Chapter 13
Inland Saline Wetlandscapes: The Missing Links for 4th Ramsar Strategic Plan (2016–2024) in India

Laxmikant Sharma
https://orcid.org/0000-0003-2911-2893
Central University of Rajasthan, India

Rajashree Naik
Central University of Rajasthan, India

Alok Raj
Central University of Rajasthan, India

ABSTRACT

Wetland ecosystems are one of the highly productive ecosystems in the world. These ecosystems have been deteriorating at a faster rate. Ramsar Convention is putting enormous effort to protect, maintain, and restore these ecosystems. Currently, the fourth phase of Strategic Plans of Ramsar Convention is going on, in which saline wetlandscapes can play vital role to attain 19 targets of this plan. In India there are 27 Ramsar sites in all the biogeographic zones; however, research work has been carried out in the past five years in only eight Ramsar sites. Currently, four years are available for the strategic plans to encourage more wetland researches. The chapter presents a case study of Sambhar Salt Lake, a Ramsar site of India that is on the verge of extinction. Normalized Difference Water Index has been calculated for three decades in 1992, 2009, and 2019, revealing the declining phases of the lake.

DOI: 10.4018/978-1-7998-5027-4.ch013

INTRODUCTION

Wetland Ecosystem

An ecosystem is composed of both biotic and abiotic factors. Biotic factor constitutes of fauna and flora and abiotic components constitutes of water, energy, nutrient, soil and gaseous constituents. There are different types of ecosystems co-existing in nature like forest ecosystem, grassland ecosystem and wetland ecosystems. However, there are also some man-made ecosystems also like rice-fields, dams and reservoirs and aquarium. Wetland ecosystems, unique in nature are among the highly productive ecosystems. Wetlands are of different types depending on their process of origin, location, physico-chemical and biological constituents, micro-climatic factors, nature of inlet and outlet of waters, hydro-ecological cycle and seasonality of water level (Lin el al., 2019).

Under the text of the Ramsar Convention (Article 1.1), wetlands are defined as "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters (rsis. Ramsar.org, 2019)". Wetlands provide enormous amount of goods and services that have been acknowledged recently (Lin el al., 2019). The provisioning services derived are food, fresh water, fiber, fuel, salt, energy and ornamental resources, regulating services like water regulation and purification, climatic regulation, wastewater treatment, prevention of desertification, pollination and soil fertility enhancement, supporting services like nutrient cycling, wildlife habitat, soil formation, biomass production and cultural services like spiritual, recreational, educational, aesthetic, and inspirational achievement.

Wetlands ecosystems being so productive but diverse in nature have been classified by Ramsar Convention based on habitat types in 1993 known as Ramsar International Wetland Classification System. According to this classification, three major classes were categorized as marine and coastal wetlands, inland wetlands and man-made wetland ecosystems. Marine and coastal wetlands were further sub divided into twelve sub-classes, inland wetlands into fourteen sub-classes and man-made wetlands into nine sub-classes. Wetlands have also been classified by (Cowardin el al., 1979) based on location, flooding pattern, origin and ecosystem services they provide into five classes as marine, estuarine, riverine, lacustrine and palustrine wetlands. The details of these wetlands are represented in Figure 1 below.

Marine wetlands are near ocean, estuarine related to estuaries, riverine wetlands come from rivers, lacustrine deal with lakes, and palustrine belong to any inland wetland that lacks flowing water. Estuarine and marine are further sub divided into subclasses as intertidal and subtidal. Riverine wetlands are again classified into four

Impact of Rapid Urbanization and Climate Change on Agricultural Productivity in Africa: Climate Change Policies in the Agricultural Sector

Mutisya Emmanuel, Lilian Muasa, Chiahsin Chen, Florence Mutisyaand Ram Avtar (2017). *Natural Resources Management: Concepts, Methodologies, Tools, and Applications (pp. 1121-1132).*
www.irma-international.org/chapter/impact-of-rapid-urbanization-and-climate-change-on-agricultural-productivity-in-africa/165338