

# Wetlands in India

[UPSC Notes]

## What is Wetland?

Wetlands are areas in which the presence of water influences or decides the physical, biological, and chemical characteristics of the particular area.

- Several wetlands are called transitional zones between aquatic ecosystems and upland.
- Others are spread divergently around the landscape in the form of upland depressions that collect water or in small zones where groundwater gets on the top of the surface.
- The basic sources of freshwater are rivers, wetlands, lakes, streams, and so on. Many wetlands are called the house for about 50% of all known fish species and more than 10% of all known animal species. Although it covers even less than 1% of the earth's surface, wetlands are very important to us

## Importance of Wetlands

The importance of the wetlands is often ignored.

- Wetlands provide natural waste-water treatment facilities and carbon-storing facilities. They play a major role in ensuring food security.
- Nearly 300 million to 400 million people make their living near the wetlands and depend solely on them for food.
- They encourage the cultivation of rice which is considered the staple in the diet of millions of people.
- Wetlands also help in ensuring clean water and storm protection, shoreline, food control, materials, medicines, and other vital habitats.
- It is estimated that 87% of the world's wetlands have vanished over the past 300 years. Such loss of wetlands majorly happened after 1900, despite contributing value to the human population.
- WWF plays an important role in the conservation and protection of these valuable wetlands so that various habitats on earth can be protected and preserved.
- The amount of water present in the wetlands differs from one another. Some wetlands are found to be flooded permanently while others get seasonal flooding but they successfully retain saturated soils throughout the unflooded period.
- Meanwhile, some wetlands flood very rarely yet the presence of saturated soil conditions creates a support system for wetland-adapted plants and for hydric soil features to develop.
- Hydric soils form during the chemical changes which take place in the soil because of the low-oxygen conditions related to prolonged saturation.

- The availability of various plant communities can be found in different types of wetlands, and every species adapted to the local hydrology (the distribution, quantity, and movement of water spreading over a particular area).
- Wetland plants are called hydrophytes as they are naturally adapted to grow in saturated soils.
- Many insects, birds, and other wildlife species are fully dependent on wetlands for crucial phases in their life cycles. Meanwhile, several species use wetlands for resting, feeding, or other daily life activities.

## How are Wetlands Formed?

When the saturated or flooded conditions exist for a long period in a growing season to cause oxygen-depleted regions in the topmost part of the soil, wetlands are formed.

- Some wetlands are generated over a long time while others are formed very quickly.
- The factors responsible for the formation of wetlands include glaciers, river floodplains, flooding of coastal lowlands, beavers, and other forces of nature.
- Many wetlands are re-created artificially by humans. Wetlands are formed for the restoration process and its development.
- The frequent flooding and consistent high water tables result in the formation of wetlands.

## Types of Wetlands

Following are the types of wetlands:

- **Human-made Wetlands:** Some human-made wetlands are reservoirs, salt pans, dams, aquaculture ponds, barrages, and impoundments. These are artificially formed by humans for fulfilling the needs of the people.
- **Lakes:** Lakes and ponds(also called lentic systems), contain different sets of inland freshwater habitats that are living across the world and comprise important resources and habitats for both aquatic organisms and terrestrial organisms.
- **River Floodplains:** Floodplains are lands situated adjacent to streams or rivers which is the main subject to periodic inundation by water over-topping the channel. The Yamuna floodplains are known to be the primary source of water for the state of Delhi.
- **Ox-bow Lakes:** Oxbows are created in which the meander of a river is cut off because of silt deposition and sometimes because of the river changing course. The basins of the Ganga and Brahmaputra rivers are made in oxbows. In Mahanadi Delta, Ansupa is an oxbow situated at the delta apex.
- **Marshes:** These are covered majorly by herbaceous plants and are sustained through water sources and the main sources like rainfall- surface runoff, tidal flow, or groundwater. Kanwar Jheel (Kabar Tal) is a marsh situated in the floodplains of Burhi Gandak in Bihar.
- **Estuaries:** An estuary is a partially covered coastal body containing brackish water with one or more streams or rivers flowing into it, with a separate connection to the open sea. Estuaries create a transition zone between maritime

environments and rivers. A coastal lagoon is called a bar-built estuary, occurring when offshore barrier sand islands form above sea level and are further extended in a chain, broken by one or more inlets. Chilika is a lagoon in Odisha divided from the Bay of Bengal by a long sand berm.

- Swamps: These are covered with trees. Swamps have very low drainage and ample amount of water supply to keep the ground waterlogged, and the combination of minerals causes the decay of organisms which eliminates the accumulation of organic materials. Mangroves are those coastal swamps fortifying the main deltas of the country. Sunderbans spread around India, and Bangladesh is known to be the world's largest single contiguous mangrove swamp.

## Types of Wetlands in India

India contains nearly 27,000 wetlands out of which there are 23000 inland wetlands and around 4000 coastal wetlands. It is estimated that wetlands cover 18.4% of the country's area, out of which 70% of areas are under paddy cultivation.

Moreover, there are 1.5 m ha of natural wetlands, and nearly 2.6 m ha are human-made. This signifies that most of the wetlands present in India are human-made. The coastal wetlands cover nearly 6,750 sq. km and are majorly occupied by mangrove vegetation. Wetlands in India are categorized into different geographical regions based on origin, nutrient status, vegetation, and thermal features. The types of wetlands in India, along with their examples, are enlisted below:

### Glaciatic Wetlands

- Tsomoriri
- (J&K)
- Chandertal (Himachal Pradesh)

### Tectonic Wetlands

- Nilnag in Jammu and Kashmir
- Khajjjar in Himachal Pradesh
- Nainital and Bhimtal in Uttarakhand.

### Oxbow Wetlands

- Dal Lake, Wular Lake in Jammu & Kashmir
- Loktak Lake in Manipur
- Deepor Beel in Assam
- Kabar in Bihar
- Surahthal in Uttar Pradesh

### Lagoons

- Chilika in Odisha

### Crater Wetlands

- Lonar lake in Maharashtra

- Salt Water Wetlands
- Pangong Tso in Jammu and Kashmir
- Sambhar in Rajasthan

#### Urban Wetlands

- Dal Lake in Jammu and Kashmir
- Nainital in Uttarakhand
- Bhoj in Madhya Pradesh
- Ponds/Tanks, Man-made Wetlands
- Harike in Punjab
- Pong Dam in Himachal Pradesh.

#### Reservoirs

- Idukki, Hirakud dam, Bhakra-Nangal dam

#### Mangroves

- Bhitarkanika in Odisha
- Coral reefs, creeks, and estuaries.

It is estimated that 100 identified wetlands are present under the National Wetland Conservation & Management Programme (NWCMP).

## Legal Framework Around Wetlands

There is no proper legal framework for wetlands management, conservation, and their use in India. Recently, wetlands have been categorized under the Environment (Protection) Act, 1986, and other several legal instruments connected to the environment and forests.