**Wetlands**

A wetland is "an ecosystem that arises when inundation by water produces soils dominated by anaerobic and aerobic processes, which, in turn, forces the biota, particularly rooted plants, to adapt to flooding." There are four main kinds of wetlands – [marsh](https://en.wikipedia.org/wiki/Marsh), [swamp](https://en.wikipedia.org/wiki/Swamp), [bog](https://en.wikipedia.org/wiki/Bog) and [fen](https://en.wikipedia.org/wiki/Fen) (bogs and fens being types of [mires](https://en.wikipedia.org/wiki/Mire)). Some experts also recognize wet meadows and aquatic ecosystems as additional wetland types. The largest wetlands in the world include the swamp forests of the Amazon and the peatlands of Siberia.

#### Ramsar Convention definition: Under the [Ramsar international wetland conservation treaty](https://en.wikipedia.org/wiki/Ramsar_Convention), wetlands are defined as follows: "Wetlands are areas of marsh, [fen](https://en.wikipedia.org/wiki/Fen), [peatland](https://en.wikipedia.org/wiki/Peatland) or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, [fresh](https://en.wikipedia.org/wiki/Fresh_water), [brackish](https://en.wikipedia.org/wiki/Brackish_water) or [salt](https://en.wikipedia.org/wiki/Saline_water), including areas of marine water the depth of which at low tide does not exceed six metres and may incorporate [riparian](https://en.wikipedia.org/wiki/Riparian) and coastal zones adjacent to the wetlands, and [islands](https://en.wikipedia.org/wiki/Island) or bodies of marine water deeper than six metres at [low tide](https://en.wikipedia.org/wiki/Low_tide) lying within the wetlands."

Wetlands may be natural or man-made. Natural wetlands include rivers, lakes, marshes and swamps, and man-made wetlands include canals, ponds, paddy fields and fish farms. Wetlands may be long lasting or short term and cover about 6% of the surface area of globe.

#### Regional definitions

Although the general definition given above applies around the world, each county and region tends to have its own definition for legal purposes. In the United States, wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas. This definition has been used in the enforcement of the [Clean Water Act](https://en.wikipedia.org/wiki/Clean_Water_Act). Some US states, such as [Massachusetts](https://en.wikipedia.org/wiki/Massachusetts) and [New York](https://en.wikipedia.org/wiki/New_York_(state)), have separate definitions that may differ from the federal government's.

In the [United States Code](https://en.wikipedia.org/wiki/United_States_Code), the term wetland is defined "as land that (A) has a predominance of hydric soils, (B) is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions and (C) under normal circumstances supports a prevalence of such vegetation." Related to this legal definitions, the term "normal circumstances" are conditions expected to occur during the wet portion of the growing season under normal climatic conditions (not unusually dry or unusually wet), and in the absence of significant disturbance. It is not uncommon for a wetland to be dry for long portions of the growing season. Wetlands can be dry during the dry season and abnormally dry periods during the wet season, but under normal environmental conditions the soils in a wetland will be saturated to the surface or inundated such that the soils become anaerobic, and those conditions will persist through the wet portion of the growing season.

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**Wetlands of Pakistan:**

Pakistan is a home for different types of wetlands and below is the wetlands found in Pakistan;

* Inland waters
* Delta marshes
* Mangroves
* Lakes and reservoirs
* Fish farms and ponds

Out of 122 numbers of wetlands, 10 wetlands are found in Azad Jammu and Kashmir, 22 are in Balochistan, 01 in Islamabad, 12 in Northern areas, 20 in [NWFP](http://kp.gov.pk/), 17 and 30 in Punjab and Sindh respectively.

