

Addressing the concept of Methane and Carbon emissions by wetlands and the Status of Wetlands India: A Review

Kaggalu Shaista Farheen*, Lee-Hyung Kim**

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Abstract

Wetlands are one of the most vital natural habitats on the planet. India is incredibly blessed to have a number of multifunctional wetland ecosystems. Wetlands, in addition to their functional importance, can act as sources or sinks for greenhouse gases (GHGs) depending on their intrinsic factors. Carbon (CO₂) and Methane (CH₄) are the major greenhouse gases (GHG's) emitted in wetlands. It is demonstrated that, despite having 4.6 percent of its area covered by natural or man-made wetlands, being home to a large number of wetlands, and being the world's second largest cultivator of paddy, India's wetlands, including paddy fields that are intermittently flooded as typical wetlands, have been very poorly studied in terms of GHG emissions. The purpose of this paper is to examine the status of Indian wetlands and wetlands in terms of CH₄ and CO₂ emissions. The present study also reviews various literature to provide the equations, parameters that are required for estimating carbon and methane and some of the best strategies for conserving carbon in wetlands. The findings suggest that both non-manipulative and manipulative measures can be used to improve Carbon Sequestration (CS). Non-manipulative measures aim to improve CS by increasing the spatial extent of wetlands, whereas manipulative measures aim to change the characteristics of specific wetland components that influence CS. Uncertainty in carbon dynamics projections under changing environmental conditions is caused by a number of Knowledge gaps: i) There is a lack of knowledge on how organic matter mineralizes and partitions into carbon dioxide, methane, and dissolved organic carbon, ii) With the notable exception of methane dynamics, models that represent the dynamic interaction of processes and their controls have yet to be established. As a result, more research is needed to fully understand the importance of wetlands in terms of GHG emissions and carbon sequestration in India.

Keywords : Ramsar, Wetland, Threats, Greenhouse gases, Carbon dioxide, Methane emissions

* Graduate student, Dept. of Civil and Environ. Eng. Kongju National University • E-mail : shaistarafi97@gmail.com

** Professor, Dept. of Civil and Environ. Eng. Kongju National University : leehyung@kongju.ac.kr