

# Metro Colombo Urban Wetland Status Report

2021

IWMI and Cobra Collective



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International Water  
Management Institute

## Contents

Executive Summary .....	3
1 - Introduction .....	4
1.1 - Colombo's urban wetlands .....	4
1.2 - Report methodology .....	5
1.2.1 - Stakeholder e-mail questionnaire.....	5
1.2.2 - Online perception survey.....	6
2.1.3 - Virtual meetings .....	8
2 - Wetland status .....	9
2.1 – Wetland Management Strategy (WMS) 2016 – Goals and strategic objectives .....	9
2.2 - Review of current familiarisation and implementation of the WMS .....	9
2.2.1 - Review of current state, changes, and drivers of change of wetlands in Colombo .....	10
2.2.2 - Review of Strategic Objective 1 – Recognise .....	11
2.2.3 - Review of Strategic Objective 2 – Prevent .....	13
2.2.4 - Review of Strategic Objective 3 – Restore .....	13
2.2.5 - Review of Strategic Objective 4 – Engage .....	15
2.2.6 - Review of Strategic Objective 5 – Govern .....	16
2.3 - Institutional responses to WMS (Signes 2016) through specific projects .....	17
2.3.1 – Darwin Initiative project partner responses.....	18
2.3.2 – Other stakeholders .....	21
2.3.2 – Web-based information collected from other organizations .....	24
3 - Conclusion .....	26

## Executive Summary

The Metro Colombo Wetland Management Strategy (WMS) was developed in 2016 to promote wise use and sustainable management of all wetlands within the Colombo Metropolitan Region (Signes 2016). This report reviews the progress made since 2016.

Following the initiation of the WMS many government institutions and NGOs in Sri Lanka now recognise that wetlands are an integral part of their institutional mandates. Their activities since 2016 reflect the increased interest and recognition of the importance of wetlands and their benefits to society.

However, despite the increased attention on wetlands it was reported that wetlands remain in a poor condition, are declining in area, and there has been a continued deterioration in wetland health since 2016.

Since 2016, progress has been made on each of the five strategic objectives of the WMS, however, overall results were mixed:

- Strategic Objective 1: Recognise – The benefits and values derived from the wetlands are recognised by some government agencies and other wetland related organisations but wider engagement across government and society is required to fully integrate wetlands into urban spatial planning;
- Strategic Objective 2: Prevent - Since 2016, wetland related legislation, regulation and policies has been strengthened. However, due to the continued decline in wetland area and ecosystem health, the focus now has to be on strengthening implementation of the legal framework;
- Strategic Objective 3: Restore - Wetland restoration planning and implementation, that integrates cross-sectoral benefits has occurred within the work of several agencies since 2016. However, wetland restoration activities need to better coordinate with the work of other government agencies such as health, transport, agriculture to ensure cross-sectoral benefits are fully realised;
- Strategic Objective 4: Engage – Many organisations involve local communities and stakeholders in wetland management planning and have implemented communication activities to raise awareness of the Colombo's wetlands both nationally and internationally. Additional emphasis is required to empower all community groups to become actively involved in wetland management decision making;
- Strategic Objective 5: Govern – Within some organisations the institutional capacity for wetland management has been strengthened but capacity building activities need to reach a wider group of individuals, agencies and organisations. WMS delivery largely occurs through individual agency and organisational programmes. A cross-organisational response, through the National Wetland Steering Committee, is now required that delivers more coordinated management, monitoring and updating of the WMS to ensure that Colombo's wetlands are protected and continue to deliver important benefits for people and biodiversity into the future.

## 1 - Introduction

The last update on the status of the Metro Colombo Wetland Complex (MCWC) was carried out in 2016 when the Metro Colombo Wetland Management Strategy (WMS) was developed as a complementary initiative towards achieving capacity enhancement for flood and drainage management under the World Bank funded Metro Colombo Urban Development Project. The goal of the WMS is the wise use and sustainable management of all wetlands within the Colombo Metropolitan Region (CMR).

This report aims to update the status of wetlands since 2016 and was undertaken under the project, 'Increasing the resilience of biodiversity and livelihoods in Colombo's wetlands' funded by the Darwin Initiative, UK.

### 1.1 - Colombo's urban wetlands

The MCWC covers a total area of 121.5 km<sup>2</sup> encompassing urban, peri urban and rural environments, of which 19 km<sup>2</sup> (15.6%) is designated as wetlands (Figure 1). The urban landscape can be described as one consisting of a wetland mosaic interspersed with urban areas and infrastructure. Within the MCWC, freshwater wetlands dominate and they account for more than 86% of the wetlands (Figure 2). Abandoned paddy lands are abundant. Many are being rehabilitated for a new wave of activities linked to urban agriculture, an emerging trend since the beginning of the COVID-19 pandemic. Open water wetlands, such as tanks, lakes, and canals, represent just over 20% of all the wetlands. Despite the complexity of the wetland classification, twenty-seven individual wetlands have been delineated within the complex. Wetland areas are undergoing rapid changes with urbanization and development, and this report attempts to determine the status of the wetlands and to evaluate changes (positive and negative) since 2016.

It is becoming increasingly clear that to integrate the Wetland Management Strategy (WMS) into the mainstream of the CMR-wide planning and management, a prerequisite is good understanding of: i) the cross-scalar governance/ownership structure, ii) biodiversity, and iii) the role of citizens. This update provides insights into these three critical areas.

The city of Colombo and its suburbs continue to develop with pressure on the natural landscape, including the wetlands. The official declaration of the CMR took place by the special Gazette Notification No.2049/11 of 2017. The Capital City Development Plan 2019-2030 was developed by the Urban Development Authority and is operational today. The WMS (Signes 2016) reported that although the area of CMR is only 6%, it accounts for almost 50 percent of the national Gross Domestic Product (GDP). This could be expected to rise with new plans for development, including the plans for two distinct administrative and financial capitals and the addition of new municipal areas to the City Region.

As such, integration of new city plans will have to be holistic and multi-sectoral in nature if cities are to be made into inclusive settlements and sustainable as envisioned (<http://www.un.org/sustainabledevelopment/cities/>). However, the CMR is vulnerable to a range of threats linked to rapid urbanization, population growth, climate change, and economic development, which, unless managed, will compromise the ability of the country to achieve its full economic potential and thereby secure the wellbeing of the population. The major concerns are the competition for natural resources, utility services, food production and livelihoods, especially for the marginalised.

Figure 1 - Wetlands of the Metro Colombo Wetland Complex. Their management approach is described in the Wetland Management Strategy Report (Signes 2016)

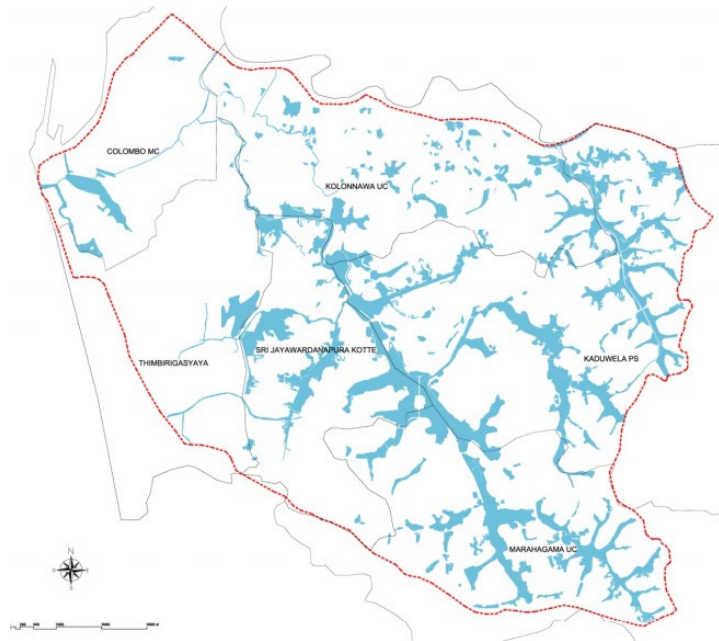


Figure 2 - The main wetland types identified within the Wetland Management Strategy Report (Signes 2016)

Habitat type	Upland	Woodland	Herb dominated	Open water	Woodland	Herb dominated		Open water	
Habitat feature		Mixed woodland	Tall herb	Flowing water	Annona woodland	Low herb	Tall herb	Standing water	
Wetland type		Mixed woodland	Marginal vegetation	Floating vegetation	Annona woodland	Active paddy	Abandoned paddy	Floating vegetation	Open water
Illustration									

Three different techniques were used to compile the information provided within this report; e-mail questionnaire; online perception survey and follow up virtual meetings.

### 1.2.1 - Stakeholder e-mail questionnaire

An e-mail questionnaire was sent to key stakeholders of MCWC following workshops with project partners and stakeholders to gain understanding of their institutional responses to the WMS. They were requested to fill in a questionnaire (Annex 1) with the requisite responses. The respondents were the six project partners and other stakeholders from the National Wetland Steering Committee and non-government organisations that have a stake in wetlands. Due to the COVID-19 pandemic related travel restrictions, the data had to be

collected electronically. Because staff could not access the data on their home computers easily, there were delays in the compilation of the reports and their responses but overall, a reasonable rate of response was achieved.

The questions included among others, names of projects, funds, names of funders, wetland area covered, type of activities carried out, hydromet data, biodiversity data, water quality data and whether they aligned activities with the WMS (Signes 2016) and the policies outlined.

### *Data sources*

#### **Partners**

All 6 partner organizations provided information for this report. Five of the institutions were government departments and one from the academic sector. The partners Institutions are as follows.