**Internationally recognized Ramsar Sites of Pakistan:**

The [Ramsar Convention](https://en.wikipedia.org/wiki/Ramsar_Convention) on Wetland Protection has been signed in [Ramsar](https://en.wikipedia.org/wiki/Ramsar,_Mazandaran), [Iran](https://en.wikipedia.org/wiki/Iran) in 1971. As of March 2013, there are nineteen Ramsar sites, covering an area of 1,343,627 hectares (3,320,170 acres) in [Pakistan](https://en.wikipedia.org/wiki/Pakistan)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. No.** | **Site Code** | **Name** | **District** | **Province** |
| 1 | 2PK009 | [Astola (Haft Talar) Island](https://en.wikipedia.org/wiki/Astola_Island) |  | [Balochistan](https://en.wikipedia.org/wiki/Balochistan_(Pakistan)) |
| 2 | 2PK002 | [Chashma Barrage](https://en.wikipedia.org/wiki/Chashma_Barrage_(Ramsar_Site)) | [Mianwali District](https://en.wikipedia.org/wiki/Mianwali_District) | [Punjab](https://en.wikipedia.org/wiki/Punjab_(Pakistan)) |
| 3 | 2PK017 | [Deh Akro-II Desert Wetland Complex](https://en.wikipedia.org/w/index.php?title=Deh_Akro-II_Desert_Wetland_Complex_(Ramsar_Site)&action=edit&redlink=1) |  | [Sindh](https://en.wikipedia.org/wiki/Sindh) |
| 4 | 2PK007 | [Drigh Lake](https://en.wikipedia.org/wiki/Drigh_Lake) |  | [Sindh](https://en.wikipedia.org/wiki/Sindh) |
| 5 | 2PK008 | [Haleji Lake](https://en.wikipedia.org/wiki/Haleji_Lake) |  | [Sindh](https://en.wikipedia.org/wiki/Sindh) |
| 6 | 2PK010 | [Hub Dam](https://en.wikipedia.org/wiki/Hub_Dam) |  | [Sindh](https://en.wikipedia.org/wiki/Sindh), [Balochistan](https://en.wikipedia.org/wiki/Balochistan_(Pakistan)) |
| 7 | 2PK018 | [Indus Delta](https://en.wikipedia.org/wiki/Indus_River_Delta) |  | [Sindh](https://en.wikipedia.org/wiki/Sindh) |
| 8 | 2PK011 | [Indus Dolphin Reserve](https://en.wikipedia.org/wiki/Indus_Dolphin_Reserve) |  | [Sindh](https://en.wikipedia.org/wiki/Sindh) |
| 9 | 2PK012 | [Jiwani Coastal Wetland](https://en.wikipedia.org/wiki/Jiwani_Coastal_Wetland) |  | [Balochistan](https://en.wikipedia.org/wiki/Balochistan_(Pakistan)) |
| 10 | 2PK013 | [Jubho Lagoon](https://en.wikipedia.org/wiki/Jubho_Lagoon) | [Sujawal District](https://en.wikipedia.org/wiki/Sujawal_District) | [Sindh](https://en.wikipedia.org/wiki/Sindh) |
| 11 | 2PK006 | [Kinjhar (Kalri) Lake](https://en.wikipedia.org/wiki/Kinjhar_Lake) | [Thatta District](https://en.wikipedia.org/wiki/Thatta_District) | [Sindh](https://en.wikipedia.org/wiki/Sindh) |
| 12 | 2PK014 | [Miani Hor](https://en.wikipedia.org/wiki/Miani_Hor_(Ramsar_Site)) | [Lasbela District](https://en.wikipedia.org/wiki/Lasbela_District) | [Balochistan](https://en.wikipedia.org/wiki/Balochistan_(Pakistan)) |
| 13 | 2PK015 | [Nurri Lagoon](https://en.wikipedia.org/w/index.php?title=Nurri_Lagoon_(Ramsar_Site)&action=edit&redlink=1) | [Badin District](https://en.wikipedia.org/wiki/Badin_District) | [Sindh](https://en.wikipedia.org/wiki/Sindh) |
| 14 | 2PK016 | [Ormara Turtle Beaches](https://en.wikipedia.org/wiki/Ormara_Turtle_Beaches_(Ramsar_Site)) |  | [Balochistan](https://en.wikipedia.org/wiki/Balochistan_(Pakistan)) |
| 15 | 2PK019 | [Runn of Kutch](https://en.wikipedia.org/wiki/Great_Rann_of_Kutch) |  | [Sindh](https://en.wikipedia.org/wiki/Sindh) |
| 16 | 2PK004 | [Tanda Dam](https://en.wikipedia.org/wiki/Tanda_Dam_(Ramsar_Site)) | [Kohat District](https://en.wikipedia.org/wiki/Kohat_District) | [Khyber Pakhtunkhwa](https://en.wikipedia.org/wiki/Khyber_Pakhtunkhwa) |
| 17 | 2PK003 | [Taunsa Barrage](https://en.wikipedia.org/wiki/Taunsa_Barrage_(Ramsar_Site)) | [Muzaffargarh District](https://en.wikipedia.org/wiki/Muzaffargarh_District) | [Punjab](https://en.wikipedia.org/wiki/Punjab_(Pakistan)) |
| 18 | 2PK001 | [Thanedar Wala](https://en.wikipedia.org/wiki/Thanedar_Wala_(Ramsar_Site)) | [Bannu District](https://en.wikipedia.org/wiki/Bannu_District) | [Khyber Pakhtunkhwa](https://en.wikipedia.org/wiki/Khyber_Pakhtunkhwa) |
| 19 | 2PK005 | [Uchhali Complex](https://en.wikipedia.org/wiki/Uchhali_Complex_(Ramsar_Site)) | [Khushab District](https://en.wikipedia.org/wiki/Khushab_District) | [Punjab](https://en.wikipedia.org/wiki/Punjab_(Pakistan)) |

