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DISCUSSION BRIEF

Governing urban wetlands for green growth in the Western Region Megapolis of Sri Lanka

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The Western Region Megapolis (WRM) of Sri Lanka, the conurbation associated with Greater Colombo and covering the entire Western Province, is the thriving economic center of the country. According to the *State of Sri Lankan Cities 2018* report (GoSL 2018), the city accounts for 40% of Sri Lanka's gross domestic product (GDP), 30% of its population and is the nation's administrative center.

The WRM is also endowed with wetlands of international importance. This includes the Bellanwila-Attidiya marshes: a 370-ha freshwater marsh in southern Colombo rich in biodiversity (Box 1); the Colombo Flood Detention Area: a 400-ha network of marshes and canals that traverse the city; and the Muthurajawela marsh: a 2,500-ha saltwater marsh in northern Colombo, which is the largest saline peat bog in Sri Lanka (IUCN and CEA 2006).

The aim of this brief is to support the efforts of the Government of Sri Lanka to leverage the WRM wetlands to foster green growth. Green growth promotes economic development alongside environmental sustainability, and is gaining traction as a model to achieve sustainable urban development globally (Hammer et al. 2011). According to OECD (2013: 9), governments promote green growth "to create jobs and attract firms and investment, while improving local environmental quality and addressing global environmental challenges, particularly climate change."

An aerial view of the city of Colombo in Sri Lanka with its network of wetlands supporting urban dwellers - A hub for green growth.

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Key messages

1. Green growth incorporates economic development and environmental sustainability. Large wetland habitats in the Western Region Megapolis (WRM) of Sri Lanka, the urban area associated with Greater Colombo, provide opportunities to foster green growth. Wetland habitats support green industries, employment and investment; increase resilience to climate change; and secure urban ecological environments.

2. There is strong political will to protect urban wetlands and support green growth, with Colombo recently gaining Wetland City Accreditation from the Ramsar Convention on Wetlands. Moving forward, Sri Lanka can become a global leader in urban green growth. To achieve this, efforts to arrest the loss and contamination of urban wetland habitats must continue.

3. A three-pronged policy response can strengthen the governance of WRM wetlands to support green growth: enabling subnational wetland management through the promotion of collaborative urban governance; promoting linkages with the private sector; and strengthening mechanisms to monitor changes in wetlands. Such actions also support the government's *Wetland Management Strategy.*

Five ways the WRM wetlands can support urban green growth

Appropriately governed and managed, the WRM wetlands can support green growth through the following:

1. **Providing opportunities for ecotourism and other green industries to flourish**. Promoting Colombo as a Wetland City presents opportunities for greening Sri Lanka's burgeoning tourism industry. Developing ecotourism infrastructure of a global standard could benefit a range of stakeholders and support a variety of green industries, from globally-connected travel companies to local communities that use the wetlands for agriculture and artisanal industries. The *Sri Lanka Tourism Strategic Plan 2017-2020* recognizes the economic value of ecotourism, noting "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).

2. **Attracting international investment**. Thriving wetlands enhance community, cultural and civic life, and contribute to livable cities, with pleasant environments and ample opportunities for recreation and leisure. Urban attributes that are key to attracting international business. The livability services provided by wetlands in the WRM are highlighted in GoSL (2018). In Kotte, wetland ecosystems accounted for 18% of all land use, including the Diyasuru and Baddegana wetland parks: these well-maintained reserves contribute to a pleasant urban environment and are popular with families as well as wildlife enthusiasts.

3. **Promoting carbon-neutral economic growth** by encouraging non-motorized mobility, such as walking and cycling. The WRM network of waterways offers opportunities to develop green transport corridors across the city. Non-motorized mobility has a range of public health benefits, including reduced exposure to harmful vehicle emissions and road traffic accidents, and increased exercise. In addition, the WRM wetlands are important carbon stores: it is estimated that the urban wetland soils contain around 1.43 million metric tons of carbon, which is equivalent to 90% of the conurbation's (annual) carbon emissions (GoSL 2016). Recent research also suggests that the flora of urban green spaces can serve as an effective carbon sink because of its proximity to the source of emissions (Wilkes et al. 2018).

4. **Securing climate-resilient urban economies**. Sri Lanka's National Adaptation Plan for Climate Change (MoMDE 2016) noted that the frequency of heavy rainfall will increase as a result of climate change, in turn heightening urban flood risk, with the potential to severely disrupt economic systems. In this context, urban wetlands are critical to the city's flood resilience:

it is estimated that 40% of Colombo's floodwaters drain into wetland areas (GoSL 2018).