1. Biodiversity Secretariat (Government)
2. Central Environment Authority (Government)
3. Department of Wildlife Conservation (Government)
4. Field Ornithology Group of Sri Lanka (University affiliation)
5. Sri Lanka Land Development Corporation (Government)
6. Urban Development Authority (Government)

#### **Other stakeholders**

Over 40 e-mail questionnaires were sent, and the following eight stakeholders responded with detailed information:

1. Small Cat Advocacy and Research (NGO)
2. People to People Volunteers (NGO)
3. The National Science Foundation (Government)
4. Environmental Foundation Limited (NGO)
5. Thalangama Wetland Watch (NGO)
6. United Nations Development Program (UN Organization)
7. Wanasara Thurulatha Swechcha Society (NGO)
8. University of Colombo (Institution)
9. The Centre for Environmental Justice (NGO)

### **1.2.2 - Online perception survey**

An online perception survey was circulated to individuals within partner and stakeholder organisations to assess their opinion on the current status and condition trends of the wetlands and the implementation of the WMS (Signes 2016). In total 63 people responded to the survey of which 57% were male and 43% were female (Figure 3). The ages of respondents ranged from people in their twenties to the over sixty fives (Figure 4). The majority of respondents to the survey came from government departments, non-governmental organisations, academic and consultancy organisations (Figure 5) with 43% of respondents saying their organisation carries out wetland specific work (Figure 6).

Figure 3 - Online survey respondent's gender

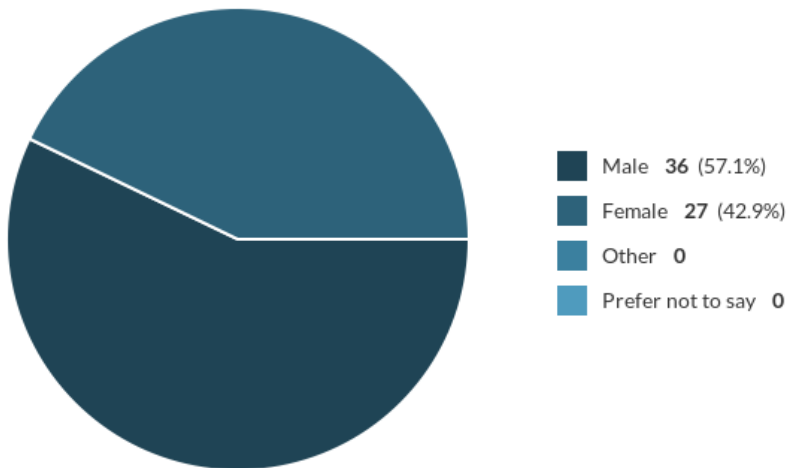


Figure 4 - Age of respondents

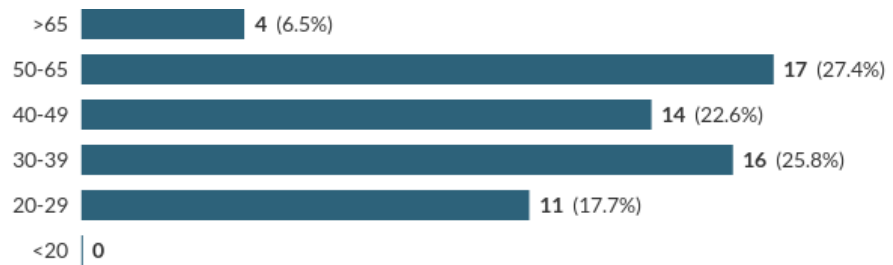


Figure 5 - Organisation of respondents

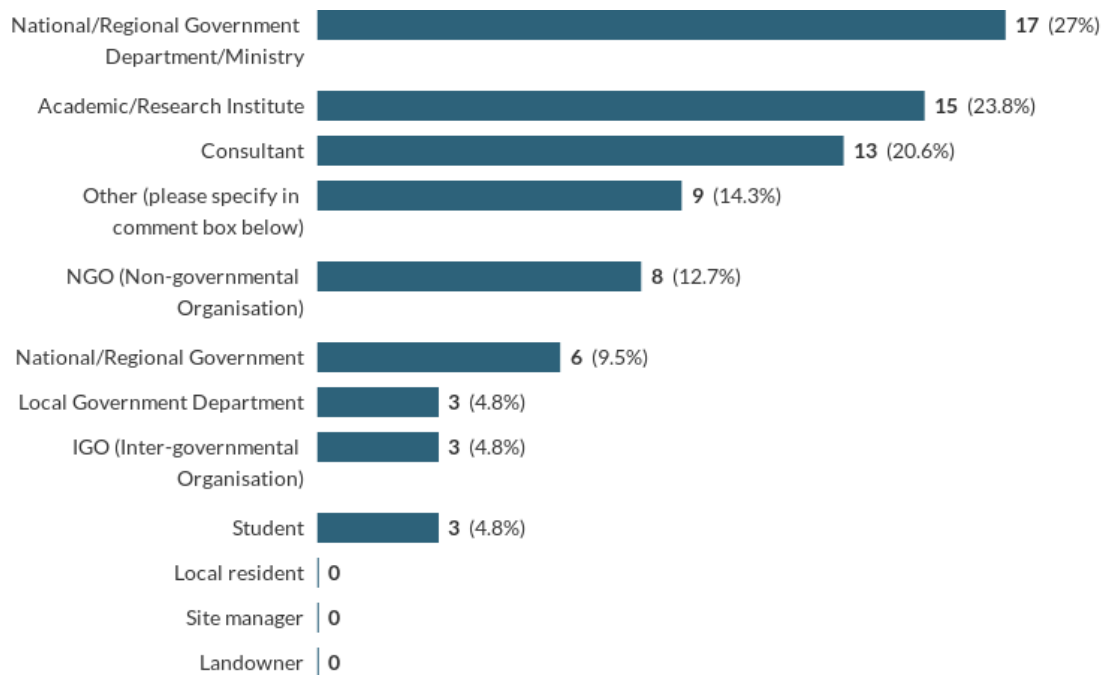
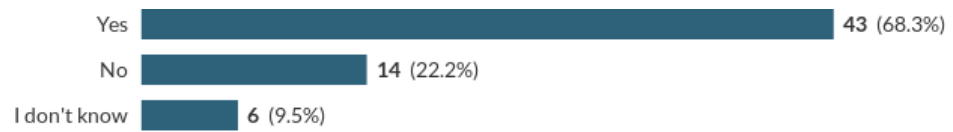


Figure 6 - Perceptions of respondents on whether their organisation carries out wetland specific activities in planning, research and/or management



### 2.1.3 - Virtual meetings

Follow up meetings were held with some individuals and organisations to gather more information regarding work programmes and the information they hold related to wetlands.



## 2 - Wetland status

### 2.1 – Wetland Management Strategy (WMS) 2016 – Goals and strategic objectives

The WMS sets the high-level ambition for wetlands within the CMR. The intention of the WMS was to unite different policies, plans, laws, institutions and organisations in order to commit the various actors and stakeholders within the CMR to deliver mutual benefit. It was anticipated that taking an inclusive and holistic approach would lead to broader appreciation of the issues, including the often formerly unrealised benefits, surrounding wetlands, and this would strengthen overall ownership and implementation of the WMS both horizontally across sectors and institutions and vertically through tiers of governance.

It stated a monitoring and evaluation programme was required to ensure that: objectives stemming from the WMS were delivered; the strategic approach was uniformly applied; and that success or lessons learnt were recorded to improve the realisation of benefits.

The WMS sets out Strategic Objectives necessary for implementation. The Strategic Objectives were designed to address five key themes: recognise, prevent, restore, engage and govern. These are described below:

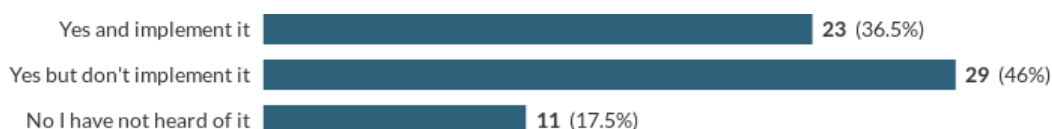
- Strategic Objective 1: Recognise - The benefits and values derived from the wetlands provide the basis for wise use, sustainable development and human well-being. All of these values must be recognised and integrated into decision-making.
- Strategic Objective 2: Prevent - Further loss and degradation of wetlands must be prevented and all wetlands should be conserved.
- Strategic Objective 3: Restore - Efforts must be made to restore degraded wetlands in order to improve ecological functioning and to enhance socio-economic values.
- Strategic Objective 4: Engage - Participatory approaches must be implemented to engage with diverse stakeholders in order to recognise values and to promote wise use.
- Strategic Objective 5: Govern - Legal instruments and management institutions must be fit for purpose and fully engaged in the integrated delivery of the WMS.

### 2.2 - Review of current familiarisation and implementation of the WMS

In the 2021 online perception survey participants were asked a series of questions to ascertain how familiar they were with the WMS and how well it has been implemented to date. They were also asked about the current state, changes, and drivers of change of wetlands in Colombo.

A total of 83% of respondents said that they are familiar with the WMS and 37% said that they implement the WMS (Figure 7).

