Wetland Conservation: A Global Guide

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Evidence update
This edition replaces unsupported or outdated statistics with findings from the Global Wetland Outlook 2025, the UN Environment Programme, the IPCC, and peer-reviewed research. All quantitative statements are linked to the reference list.

Introduction

Wetlands are among the planet's most productive and strategically important ecosystems. They regulate water, support biodiversity, store carbon, sustain food systems, and reduce exposure to floods, droughts, and coastal hazards. Yet the latest global assessment shows a continuing decline: since 1970, an estimated 411 million hectares of wetlands - about 22% of the global total - have been lost, while roughly one quarter of the wetlands that remain are in poor ecological condition. The average ongoing rate of loss is approximately 0.52% per year.[1]

This guide explains what wetlands are, why they matter, the main pressures driving their decline, and the practical actions governments, communities, businesses, landowners, and civil-society organizations can take to conserve and restore them. It uses a global perspective while emphasizing the strong links between wetlands, climate resilience, biodiversity, water security, and sustainable development.

What Are Wetlands?

The Convention on Wetlands uses a broad definition that includes natural and human-made areas where water is the primary factor shaping ecological conditions. Wetlands may be permanent or temporary, freshwater, brackish, or saline, and inland or coastal. They include marshes, swamps, peatlands, floodplains, rivers, lakes, estuaries, mangroves, seagrass beds, coral-associated shallow waters, reservoirs, and constructed treatment wetlands.[2]

Major wetland types

- Coastal wetlands: salt marshes, mangroves, tidal flats, estuaries, coastal lagoons, and seagrass systems.
- Inland wetlands: rivers, lakes, ponds, marshes, swamps, floodplains, and wet meadows.
- Peatlands: waterlogged ecosystems in which partially decomposed organic material accumulates as peat.
- Urban wetlands: natural or restored wetland systems located within or adjacent to cities.
- Artificial wetlands: reservoirs, rice fields, wastewater-treatment wetlands, detention ponds, and other human-created water systems.

Wetlands occur on every continent and across climatic zones, from tropical mangrove forests and high-altitude peatlands to temperate floodplains and polar coastal marshes. Their ecological character depends on water depth, timing, flow, salinity, soils, vegetation, and landscape connectivity.

Why Wetlands Matter

Water regulation and flood risk reduction

Wetlands slow, store, and redistribute water. Floodplains and marshes can absorb excess runoff during heavy rainfall, while groundwater-connected wetlands may help sustain base flows during dry periods. These functions do not eliminate flood or drought risk, but they can reduce peak flows, delay downstream impacts, and complement engineered water infrastructure.[1][3]

Water filtration and purification

Wetland vegetation, sediments, and microbial processes can retain suspended solids, transform nutrients, and remove some contaminants. The level of treatment varies by wetland type, pollutant load, hydrology, and management, so wetlands should not be treated as unlimited waste-disposal systems. When protected and appropriately managed, however, they can improve water quality and reduce the burden on conventional treatment infrastructure.[3]

Carbon storage and climate regulation

Wetlands store carbon in vegetation and soils, but the scale varies greatly among wetland types. Peatlands are especially significant: although they cover only about 3-4% of the world’s land surface, they contain up to one third of global soil carbon. Drainage, burning, and degradation can convert these long-term carbon stores into major sources of greenhouse-gas emissions.[4]

Biodiversity, migration, and ecological connectivity

Wetlands provide breeding, feeding, nursery, and refuge habitat for fish, amphibians, reptiles, mammals, invertebrates, and waterbirds. For migratory species, the loss of a small number of critical stopover sites can affect populations across entire flyways. Research on shorebirds using Yellow Sea tidal flats demonstrates how dependence on disappearing wetland stopovers is associated with rapid population decline.[5]

Food systems, livelihoods, and cultural values

Wetlands support fisheries, grazing, rice production, small-scale agriculture, tourism, transport, and the collection of reeds, fibres, medicinal plants, and other resources. They also carry deep

cultural and spiritual significance for many Indigenous Peoples and local communities whose knowledge and stewardship practices have developed over generations.