5. **Safeguarding biodiversity.** Protecting wetlands ensures that economic growth **includes urban flora and fauna**. The WRM wetlands are home to an array of plant and animal life that support thriving ecological habitats. A recent study of Colombo's wetlands found 250 plant species (including nine endemic, nine nationally threatened) and almost 280 species of mammals (including 32 endemic species) (GoSL 2016).

Sustainable wetland governance: Progress and challenges

The Government of Sri Lanka has shown strong commitment to protecting the city's wetlands. In 2018, Colombo became one of the first 18 cities worldwide to gain Wetland City Accreditation from the Ramsar Convention on Wetlands – a global agreement to protect and wisely use the world's wetland ecosystems, to which Sri Lanka is signatory (known as a Contracting Party). Wetland protection and green growth are also key components of the United Nations Sustainable Development Goals (SDGs) (Box 1).

Box 1. Urban wetlands, green growth and the United Nations Sustainable Development Goals (SDGs).

Promoting green growth and protecting urban ecosystems are key to achieving the United Nations Sustainable Development Goals (SDGs) and the New Urban Agenda: important international agreements to which Sri Lanka is signatory. Promoting urban green growth through improved wetland governance contributes to the following SDGs:

- **Goal 3: Good health and well-being**: by providing green spaces for leisure, education and tourism, enabling non-motorized mobility (cycling and walking), and reducing air pollution.
- **Goal 6: Clean water and sanitation**: by reducing urban residents' exposure to contaminated water and associated public health concerns, as well as water security through its role in flood mitigation.
- **Goal 11: Sustainable cities and communities**: by providing green, liveable and environmentally sustainable urban spaces.
- **Goal 13: Climate action**: by increasing urban flood resilience and securing urban carbon pools.
- **Goals 14 and 15: Life below water and Life on land**: by protecting ecological habitats and biodiversity in urban ecosystems.

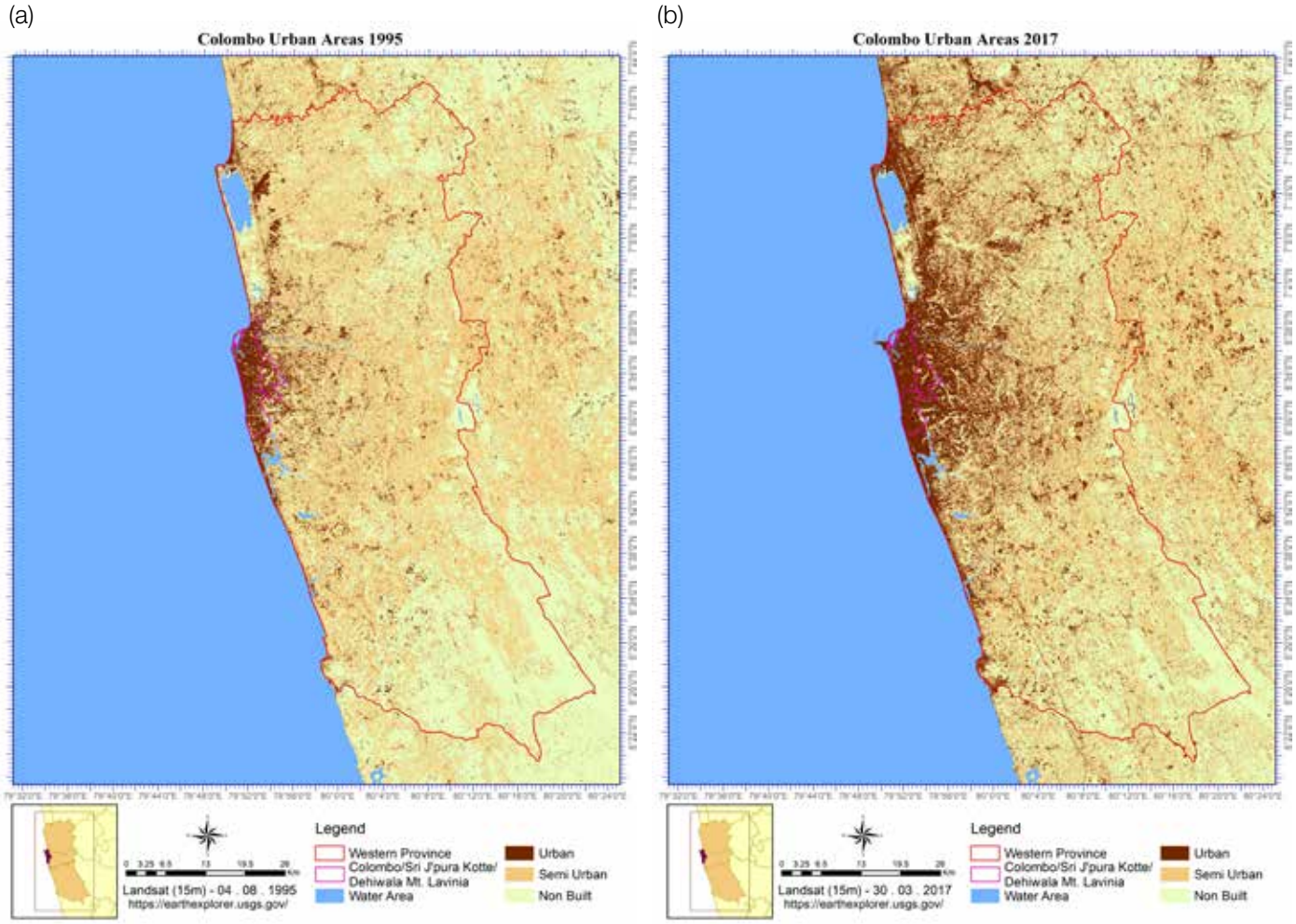
An impressive number of policy, legislative and regulatory instruments support wetland conservation, and are confirmation of the efforts made by the government to safeguard the ecological integrity of the wetlands. These initiatives cover biophysical, hydrological, biodiversity, pollution, climate, sociocultural and institutional aspects of wetland management. Instruments have been formulated by different institutions, over time, realizing the value of wetlands, and the mandates of the respective institutions that govern them.