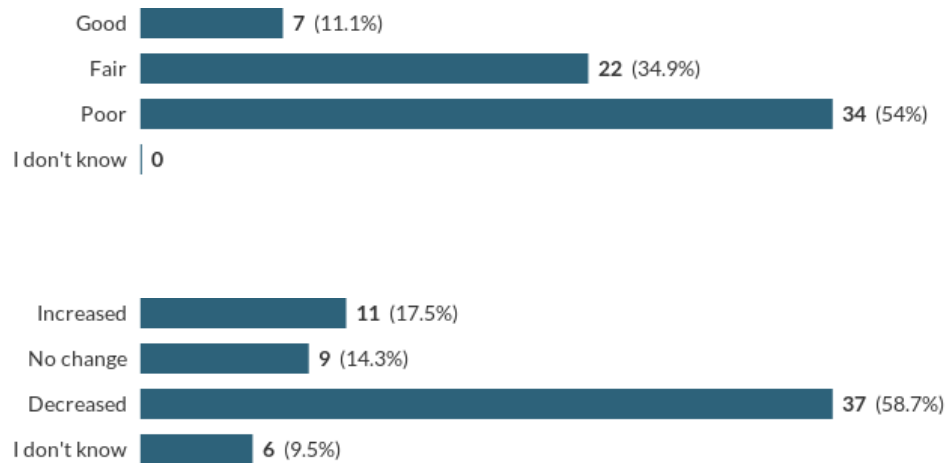
*Figure 7 - Perception of respondents on whether they are familiar with the Metro Colombo Wetland Management Strategy produced in 2016*



### 2.2.1 - Review of current state, changes, and drivers of change of wetlands in Colombo

When asked about the current overall state of the wetlands in Colombo, 46% of online perception survey participants responded that they felt wetlands were in good or fair condition whilst 54% felt they were in poor condition (Figure 8). The majority of respondents (59%) felt that the wetlands in Colombo had decreased in area, whilst 18% felt that the area had increased and 14% felt there had been no change (Figure 9).

Figure 8 - Perception of respondents on what is the current overall state of the wetlands in Colombo



In response to being asked what the overall change in the state of wetland health since 2016 has been, 64% of people questioned felt there had been deterioration or major deterioration, 22% an improvement or major improvement and 10% no change (Figure 10). The most popular perceived drivers of positive change to wetlands in Colombo were implementation measures for wetland recreation and conservation management, tourism and forestry. The drivers of negative change included solid waste dumping, alien species, urban/industrial pollution, industrial development/infrastructure and political intervention (Figure 11).

Figure 10 - Perception of respondents on what has been the overall change, since 2016, in the state of the wetland health in terms of water, soil, landform, biodiversity, natural processes and ecosystem benefits

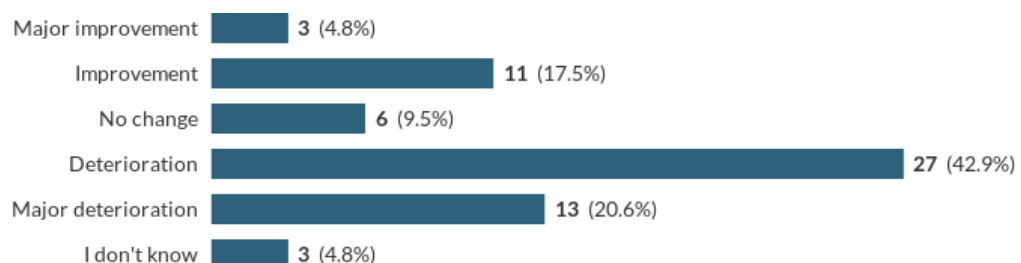
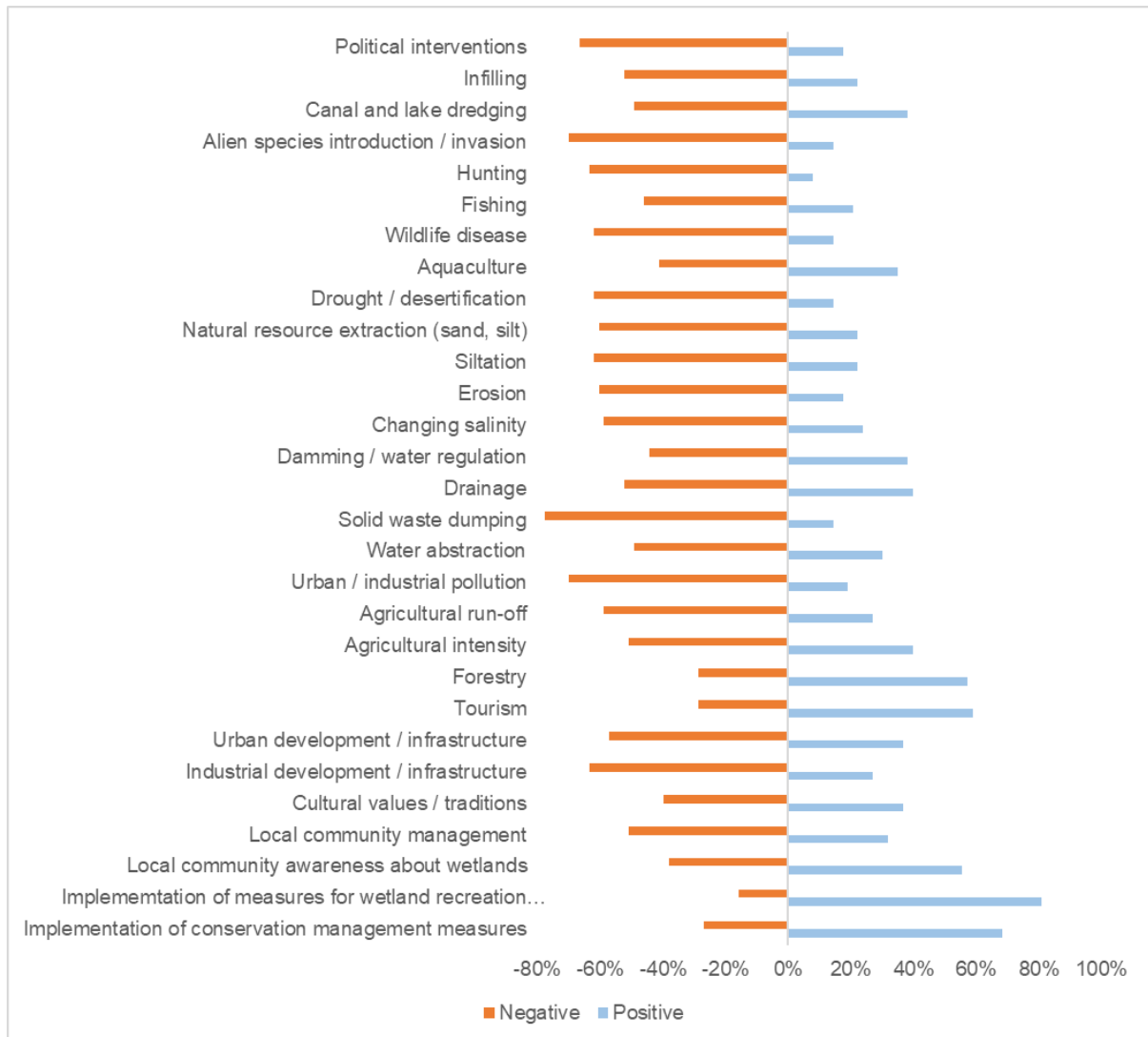


Figure 11 - Perception of respondents on which direct drivers (causes) have resulted in changes (negative or positive) in wetland health in Colombo since 2016

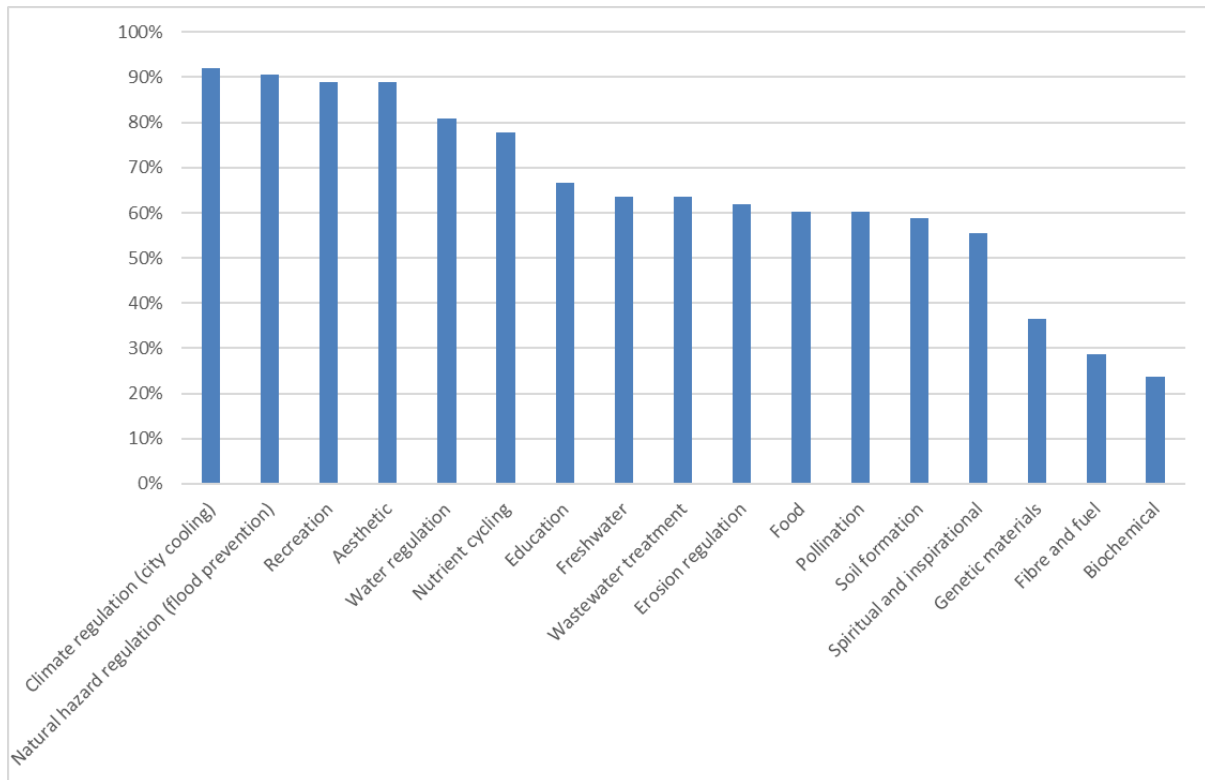


## 2.2.2 - Review of Strategic Objective 1 – Recognise

### 2.2.2.1 - Benefits and values derived from the wetlands

In the 2021 online perception survey, over 85% of all respondents identified the most important benefits Colombo’s wetland provide are climate regulation (city cooling), flood prevention, recreation value and aesthetic value (Figure 12).