**Importance of Wetlands:**

Wetlands of Pakistan are important in cultural, economic and socioeconomic value. Majority of that population who live near the inland and coastal wetlands depend for their food and livelihood on wetlands. Local communities around the wetlands are using this valuable resource right from forefathers. Their importance can be summarized as follows

* Wetlands are important source of food supply (leafy plants source of vegetables, production of rice and seeweeds)
* Wetlands act as habitat for a wide range of plant and animals. They provide oxygen through the respiration of plants and algae.
* They filter the water running into the stream, river or ocean, cleaning it of toxins that could cause pollution in major waterways.
* They provide protection against storms, flood control, stabilization of shorelines and maintain surface water flow during dry periods.
* They are important for the landscape point of view and attract the tourists (recreational opportunities).
* They help to store the nutrients and regarded as the more important productive system.

**Causes of wetland degradation in Pakistan:**

Pakistan has different types of wetlands and various factors are causing serious stress and potentially altering the natural valuable resource. Wetlands in sub-tropical and tropical regions have been damaged progressively or lost due to conversion into agricultural land use. People do not know the importance of these wetlands and through their home waste and pollutants in water.

These wetlands Kalar Kahar Lake (Salt Range), Rawal Lake, Mangla Lake, Simbly Lake and Khanpur Lake are suffering from contaminants caused by human beings.  Many people have developed their business, homes, number of small hotels and shops of edible items near to wetlands to attract the tourists and this hard infrastructure is increasing day by day.

Climate change and global warming has become a hot issue of the world.  Global warming increases the temperature and drought that leads to loss of species and bleaching of coral reefs. An off-site activity causes physical and chemical changes in wetlands.  Addition of [polluted water](https://www.technologytimes.pk/wastewater-pollution-in-pakistan-potential-pollutants-sources-and-their-toxicity/) draining into wetlands from upstream agricultural, industrial or other activities is a major cause. Changes occurring in water flow system due to rapid expansion of population. Lack of effective policies and inadequate management is major problem in our country.

**Management of wetlands:**

Currently, Pakistan’s wetland program working on restoration projects and promotes globally significant biodiversity of the country. Primarily, it has two main objectives;

1. To create and maintain enabling environment for sustainable and effective conservation of natural wetlands at local level.
2. To implement sustainable wetland conservation strategy at four representative sites that will serve as model for subsequent wetland conservation.

The program is working in 4 areas namely, Lakes of the alpine region, Lakes of the Salt Range, Coastal wetland, and Riverine wetlands. Preserve and protect the aquatic resources (flora and fauna). More local plants should be planted and illegal activities should be reported. Restore natural integrity and natural structure. Work within the water shed, pick all the litter and waste and dispose it in proper way.Almost all kinds of wetlands providing support for earning livelihood. Wetland centre at Sandspit, located in west of Karachi has established for the conservation and restoration of wetlands of Pakistan. WWF Pakistan wetland projects objectives are to conserve the wetland of Pakistan, identify the wetland complexes, enhance biodiversity, create awareness among the people, and prepare and implement national wetland conservation strategies for sustainable development of wetlands.

**References**

<https://openoregon.pressbooks.pub/envirobiology/chapter/21-2-threats-to-biodiversity/>

<http://www.wildlifeofpakistan.com/WildlifeBiodiversityofPakistan/threatstowildlifeinPakistan.htm>

IUCN. (2012). IUCN Red List Categories and Criteria: Version 3.1. Second edition. Gland, Switzerland and Cambridge, UK: IUCN. iv + 32pp.

<https://www.conserve-energy-future.com/causes-effects-solutions-for-habitat-loss-and-destruction.php>

<https://www.technologytimes.pk/wetlands-pakistan/>

<https://en.wikipedia.org/wiki/List_of_Ramsar_wetland_sites_in_Pakistan>