To date, five policies, six strategies and action plans, seven ordinances and acts, and three regulatory documents support wetland governance. The most recent strategic document is the *Wetland Management Strategy* which specifically targets the Colombo Wetlands, and was supported by a large number of scientific studies that emphasized the pressing need to safeguard the city's wetlands (GoSL 2016).

Despite this progress, there remain significant challenges to sustainable governance of wetlands (Box 2). A key challenge is the rapid expansion of the built-up area in the WRM: the urban area grew at an average rate of 4.5% annually during the period 1995-2017 (Figure 1) (GoSL 2018). This has rendered Sri Lanka's biosphere as one of the top five most at risk from urban expansion, globally (Seto et al. 2012).

Scientific studies have shown that rapid urban expansion in the WRM has put wetland habitats at severe risk from reclamation and contamination, which threaten the ecosystem services that support green growth (Hettiarachchi et al. 2014). A recent study found that wetlands are decreasing at a rate of 1.2% annually, which is equal to approximate reductions of one-third by 2038 and half by 2070 (GoSL 2016). Further loss of wetlands could have a range of negative consequences, including loss of biodiversity and green space, and a sharp increase in climate vulnerability: it is estimated that, if the city's wetlands were lost, floodwater levels would increase by 2 meters during severe rainfall events (GoSL 2016). The economic disruption that flooding would cause provides strong incentives to arrest the trend of wetland destruction.

Figure 1. Urban area in Colombo and the Western Region Megapolis in (a) 1995, and (b) 2017.



Source: GoSL 2018.

Box 2. Bellanwila-Attidiya wetlands.

A good example of the challenges to wetland governance is the case of the Bellanwila-Attidiya marsh in southern Colombo. According to a wetland directory of the Central Environmental Authority (IUCN and CEA 2006), this marsh is rich in biodiversity, including 77 species of butterfly, some of which are threatened. This thriving ecosystem also provides a variety of recreational and educational services: its wildlife and green space provide leisure activities for urban residents, and the area is also used for educational purposes – it is a popular site for schoolchildren and university students, particularly for the study of birdlife. The wetland also supports the livelihoods of the local communities, including the provision of reeds for making mats, fishing and shrimp farming, and small-scale agriculture. In addition, the marsh provides important flood drainage services, and is hence integral to the climate resilience of the surrounding area. There is great potential for the Bellanwila-Attidiya marsh to be leveraged into further green growth activities, including ecotourism, leisure activities and supporting services.

Urban expansion has exerted severe pressure on these ecosystem services. Spatial analysis conducted by GoSL (2018) found that the number of buildings in the protected area increased from 5,158 in 2004 to 7,524 in 2017 (Figure 2), which is equal to an annual increase of 2.95%. Not only has the land filling for development resulted in wetland loss, an increase in population and socioeconomic activity has resulted in further contamination of the wetlands. In particular, the area is not served by a municipal sewerage network, which means that wastewater contamination is a severe threat to the ecosystem services provided by the wetland. In this context, the importance of wetlands for the treatment of wastewater is often cited as a beneficial and valuable ecosystem service. However, if chemical loadings exceed the physiological tolerances of key plant and microbial species, environmental degradation is likely to occur.