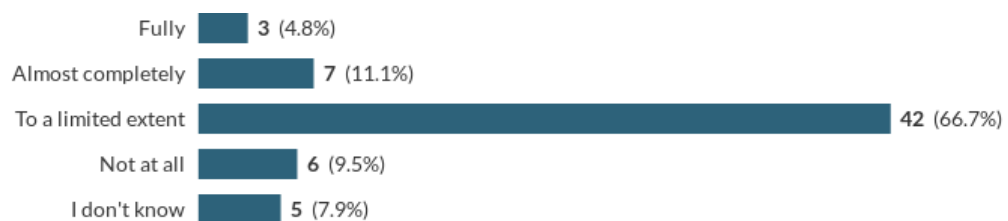
Figure 12 - Perception of respondents on which are the most important benefits that the Metro Colombo Urban Wetlands currently provide to people living in Colombo



### 2.2.2.2 - Integrating wetland values into urban planning institutions

In the 2021 online perception survey, 67% of respondents felt that wetlands as a land use category and wetland values had only been integrated to a limited extent into the work of urban planning institutions since 2016, see below (Figure 13).

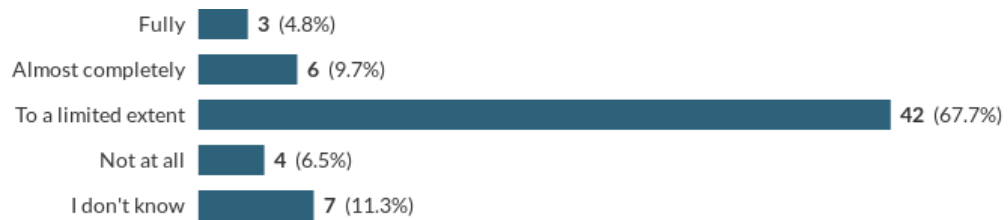
Figure 13 - Perception of respondents on whether wetlands as a land use category and wetland values have been integrated into the work of urban planning institutions since 2016



### 2.2.2.3 - Integrating wetland values into urban spatial planning

A total of 15% of respondents agreed that legislation, regulations and policies related to the Metro Colombo Urban Wetlands have been upheld and improved fully or almost completely since 2016, see below (Figure 14). The majority, 68%, felt it had been achieved to a limited extent.

Figure 14 – Perception of respondents on whether wetlands as a land use category and wetland values have been integrated into urban spatial planning more generally since 2016

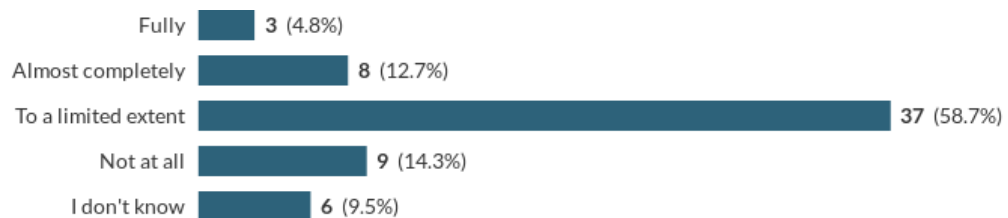


## 2.2.3 - Review of Strategic Objective 2 – Prevent

### 2.2.3.1 - Implement the obligations under the Ramsar Convention

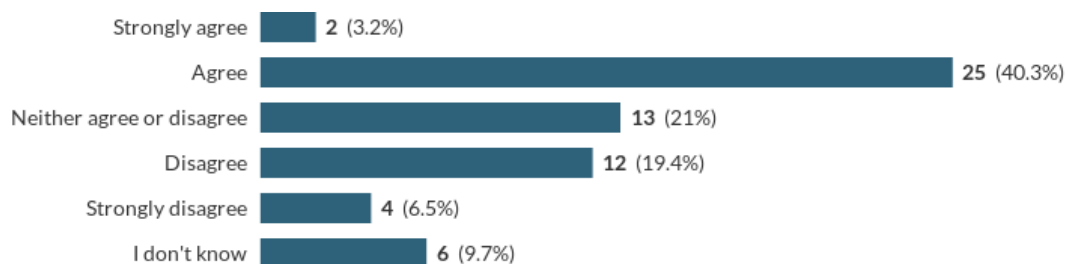
When questioned 18% of online participants felt that the obligations under the Ramsar Convention are being implemented fully or almost completely, with 59% feeling to a limited extent and 14% feeling not at all (Figure 16).

Figure 15 - Perception of respondents on whether obligations under the Ramsar Convention are being implemented



The perception of respondents on whether there has been an improvement in the legislation, regulation and policies in regard to the wetlands was mixed. A total of 43% of people agreed or strongly agreed, 21% neither agreed or disagreed and 26% disagreed or strongly disagreed (Figure 16).

Figure 16 - Perception of respondents on whether legislation, regulations and policies related to the Metro Colombo Urban Wetlands have been upheld and improved since 2016

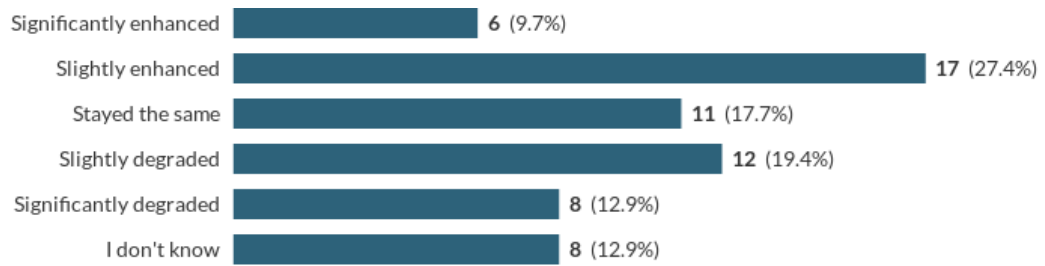


## 2.2.4 - Review of Strategic Objective 3 – Restore

### 2.2.4.1- Enhancing wetland ecosystem services for cross-sectoral benefits

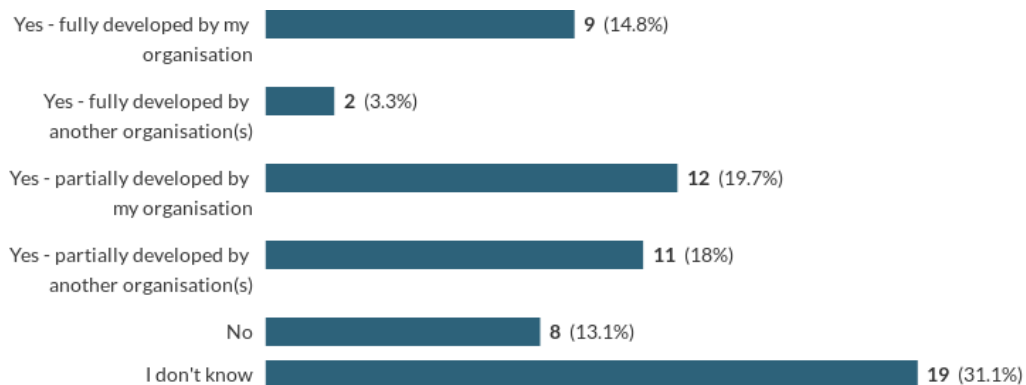
In terms of wetland ecosystem services, 37% of respondents felt that they had been enhanced since 2016, whilst 32% felt they had been degraded, see below (Figure 17).

Figure 17 - Perception of respondents on the enhancement of ecosystem services in 2016



A total of 56% of respondents felt that a wetland restoration plan has been fully or partially developed since 2016, see below (Figure 18).

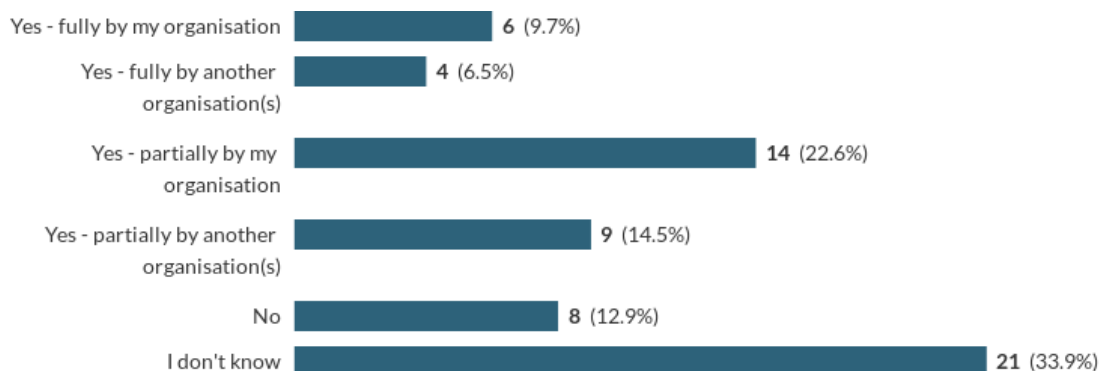
Figure 18 - Perception of respondents on the status of wetland restoration plans, since 2016



#### 2.2.4.3 - Restore wetlands as essential elements in climate change mitigation and adaptation programmes

When questioned 53% of respondents felt that a wetland restoration plan had been fully or partially integrated into climate change mitigation and adaptation programmes since 2016, see below (Figure 19).

