



## Wetland with Emerging Technology: Indian Perspective

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### Abstract

Recently, the state government and union territorial administrations across India celebrated World Wetlands Day (WWD) at all 75 Ramsar sites on February 2, 2023. The theme for World Wetlands Day is "Wetland Restoration," highlighting the urgent need to prioritize wetland restoration. Wetlands are among the most beneficial environments in the world, comparable to rainforests and coral reefs. Wetland is important for increasing the water level of the land and increasing the wildlife habitat. Wetlands are an imperative source of nourishment, crude materials, hereditary assets for medications, and hydropower.

**Keywords:** Ramsar Sites; Water Bodies; Artificial Intelligence; Machine Learning; Graphical Information System (GIS); and Support Vector Machine (SVM)

### Introduction

A wetland is a surface where water bodies are present on the land or near the land and is covered by shallow water. Wetland is also known as the Ramsar site because it was held for the first time in Ramsar, Iran. The Tradition on Wetlands is the most seasoned of the present-day worldwide intergovernmental environmental agreements. The treaty was negotiated through the 1960s by countries and non-governmental organizations concerned approximately with the expansion of misfortune and degradation of wetland territory for migratory water birds. It was embraced within the Iranian city of Ramsar in 1971 and came into force in 1975. In India, wetland comes under the Ministry of Environment, Forests, and Climate Change.

According to UNESCO, the risk to wetlands will have an unfavorable effect on 40% of the world's flora and fauna that live or breed in wetlands. The Conference of the Contracting Parties (COP) is held every three years.

### Indian perspective

India has been a party to the Convention since 1982 and has so far declared 75 wetlands as Ramsar across 23 states and union territories. India has the largest network of Ramsar sites in Asia. To save our wetland bodies, the Indian government should make some laws.

### Regulations of wetlands in India

The Wetlands (Conservation and Management) Regulations of 2017 govern wetlands.

- The newer regulations removed some items from the definition of "wetlands," including backwaters, lagoons, creeks, and estuaries.
- The 2010 version of the rules provided for a central wetland regulatory authority, but the new rules of 2017 replaced it with state-level bodies and created a national wetland committee, which functions in an advisory role.
- The process to identify the wetlands has been given to the states under the 2017 regulations.

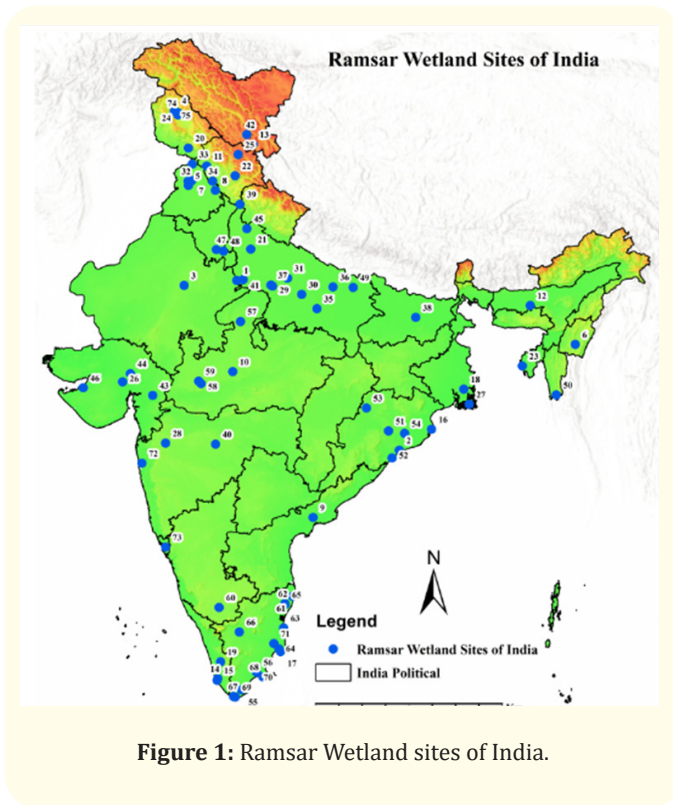


Figure 1: Ramsar Wetland sites of India.

Table 1: Ramsar Wetland sites in Uttar Pradesh

Uttar Pradesh	Bakhira Wildlife Sanctuary
Uttar Pradesh	Haiderpur Wetland
Uttar Pradesh	Nawabgnj Bird Sanctuary
Uttar Pradesh	Parvati Agra Bird Sanctuary
Uttar Pradesh	Saman Bird Sanctuary
Uttar Pradesh	Samaspur Bird Sanctuary
Uttar Pradesh	Sandi Bird Sanctuary
Uttar Pradesh	Sarsai Nawar Jheel
Uttar Pradesh	Sur Sarovar
Uttar Pradesh	Upper Ganga River

### Methodology

We will use the Geographic Information System and Support Vector Machine for collecting data and classifying the data. We use a hybrid learning approach and some algorithms, such as KNN (K-Near Neighbor), K-Means, etc., for quantifying changes in Indian wetlands.

When adequate experimental data are available, some algorithms derived from artificial intelligence research represent a promising alternative to the most common estimation techniques.

When adequate experimental data are available, some algorithms derived from artificial intelligence offer promising alternatives to the most common estimation techniques.

### Advantages

- Recharge and replenish the groundwater.
- Increase the economy, such as fishing, and hydroponic farming.
- Measure absolute water level changes in wetlands through Artificial Intelligence, Machine learning, etc.
- Wetland helps to increase Agriculture, Environment, pollution, Climate change, etc.
- Creating and coordinating administration plans at wetland sites using artificial intelligence and machine learning
- Reduce water wastage.
- Reuse the wastewater.

### Issues

- Some diseases increase concerning the mosquito as well as insects.
- Making a new policy related to land use.
- Increase Methane Production.
- Increase Soil Pollution.

### Future

- The research will design some machine learning models for artificial intelligence applications; it is helpful for scientific papers in both computer and natural sciences.

- Embracing National Wetland Policies, either independently or as a component of more extensive activities such as National Environmental Activity Plans;
- Future research proposals of artificial intelligence demonstration can be utilized to viably offer assistance to individuals to get the visible scene changes of environmental components from the wetland morphology.
- The use of machine learning and artificial intelligence for the simulation of environmental and operational processes in wetlands has gained attention for understanding the dynamics occurring in the water basins and designing possible interventions for successful management.
- Artificial intelligence improves the environment and helps sustainable development.

## Conclusion

Technology enhances water management, flood management, fishing, hydroponic farming, etc and it also increases the economy as well as employment. Management of wetlands must follow an integrated strategy in terms of planning, carrying out, and monitoring to combat unplanned urbanization and a growing population. Successful partnerships between academics, technologies, and industry experts, such as ecologists, watershed management experts, planners, Engineers, Researchers, Scholars, and decision-makers for the overall management of wetlands. By launching programs to raise awareness of the value of wetlands and continuously checking the water quality of wetlands, important steps can be taken to protect them from further deterioration [1-19].

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