Figure 2. Increase in buildings in Attidiya (2004-2017) is gradually impacting the natural wetlands.

Source: GoSL 2018.

Source: Google Earth

The cultivation of paddy rice in Kimbulawela urban wetlands, Sri Jayawardenepura Kotte, Sri Lanka.

Strengthening wetland governance for green growth: A three-point action plan

1. **Subnational governance reform**. There are robust national frameworks for wetland governance in Sri Lanka, but there remain challenges of implementation at the subnational level – particularly in rapidly expanding cities sprawling across administrative boundaries. The network of WRM wetlands covers a wide area and dozens of administrative units of subnational government: seven Municipal Councils, 14 Urban Councils, 27 *Pradeshiya Sabhas* (local administrative unit) and 40 Divisional Secretariats, according to the 2012 census. To effectively manage the WRM wetlands, these entities need to coordinate and cooperate across large areas and around a range of interlinked issues, such as environmental protection, and solid waste and wastewater management. Effective coordination between subnational entities and ministries involved in WRM wetland management is also important: several agencies under the Ministry of Megapolis and Western Development, and the Ministry of Mahaweli Development and Environment, for example, are mandated with WRM wetland management. In response to coordination challenges, the **collaborative governance** approach fosters cooperation between subnational government entities, which is key to managing highly integrated wetland systems. Using collaborative governance on a single urban management issue (such as wetland governance) can act as a 'pilot' for the collaborative approach, leading to its wider application and the optimization of other urban systems. To this end, a detailed action plan is needed to enable collaborative governance in WRM wetland management. The National Wetland Steering Committee is well suited to prepare a collaborative governance strategy because all the relevant government departments are members of the committee. The entity could develop a cross-sector plan that involves all aspects of wetland governance, and provides a framework for collaborative implementation across the WRM at the subnational level.

2. **Harnessing the private sector.** To secure Colombo's wetlands over the long term, the economic value of the ecosystem services they provide could be further unlocked. Piecemeal interventions have already taken place to promote recreational and leisure activities on wetlands in the WRM, including

Diyasuru Wetland Park in Thalawathugoda. To build on this success, future interventions could strengthen the supply chains supporting local livelihoods that are centered on wetlands (i.e., urban agriculture, artisanal activities). Another key issue is strengthening ecotourism services in the WRM, and linking ecotourism to wetland-based livelihood activities to promote green jobs and green industries.

3. **Strengthening capacity for integrated and sustainable wetland management.** This includes the preparation of an up-to-date directory of wetlands and the ecosystem services they provide. A key intervention is to initiate environmental monitoring for assessments of water quantity and quality, and biodiversity at key sites, over time, to include wetland water levels, microbiology and sediment accumulation rates. Assessments of ecosystem services for the range of urban stakeholders, and their changes over time, are also necessary. Robust data collection will enable integrated modelling of wetland systems to identify ecosystem services and develop strategies to safeguard these wetlands. To develop such infrastructure, partnerships between the government, academia and international leaders in integrated wetland management must be developed in line with Sri Lanka's *Wetland Management Strategy* (GoSL 2016). In this context, 'citizen science' is a powerful tool for wetland conservation. Engaging citizens in data collection enhances capacity for the monitoring of ecosystem services. Citizen participation also strengthens the community and civic structure for wetland management, and instills a sense of ownership and pride in maintaining thriving wetlands. 'Citizen science' could be promoted through the formation and/or strengthening of local 'wetland committees' targeting youth and other groups, or via online open source data platforms for citizen engagement.

Citizen science programs held at the Diyasaru Park, Thalawathugoda, Sri Lanka.

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Acknowledgements

This brief draws on spatial analysis conducted for the *State of Sri Lankan Cities 2018* project, implemented by the Government of Sri Lanka with technical assistance from UN-Habitat and funded by the Australian government. This research was also carried out as part of the CGIAR Research Program on Water, Land and Ecosystems (WLE) and supported by Funders contributing to the CGIAR Trust Fund (https://www.cgiar.org/funders/). The brief was reviewed by Srinivasa Popuri (UN-Habitat), Parul Agarwala (UN-Habitat), Matthew French (Monash University), Jan Turkstra (UN-Habitat) and Matthew McCartney (IWMI).

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Printed: August 2019