Figure 19 - Perception of respondents on the integration of wetland restoration plans into climate change mitigation and adaptation programmes since 2016

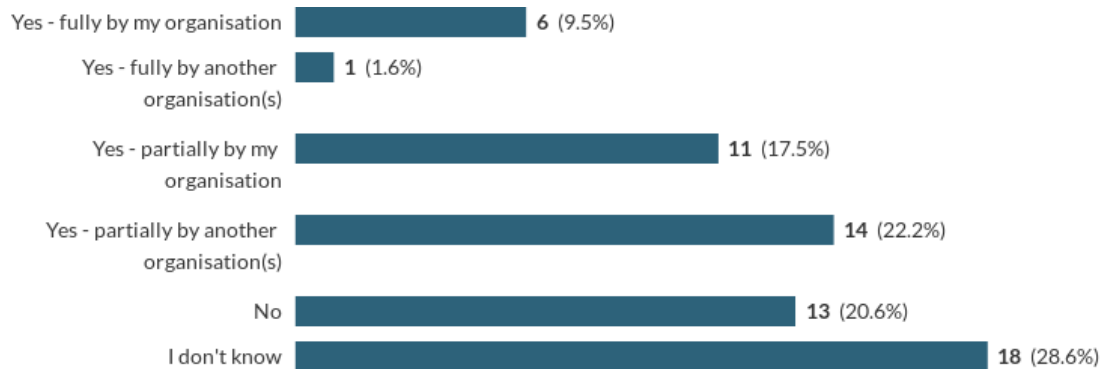


## 2.2.5 - Review of Strategic Objective 4 – Engage

### 2.2.5.1 - Engaging with local communities and stakeholders

A total of 51% of respondents felt that local communities and stakeholders have been partially or fully engaged in wetland planning and management since 2016, see below (Figure 20).

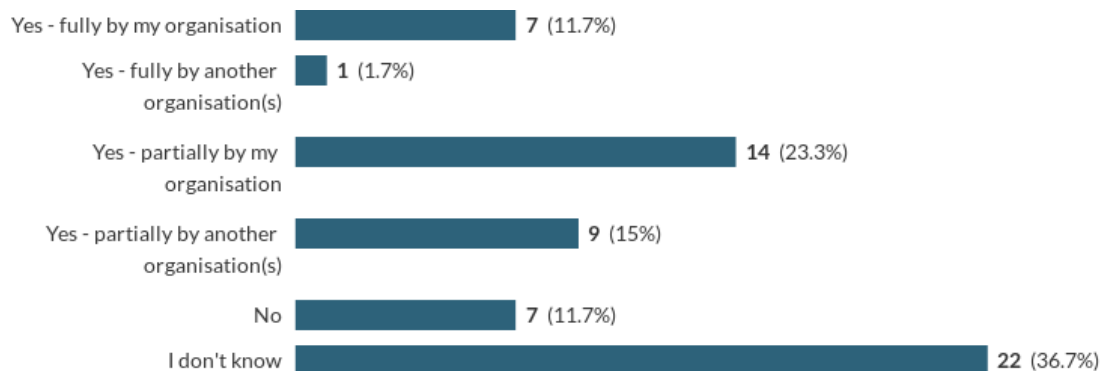
Figure 20 - Perception of respondents on the involvement of local communities and stakeholders in wetland management and planning since 2016



### 2.2.5.2 - Implementing a communications plan

When asked whether a communication plan raising awareness of the Metro Colombo Urban Wetlands had been implemented 52% of the respondents thought either fully or partially yes (Figure 21).

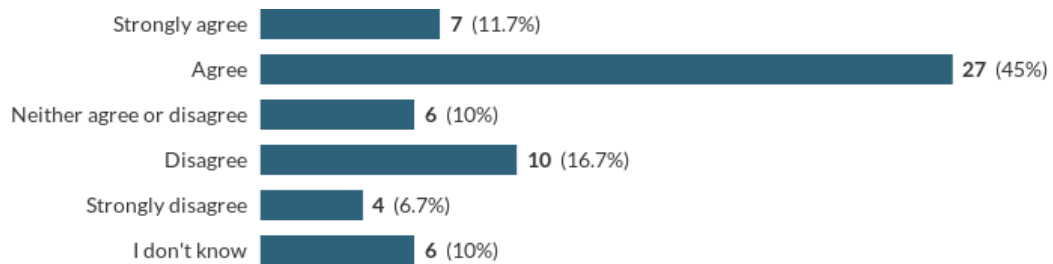
Figure 21 - Perception of respondents that since 2016, a communication plan raising awareness of Metro Colombo Urban Wetlands has been implemented



### 2.2.5.3 - Promoting Colombo's wetlands

When asked whether the Metro Colombo Urban Wetlands had been widely promoted since 2016 both nationally and internationally, 56.7% of respondents agreed, see below (Figure 22).

Figure 22 - Perception of respondents on the promotion of Metro Colombo Wetlands locally as well as internationally

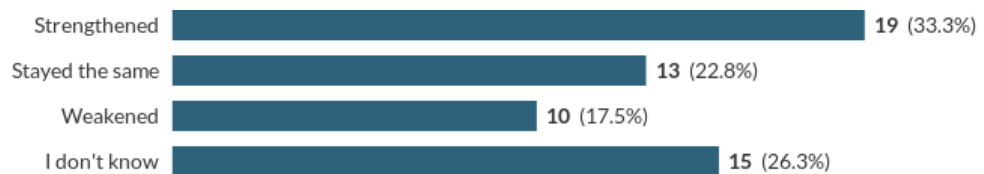


## 2.2.6 - Review of Strategic Objective 5 – Govern

### 2.2.6.1 - Developing institutional capacities

In answering the online perception survey 33% of respondents felt that since 2016 capacity for managing wetlands had been strengthened within their institution, 23% felt it had stayed the same and 18% felt it had weakened (Figure 23).

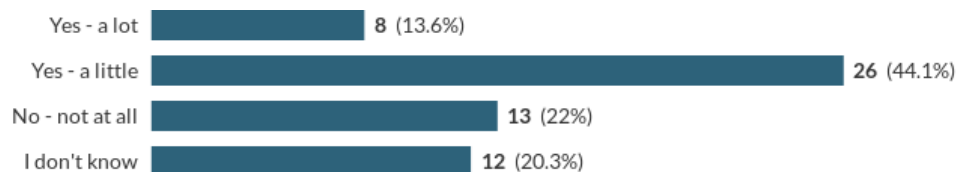
Figure 23 - Perception of respondents on the status of capacity development in the respective institutions to manage wetlands



### 2.2.6.2 - Resolving implications for existing regulations

When questioned as to whether regulations related to the Metro Colombo Urban Wetlands had improved since 2016, 57% felt they had and 22% felt they had not (Figure 24).

Figure 24 – Perception of respondents on whether regulations related to the Metro Colombo Urban Wetlands have been improved since 2016

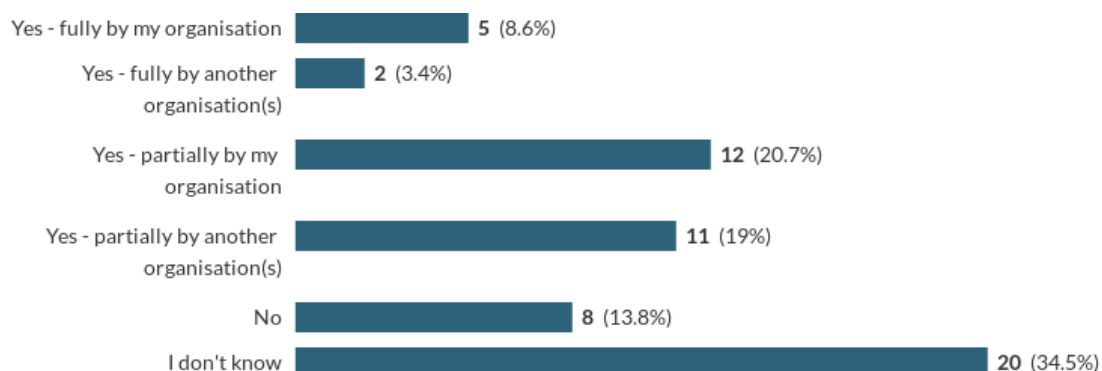


### 2.2.6.3 - Implementing a monitoring and evaluation plan

When asked 52% of respondents felt that a monitoring and evaluation plan for Metro Colombo Urban Wetlands had been partially or fully implemented since 2016, see below (Figure 25).



