

Chapter 3

Integrated Urban Freshwater Landscape at Risk: Ecology, Governance, and Sustainability of Urban Wetlands in Colombo, Sri Lanka

M. D. K. L. Gunathilaka

 <https://orcid.org/0000-0001-7406-2800>

University of Colombo, Sri Lanka & Yunnan University, China

W. T. S. Harshana

Urban Development Authority, Sri Lanka

ABSTRACT

Freshwater wetlands are more threatened than any other ecosystem in the world. The current trend of freshwater wetland crisis arises a question ‘whether it is conversion or conservation of wetlands’ which is absolutely a dilemma. Therefore, this study aims critical evaluation at wetland governance and sustainability of urban wetlands in Colombo. The results reveal that the Colombo wetlands have lost their territory from a moderate to a severe degree. The wetland loss is higher in Kaduwela, Kolonnawa, and Kesbawa areas. Recently the causes of Colombo wetland loss has moved with a new frame. Land grabbing and green grabbing are the cycles that transforming the geostrategically important urban wetlands into hybrid ecosystems. Due to this, the frequency of flash flood events and inundation time has increased than ever. It is important to ensure urban freshwater wetland sustainability and surveillance following sustainable development goals and it is time to have freshwater ethics.

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INTRODUCTION

An ecosystem has always been made up of biotic and abiotic matter, including all the physical, chemical, and biological processes that operate on Earth. Ecosystems are dynamic, whether they are small or large. That is, damage to a part of this system directly or indirectly affects the entire ecosystem. Among the ecosystems, freshwater ecosystems are more sensitive and their relationship dates back to early history. The world's oldest civilization is based on where water resources are available. That is, the formation of early civilizations like Mesopotamian Civilization also known as the Cradle of Civilizations along the Euphrates and Tigris valleys also known as the Cradle of Civilizations or the Fertile Crescent between 4000 and 3500 BC; another example is the emergence of Egyptian civilization around the Nile Valley around 3200 BC (Gokce, 2018) Besides, the Hwanhuou or Yellow-river Civilization in China and Indus-Valley in Northwest India are great examples of civilizations that flourished along a river. Thus, it has now been proven that there are some key factors behind the formation of settlements near water bodies. Among them, agriculture is the prime. Adequate water, as well as land and alluvial soil, are the essential elements of agriculture. Accordingly, this need was met by water-based river valley lands. These ancient civilizations provide evidence that paddy cultivation was the mainstay of agriculture in these lands. The lands used for this purpose were river valleys on both sides of submerged rivers, most of which were later known as wetlands. That is, the wetland is the first ecosystem to be affected by mankind on Earth.

Globally, wetlands are distributed in every biome with an exception of Antarctica. It is approximately 6% of Earth's land surface covered by wetlands (Reddy & DeLaune, 2008). Being complex ecosystem wetland systems are driven by various physical, chemical and biological processes. In the beginning, scientists used to explain wetlands by their life form, hydrology, morphology, chemistry, vegetation or microbiology (Reddy & DeLaune, 2008). It was like that fabled group of blind men trying to describe an elephant that was completely a mess. Extensive research specializations in wetland science in the 20th century paved the way to further experiments of critical features of the global landscape because of their unique role in regulating global biogeochemical cycles, value and function of the wetlands. Wetlands are located in areas with low elevation and higher water tables (Reddy & DeLaune, 2008) including those of marshes, swamps, bogs and similar areas under a comprehensive definition. Different classification systems of wetlands have been developed to function for various purposes. United States Fish and Wildlife Service in 1979 presented a classification of wetlands and deepwater habitats of the United States which is a hierarchical system based on marine, estuarine, riverine, lacustrine and palustrine (Matthews, 2013). Similarly, the Ramsar Convention made wetland classification based on the US classification which was modified by adding it to

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