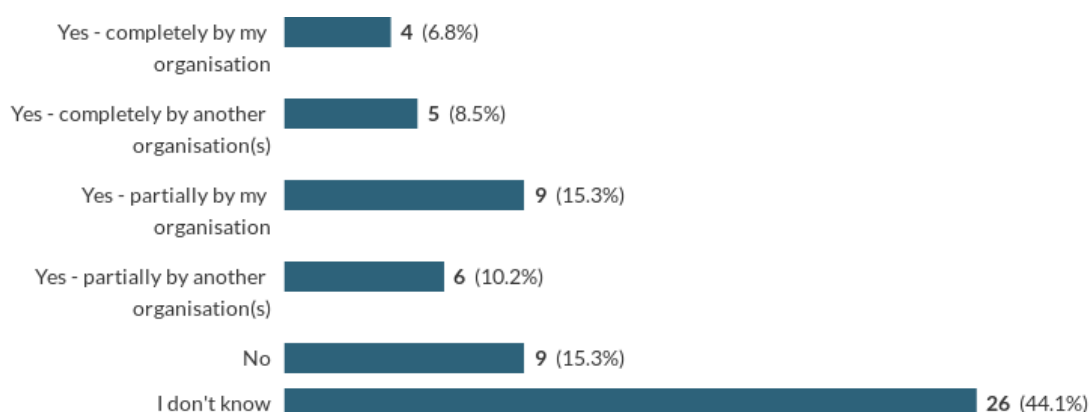
Figure 25 - Perception of respondents on the status of monitoring and evaluation of the Metro Colombo Urban Wetlands, since 2016



#### 2.2.6.4 - Reviewing, adapting and renewing

A total of 41% of respondents felt that the WMS had been partially or fully reviewed, adapted and renewed since 2016, see below (Figure 26). It should be noted that 44% of respondents did not know.

Figure 26 - Perception of respondents on the revision, adaptation or renewal of the WMS since 2016



### 2.3 - Institutional responses to WMS (Signes 2016) through specific projects

The following sections detail the specific responses organisations have taken to deliver the WMS and strengthen wetland conservation and management since 2016. Sri Lanka Land Development Corporation, Urban Development Authority, Central Environment Authority, Field Ornithology Group of Sri Lanka and all other institutions that have responded recognise that wetlands are an integral part of their institutional mandates. Their activities reflect the increased interest and the recognition of the importance of wetlands for human well-being. The National Wetland Steering Committee oversees activities and is a forum for members to update others on their activities. The Ministry of Environment plays a key role in policy matters, in terms of the recent moratorium on wetland filling in Colombo and the Department of Wildlife's initiative to declare Colombo's wetlands under the category of sanctuaries.

### 2.3.1 – Darwin Initiative project partner responses

#### **The Biodiversity Secretariat**

The Biodiversity Secretariat serves as the coordinating body for all biodiversity related projects as they are the national focal point for the Convention on Biological Diversity. They are guided by the Convention's mandate and have developed a Biodiversity Strategic Action Plan (2016-2022), according to which they plan their current activities. They are responsible for biodiversity listings, documentation of endangered species and the contribution to the REDD lists. Their mandate covers the biodiversity of Colombo's wetlands and one of their key activities was the development of a training manual for controlling and managing invasive species (2015) which is a key issue in Colombo. The secretariat comes under the Ministry of Environment.

#### **The Central Environment Authority (CEA)**

The CEA carried out two important projects in two Environmentally Protected Areas (EPAs) under their jurisdiction. The CEA was established in August 1981, and also comes under the Ministry of Environment, (provision of National Environmental Act No:47 of 1980; <http://www.cea.lk/web/en>). Its main goal is to integrate environmental considerations in the development process of the country. The CEA was given wider regulatory powers under the National Environment (Amendment) Acts No:56 of 1988 and No:53 of 2000. During the said period of 2016 – 2021, CEA was active at two EPAs, focussing on two water bodies namely, Thalangama Tank and Bolgoda Lake. Studies focused on the migrant, native and endangered species of birds, dragonflies (as well as endemic spp.) as well as water quality. Studies also encompassed the assessment of encroachments and illegal activities taking place in these areas. CEA also engaged in several developmental project discussions, that impacted wetlands, where Environmental Impact Assessments (EIA) were needed, especially linked to road development. There are three highway projects that have potential environmental impacts on wetlands. These are the central highway project, the highway that goes over the Thalangama Tank and the Ruwanpura highway. The gazette notification for EPAs was regazetted after including an extra allowable category, the Highway over the Thalangama wetlands, for which it has received cabinet approval. Accordingly, the Road Development Authority (RDA) has requested the CEA to conduct an EIA, but it has not been undertaken to date.

In wetland areas that have been designated as EPAs the CEA have established Wetland Committees to promote and coordinate the protection and conservation of the wetland areas by the local community.

#### **Department of Wildlife Conservation**

In 2018, a special cabinet decision was made on the Colombo wetlands<sup>1</sup>. The resulting cabinet paper No CP/18/1817/803/028 of the Ministry of Environment declared the Colombo

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<sup>1</sup> Press briefing of Cabinet Decision taken on 2018-08-21 – Imposing orders to stop land reclamation and destruction of wetlands  
- An Officials' Committee has been previously appointed by the Cabinet for obtaining the recommendations necessary to impose a temporary prohibitory order to immediately stop land reclamation and destruction of wetlands in the Colombo Metropolitan Region and to take appropriate measures to declare wetlands as protected zones and the preservation of same. Accordingly, the proposal made by H.E. the President Maithripala Sirisena, in his capacity as the Minister of Mahaweli

wetlands as wildlife sanctuaries. The Department of Wildlife has developed a number of activities related to wetlands, including:

1. Preparation of boundary schedules for several wetlands and submission to the legal department for drafting the gazette notification. In a gazette notification the “schedule” describes the details of the boundaries of the area identified as a sanctuary;
2. An “awareness board” was erected on the boundary of the newly declared, Sri Jayewardenepura sanctuary;
3. A special project was developed called “Raising awareness on the importance of urban wetlands” and was implemented with the Environmental Foundation Limited (EFL);
4. Legal action has now been taken against illegal activities (protection activities - to prevent infilling of wetlands and other forms of encroachment) in the wetland area around the parliament that has been declared as the Sri Jayewardenepura sanctuary; and
5. Action on wildlife policies – Changes to the Fauna and Flora Protection Ordinance (FFPO), based on the conservation activities was undertaken and this includes the fauna and flora of Colombo’s wetlands. This department is part of the Ministry of Wildlife and Forest Conservation (URL accessed in June 2021 <https://msdw.gov.lk/contact-us/ministry/>).

### **Field Ornithology Group of Sri Lanka (FOGSL)**

FOGSL is a non-profit organization that works for the conservation of birds and the environment. It works as a non-governmental organization, but is affiliated to the Department of Zoology, Faculty of Science, University of Colombo. FOGSL was established in 1976 as a society. FOGSL carried out three projects in multiple wetland sites of the MCWC. They are:

1. An awareness program on the “Conservation of urban wetlands through birds and citizen science: Pilot Testing the approach in Colombo district” 2016-2018. The aim of this project was to raise awareness on the Ecology of Urban wetlands among citizens and school children. The approach was to use a citizen science approach to initiate monitoring and data collection programmes in selected urban wetlands, involving volunteers and school children. They aimed to establish an ecologically sustainable model for urban wetlands to conserve the biological diversity of urban parks with involvement of the general public and relevant institutions. URL: <http://gefsgpsl.org/presentations/Conservation%20of%20urban%20wetlands%20through%20birds%20and%20citizen%20science.pdf> (Accessed on 12 August 2021)
2. An awareness program titled “Go Outdoors Colombo Bird Race 2016”. This awareness activity was organized by the Federation of Environmental Organizations (FEO), Sri Lanka in collaboration with FOGSL, and sponsored by "Go Outdoors". It was aimed at educating the public of Sri Lanka in the importance of urban wetlands and promoted the practice of urban bird watching in and around the wetland sites.

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Development and Environment, to implement the following recommendations made by the said Officials' Committee, was approved by the Cabinet.

- i to impose a prohibitory order preventing all types of land reclamation and constructions in the Colombo Metropolitan Region for any other purpose other than the constructions necessary to be done which are of national importance and the constructions identified under the Transit Railway Line Network.
- ii to direct the Director General of Wildlife to declare the wetlands, other than the areas recognized adjacent to Kimbulaela and Diyawanna oya in which the development activities have already been initiated, as protected areas.

3. A preliminary survey investigating the causes for the decline of species richness of fish in Beddagana Wetland Park was also undertaken.

### **Sri Lanka Land Development Corporation**

Sri Lanka Land Development Corporation has a special division for wetland conservation and rehabilitation. It is part of the Ministry of Urban Development, Coast Conservation, Waste Disposal and Community Cleanliness. They have developed a comprehensive set of initiatives to help deliver the WMS. Their activities include many of the wetland areas, and 12 specific projects were launched. They are:

1. Managing Diyasuru Park at Thalawatugoda;
2. Wetland encroachment prevention project;
3. Establishment of Floating Treatment Wetlands at Southwest Beira Lake;
4. Inland water transport at Beira Lake (Operation and maintenance);
5. Colombo water quality improvement project;
6. Canal bank protection using soft banking approach;
7. Carbon sequestration study;
8. Urban Agriculture & Environmental Improvement Project (UA&EIP) - Madiwela West;
9. World Wetlands Day celebrations, workshops and awareness programs for wetland conservation and Low Land Development;
10. Greater Colombo Flood Controlling & Environment Improvement project;
11. Colombo Water Quality Improvement Project; and
12. Water level monitoring for flood mitigation.

Activities have promoted the following:

1. Flood mitigation, biodiversity enhancement and operation of a visitor attraction through the maintenance of the Diyasuru Park;
2. Prevention of encroachment into government acquired lands by private parties;
3. Sustainable management of wetlands through wise use., e.g. protection of the natural ecosystem within marshlands;
4. Establish Floating Treatment Wetland (FTW) system using locally available materials to enhance water quality, aesthetic value and wildlife habitats;
5. Nature-based solutions for water quality;
6. Enhance recreational activities within wetlands, tourism and water-based transportation to generate revenue to pay for other wetland activities;
7. Improvement of water quality of the Colombo canal network;
8. Reduction of waste reaching waterways. Wastewater management;
9. Promotion of sustainable land use management;
10. Awareness raising and enhancing the knowledge and skills of stakeholders with respect to pollution control mechanisms through research, and other communication, education and public awareness activities;
11. Contribute to the liveability of the city and ecological status of the wetlands;
12. Stabilize canal banks with ecologically safe and cost effective, sustainable alternatives;
13. Enhance aesthetics and ecosystem services provided by the banks in Kotte Canal;
14. Estimate the carbon sequestration rate of wetland soils and trees in three selected marshy areas;
15. Create awareness about wetland values and benefits for a better quality of life. Target groups: School children, university undergraduates, general public and nature lovers; and

16. World Wetland Day events at Diyasaru Park to promote the value of wetlands with the wider public.

### **The Urban Development Authority**

The Urban Development Authority, which is part of the Ministry of Urban Development, Coast Conservation, Waste Disposal and Community Cleanliness (URL accessed in June 2021, <https://www.uda.gov.lk/>), now incorporates wetlands as a land use category in their urban planning. Seven projects have been launched since 2016 that are related to wetlands:

1. A Master Plan for Beddagana Wetland Park;
2. Development of a Biodiversity Park at Kotte Rampart;
3. Sri Jayawardenepura Kotte Development Plan;
4. Kaduwela Municipal Council development area;
5. Maharagama urban development area;
6. Dehiwala-Mount Lavinia Municipal Council development area; and
7. Preparation of the six wetland plans have been integrated into development plans.

### **2.3.2 – Other stakeholders**

There are many other organisations in Colombo that undertake wetland related activities and have contributed to the delivery of the WMS. Their specific activities are detailed below.

#### **The Small Cat Advocacy and Research**

The Small Cat Advocacy and Research is an NGO that is studying the ecology and distribution of the urban fishing cat (*Prionailurus viverrinus*), within the environs of Colombo. The aim of the organisation is to conserve the species by protecting its habitat. The project entitled, ‘Studying the ecology of Colombo’s fishing cat population to aid in long term species and habitat conservation’, has tracked the movement of the fishing cat across the wetland habitats. The organisation has conducted many awareness raising campaigns to highlight the critical conditions facing the fishing cat population in the wetlands. More information can be found at its website (URL: <https://fishingcats.lk> accessed on 1 June 2021).

#### **People to People Volunteers**

People to People Volunteers is a community-based NGO working on the grass roots level issues, especially conservation of biodiversity and enhancement of livelihoods of the poor. They currently work within the Thalangama wetland area (35 acres), which is part of the EPA managed by the CEA. Since 2016, their activities were:

1. Conducting awareness programs on biodiversity (night camps to study the animals and plants) and identifying the site boundaries to prevent encroachments;
2. Planting wetland plants to protect wetland biodiversity;
3. Promoting bio-organic farming and home gardening; and
4. Introducing compost bins to the communities living in an around the Thalangama Tank to improve waste management.

## The National Science Foundation (NSF)

NSF was established in 1998 by Act No. 11 of 1994 as the successor to the Natural Resources Energy & Science Authority of Sri Lanka (NARESA). NARESA was established in 1981 as the successor to the National Science Council set up in 1968. URL: <http://www.nsf.ac.lk/> accessed on 21 June 2021). The National Science Foundation, mandated to serve and strengthen the Science and Technology sectors in Sri Lanka, performs its tasks in accordance with the functions set out in the enabling Science and Technology Development Act, No. 11 of 1994 and its activities conform to the National Science & Technology Policy. Accordingly, the National Science Foundation facilitates research, development and innovation to create a knowledge economy. It also facilitates capacity building, infrastructure development, technology transfer, knowledge creation and sharing in all fields of science & technology to improve the quality of life of the people. Since 2016, NSF reported seven studies that included the Colombo wetlands.

Related to wetlands, they host the National MAB (Man and the Biosphere) Committee at NSF. Wetlands and their activities mainly come under this programme as well as the Grants awarded under Environment and Biodiversity. While Colombo's wetlands may not have been directly targeted, in these island wide studies, some of the sites cover MCWC. The topics covered were:

1. A base line study on the leafy liverworts in Sri Lanka. All collected specimens are deposited in the National Herbarium, Royal Botanic Gardens, Peradeniya;
2. Investigation of the species diversity, abundance and distribution of frog-biting mosquitoes in dry and wet zones of Sri Lanka. Determination of the preferred ecological conditions and breeding site preferences of frog biting mosquitoes within selected localities;
3. Production of species lists, distribution maps in forest and agroecosystems, habitat preferences, taxonomic revisions and a web portal. Contribution of reliable information and improvements regarding research data on insect biodiversity and ecology;
4. Identification of the micro-fauna and micro-flora associated in breeding habitats of mosquito genera, *Aedes*, *Culex* and *Anopheles* in four selected areas in Sri Lanka. Determination of the spatial distribution of micro-fauna and micro-flora assemblage in selected areas in Sri Lanka. Determination of the correlation effect between micro-fauna and micro-flora species and mosquito species;
5. Development of a management strategy to control invasiveness of *Typha angustifolia* through community participation and optimal consumption. Development of a guidebook (booklet) on methods to control *Typha angustifolia* through optimal utilization by rural communities;
6. Development of an inventory of different components of biodiversity within home garden systems in selected agro-ecological regions and development of an analytical report on changes in biotic and abiotic factors and land use in home garden systems under changing climates over 30 years;
7. A range of population genetic studies of Olive Ridley (*Lepidochelys olivacea*), Green turtle (*Chelonia mydas*), and Loggerhead sea turtles (*Caretta caretta*) of Sri Lanka to understand the nesting boundaries of the Loggerhead sea turtles; and
8. Offers of funding for research and technology development through competitive research grant schemes and scholarship schemes. There is also the possibility of initiating a thematic research programme on Wetland Management in the future.

## Environmental Foundation Limited

Environmental Foundation Limited was established in 1981, with a view to protecting the natural resources in Sri Lanka and to address environmental issues that arose due to the misuse of resources (URL: <https://efl.lk/> accessed on June 20 2021). It is now incorporated under the Companies Act as a (Guarantee) Limited company. While they cover a broad spectrum of activities dealing with the environment, wetlands have been a focus of attention.

Having received funding from the Ramsar Regional Center – East Asia, three projects have been initiated:

1. Development of an informative video on the wetlands of Colombo – that is available in English, Tamil, and Sinhala. The videos are available to watch on the EFL YouTube Chanel <https://youtu.be/0UICbCs7Sp0> ;
2. Preparation of a series of infographics that highlight the ecosystem services provided by the wetlands; and
3. Production of taxonomic keys to identify the fauna and flora found in Colombo's wetlands. These will be made available online and at the wetland centres in the future. EFL serves on the National Wetland Steering Committee.

### **The Thalangama Wetland Watch (TWW)**

TWW was initiated in late 2016 as a community-based initiative and since then it has been supporting the Irrigation department and other stakeholders by taking care of the ecosystem in and around the Thalangama and Averihena lakes. Thalangama and Averihena lakes are within the EPA declared by the CEA.

URL:[http://wetlandwatch.lk/files/about\\_us\\_and\\_our\\_work.htm](http://wetlandwatch.lk/files/about_us_and_our_work.htm) accessed on 20 June 2021

A number of activities have been initiated by TWW, including: informal stakeholder dialogue and engagement; use of social media networks like WhatsApp to report on any threats to the wetland which require community action (from immediate to short- or middle-term); periodic removal of water hyacinth, salvinia and invasive grass species; monitoring of water bodies throughout the year, with community support; and creating opportunities for interested parties to join and support action oriented work so that ecosystem services are maintained. The network also supports students who wish to conduct research. In such instances the TWW provides equipment such as boats, labour, swim-vests, test kits, etc. The students bring their own test kits for testing pH, temperature, dissolved oxygen, electrical conductivity although the data is not currently deposited with the NGO.

The active stakeholder groups that work with TWW: 1. Local residents (different social media groups); 2. Paddy farmer associations; 3. Fishermen; and 4. Birders (different groups, incl. FOGSL), etc.

Other stakeholders TWW work with are: 1. CEA; 2. Irrigation Department; 3. Navy; 4. National Aquaculture Development Authority of Sri Lanka (NAQDA); 6. SLLDC; 7. Road Development Authority (RDA); and 8. Media.

### **United Nations Development Program (UNDP)**

The UNDP has been supporting several NGOs to work on wetlands. The Project SRL/SGP/OP6/STAR/CB/2017/06 offered to Surakshi Gte Ltd was on the Knowledge Management and Capacity Building of Civil Society Organisations (CSOs) / Community Based Organisations (CBOs) in the MCWC. The area covered is 20 km<sup>2</sup> within the Colombo Metropolitan Region.

UNDP awarded 10 projects to CSOs and CBOs aimed at landscape management to address poverty and to enhance livelihood empowerment. The projects concentrated on the focal areas of biodiversity, climate change and land degradation. The projects attempted to intervene in the management of the landscape and maintain the balance of natural ecosystems with the rapid development interventions that are taking place. The projects facilitated the development of links between community engagement and ecosystem service improvements, build capacities of partners in participatory landscape management. The projects demonstrated that sharing lessons learnt is essential in implementing landscape management projects, enhancing their potential for replication and influencing policy.

The NGO Surakshi has completed GIS mapping of eight projects launched in the Urban Wetlands of Colombo. Community mapping has been undertaken by at least two projects which has facilitated work at the field level. The two maps namely, Google map and Arc GIS maps have been developed and shared with the relevant agencies and departments for knowledge exchange and report writing. The GEF-SGP projects are aimed at capacity building among the institutions to harmonise nature based solutions for conservation and development activities. Overall, the project facilitated the development of links between community engagement, ecosystem services improvements, and improved the capacity of partners participating in all conservation activities.

### **Wanasara Thurulatha Swechcha Society**

This NGO was entrusted with the rehabilitation of abandoned paddy lands in Walpita, Homagama. Key objectives of the project were: 1. Rehabilitation of 30 ha of abandoned paddy lands; 2. Economic development of paddy farmers; 3. Non chemical agriculture practices; 4. Biodiversity conservation of the Walpita wetland; and 5. Local flora and fauna species conserved.

To date 1.30 ha of abandoned paddy lands have been cultivated with traditional paddy varieties. This study has collected information on wetland families, flora and faunal species in the wetland, hydrometry (water quality etc.), soil quality, temperature and rainfall and include:

1. Socio economic data of 128 families in Walpita was collected including: income levels of farmers; cultivating paddy and vegetables; and number of self-employed people, traditional rice growers; and
2. A wetland farmer organization has been formed - Jayamuthu govi Sanvidanaya, Vegetable grower's society, and self-employees' cooperative society.

### **University of Colombo (Institution)**

The University of Colombo delivers research and training programmes related to wetland ecosystems including: flora and faunal diversity; invasive species; and water quality testing.

## **2.3.2 – Web-based information collected from other organizations**

### **The Centre for Environmental Justice (CEJ)**

The CEJ is an NGO based in Colombo. They have developed a mobile app which offers citizens a quick and easy platform to anonymously report environmental crimes relating to



forests and wetlands. The reports received are collected via a hotline and transmitted to the relevant institutions for action. For example, Kelanimulla is one of the few remaining wetlands in Sri Lanka's District of Colombo, and is a refuge for urban wildlife, including the elusive fishing cat. Indiscriminate dumping of waste was causing the wetland to be filled and degraded. The eJustice app offers an opportunity for citizens to share information on possible environmental issues anonymously. The first level of information is verified by CEJ and then used to demand action from the authorities. Success stories are found in the link. <https://news.mongabay.com/2020/05/for-sri-lankans-reporting-environmental-crimes-theres-now-an-app-for-that/> (accessed on 12 August 2021)

### 3 - Conclusion

Following the initiation of the WMS many government institutions and NGOs in Sri Lanka now recognise that wetlands are an integral part of their institutional mandates. Their activities since 2016 reflect the increased interest and recognition of the importance of wetlands and their benefits to society. In 2018 Colombo was awarded Wetland City accreditation by the Ramsar Convention on Wetlands in recognition of delivering wetland conservation and wise use activities, implementing wetland restoration measures, undertaking awareness raising activities, connecting with local communities and managing for wider ecosystem service delivery. World Wetland Day events and programmes are held annually by many government institutions and NGOs to help promote awareness more widely.

This report encouragingly shows that most institutions surveyed were aware of the WMS, however worryingly most respondents felt that despite the efforts of multiple agencies and NGOs the wetlands of Colombo were in poor condition, declining in area, and that there has been a deterioration in wetland health since 2016.

Since 2016, progress has been made on each of the five strategic objectives of the WMS, however, overall results were mixed:

- Strategic Objective 1: Recognise – The benefits and values derived from the wetlands are strongly recognised by the partners and stakeholders surveyed. However, although some institutions have demonstrated improved wetland management for ecosystem delivery, work is required to ensure wider government agencies recognise and integrate wetland values into decision-making and in particular by fully integrating wetlands into urban spatial planning;
- Strategic Objective 2: Prevent - The majority of partner and stakeholders felt that obligations under the Ramsar Convention are only being implemented to a limited extent. However, since 2016, wetland related legislation, regulation and policies, in particular the 2018 moratorium on Colombo's wetlands, have led to a strengthening of the legal frameworks related to wetlands. However, due to the continued decline in wetland area and ecosystem health it indicates that legal framework implementation also needs strengthening and the legal framework on its on is not sufficient;
- Strategic Objective 3: Restore - Wetland restoration planning and implementation, that integrates cross-sectoral benefits and contributes to climate change mitigation and adaptation programmes, has occurred within the work of several agencies since 2016. However, wetland restoration activities need to more fully link to the work of other government agencies such as health, transport, agriculture to ensure cross-sectoral benefits are fully realised;
- Strategic Objective 4: Engage – Encouragingly this report indicates that many organisations are involving local communities and stakeholders in wetland management planning and the implementation of communication plans have been developed to raise awareness of the Colombo's wetlands both nationally and internationally. However, more work is required to empower all community groups to become actively involved in wetland management decision making;
- Strategic Objective 5: Govern – Whilst most partners and stakeholders felt that regulation related to Colombo's wetlands had improved since 2016, the majority felt that the institutional capacity for managing wetlands had not been strengthened, and in some cases have actually weakened since 2016. To date most agencies and organisations are delivering programmes on their own. Ideally

better overall coordination of WMS activities takes place to ensure that the WMS objectives are fully delivered. More coordinated management, monitoring and updating of the WMS is required to ensure that Colombo's wetlands are protected and continue to deliver important benefits for people and biodiversity into the future.

## References

Signes (2016) Metro Colombo Wetland Management Strategy. Metro Colombo Urban Development Project (MCUDP). No. MCUDP/PHRD/03.

## Annex 1 – Online questionnaire

Institution: \_\_\_\_\_

Focal person: \_\_\_\_\_

Please complete the table below.

We are trying to understand all of the Metro Colombo wetland related work that has been undertaken since 2016 in terms of activities, projects, management, surveys, policies, guidelines and community engagement. At this stage, we would just like a summary of the work your organisation has undertaken.

Please read the complete table before filling it in. The first section asks for specific projects undertaken but you might feel that the information for a specific project might fit better in some of the rows beneath. This exercise is to record all of the work that your organisation has carried out regarding wetlands since 2016, either as a project or single activity.

Information	Yes	Not applicable	If yes, then please completed the following	
			Name of project / data / information	Brief summary of information
Specific Projects - any projects undertaken since 2016 within the Metro Colombo Wetlands	<input type="checkbox"/>	<input type="checkbox"/>	Project 1	
			Project 2	

Information  (e.g. funder, project name, objectives, results/outcomes/outputs)	Yes	Not applicable	If yes, then please completed the following	
			Name of project / data / information	Brief summary of information
Ecological information - Any wildlife or plant survey data or information gathered since 2016 (state the species or group of species surveyed and the method of survey (e.g. quadrant surveys, transect walks etc.)	<input type="checkbox"/>	<input type="checkbox"/>		
Any hydrometric data – hydrological (e.g. water levels, flow) or meteorological (e.g. rainfall) or water quality (e.g. pH, temp, nutrients)	<input type="checkbox"/>	<input type="checkbox"/>		

Information	Yes	Not applicable	If yes, then please completed the following	
			Name of project / data / information	Brief summary of information
Socio-economic data - Any socio-economic data or information gathered since 2016 in relation to communities directly related to the wetland areas (e.g. wetland dependant livelihoods – fishing, rice cultivation etc.)	<input type="checkbox"/>	<input type="checkbox"/>		
Wetland land use mapping – Date land use map undertaken and format e.g. GIS	<input type="checkbox"/>	<input type="checkbox"/>		

Information	Yes	Not applicable	If yes, then please completed the following	
			Name of project / data / information	Brief summary of information
Wetland management - Any changes in wetland management that has occurred within the Metro Colombo wetlands since 2016 (e.g. wetland committees, new management practices etc.)	<input type="checkbox"/>	<input type="checkbox"/>		
Whether your organisation has any formal roles and responsibilities regarding Metro Colombo's wetlands. Please list any guidelines, policies, strategies, frameworks developed by your organisation for wetlands	<input type="checkbox"/>	<input type="checkbox"/>		

Information	Yes	Not applicable	If yes, then please completed the following	
			Name of project / data / information	Brief summary of information
Initiatives undertaken with a wetland community if not a specific project listed above. Please identify the wetland where your organisation worked.	<input type="checkbox"/>	<input type="checkbox"/>		
Community committees, networks and community contacts at specific wetlands that your organisation has worked with	<input type="checkbox"/>	<input type="checkbox"/>		
Please list any NGOs or other government agencies you collaborate with to deliver wetland projects if you have not mentioned them above	<input type="checkbox"/>	<input type="checkbox"/>		



Information	Yes	Not applicable	If yes, then please completed the following	
			Name of project / data / information	Brief summary of information
Any other relevant information	<input type="checkbox"/>	<input type="checkbox"/>		
What do you see as the key issues facing Colombo Wetlands?	<input type="checkbox"/>	<input type="checkbox"/>		
Are there any specific actions you would like to see occur with respect to Colombo's wetlands?	<input type="checkbox"/>	<input type="checkbox"/>		
What capacity does your organization have for environmental monitoring and analysis? (e.g. number of trained staff, resources etc.)	<input type="checkbox"/>	<input type="checkbox"/>		

Information	Yes	Not applicable	If yes, then please completed the following	
			Name of project / data / information	Brief summary of information
What capacity does your organisation have for community engagement? (e.g. number of trained staff, resources etc.)	<input type="checkbox"/>	<input type="checkbox"/>		