Global Decline and the Main Drivers of Degradation

The Global Wetland Outlook 2025 identifies agricultural expansion, pollution, infrastructure development, hydrological disruption, over-extraction of water, invasive species, and climate change as interacting pressures. The scale of loss is not only ecological: the world's remaining wetlands generate ecosystem services valued at up to USD 39 trillion annually, while degraded wetlands provide fewer benefits and increase social and economic risk.[1]

- Conversion and drainage for agriculture, forestry, urban development, and infrastructure.
- Alteration of river flows through dams, channelization, water diversion, and groundwater extraction.
- Pollution from nutrients, pesticides, industrial discharges, plastics, sewage, and sediment.
- Coastal development and barriers that prevent wetlands from migrating inland as sea levels rise.
- Overharvesting of fish, timber, peat, and other biological resources.
- Invasive species and loss of ecological connectivity.
- Rising temperatures, sea-level rise, changing rainfall patterns, drought, wildfire, and extreme events linked to climate change.[7]

If current trends continue, the Convention on Wetlands warns that up to one fifth of the world's remaining wetlands could disappear by 2050. This would weaken water security, food production, biodiversity, climate resilience, and disaster-risk reduction at the same time.[1]

Global Policy Framework

The Convention on Wetlands

Adopted in Ramsar, Iran, in 1971, the Convention on Wetlands provides the main intergovernmental framework for the conservation and wise use of wetlands. As of August 2026, it has 172 Contracting Parties. The Convention promotes national wetland policies, designation and management of Wetlands of International Importance, international cooperation, monitoring, restoration, and the integration of wetland values into development decisions.[2][9]

Climate, biodiversity, and sustainable-development commitments

Wetland conservation contributes directly to the Paris Agreement, the Kunming-Montreal Global Biodiversity Framework, and the Sustainable Development Goals. Healthy wetlands support adaptation and mitigation, but ecosystem action cannot substitute for rapid reductions in fossil-fuel emissions and other structural sources of climate change.[1][7][10]

Key Ecosystem Services

Service	Examples of benefits
Water regulation	Store and slowly release water; reduce some flood peaks; support groundwater recharge and dry-season flows.

Service	Examples of benefits
Water quality	Retain sediments; transform nutrients; remove some pollutants under appropriate loading and management conditions.
Climate regulation	Store carbon in vegetation and soils; avoid emissions when peatlands and other carbon-rich wetlands remain intact.
Coastal protection	Reduce wave energy, erosion, and storm impacts through mangroves, marshes, tidal flats, and connected coastal habitats.[8]
Biodiversity	Provide breeding, feeding, nursery, and refuge habitat, and connect species across landscapes and migratory flyways.
Food and livelihoods	Support fisheries, agriculture, grazing, tourism, traditional harvesting, and local enterprise.
Cultural values	Provide places for identity, spirituality, recreation, education, research, and intergenerational knowledge.

Table 1. Principal ecosystem services provided by wetlands. The magnitude of each benefit depends on wetland type, condition, location, and management.

Strategies for Effective Conservation

1. Protect hydrology and ecological character

Wetlands cannot be conserved by drawing a boundary around them while allowing upstream water flows, sediment supply, or water quality to collapse. Effective protection begins with hydrological assessment, mapping, ecological monitoring, and land-use rules that maintain the water regime and surrounding buffer areas.

- Identify and map wetlands at national, regional, and local scales.
- Recognize priority wetlands in land-use plans and protected-area systems.
- Maintain environmental flows and limit damaging drainage, infilling, and extraction.
- Require robust environmental assessment for projects that may alter wetland hydrology or connectivity.
- Plan for inland migration of coastal wetlands where sea-level rise makes this necessary.

2. Restore degraded wetlands

Restoration should address the cause of degradation rather than only its visible symptoms. Depending on the site, this may involve rewetting peatlands, reconnecting rivers to floodplains, removing drainage structures, restoring native vegetation, controlling invasive species, reducing pollution, and rebuilding ecological connectivity.

- Establish a clear ecological baseline and measurable restoration objectives.
- Prioritize hydrological repair before large-scale planting.
- Use native species and locally appropriate reference ecosystems.
- Include long-term monitoring, maintenance, and adaptive management.
- Engage affected communities and land users from the beginning.

3. Manage water at the basin scale

A wetland's condition is shaped by the wider catchment. Integrated water-resource management should coordinate agriculture, urban development, industry, drinking-water supply, sanitation, and ecosystem needs across administrative boundaries. This approach is especially important under climate change, when water availability and extreme events are becoming less predictable.[7]

4. Align finance with wetland value

The economic value of wetlands is often omitted from public budgets, infrastructure appraisal, insurance models, and private investment decisions. Governments and financial institutions can improve outcomes by incorporating ecosystem services, avoided disaster losses, restoration costs, and long-term climate risks into decision-making.

- Redirect subsidies that encourage drainage, pollution, or unsustainable extraction.
- Develop public restoration funds and transparent climate-finance mechanisms.
- Use payments for ecosystem services where rights, safeguards, and benefits are clear.
- Require credible monitoring and avoid overstating carbon or biodiversity outcomes.
- Apply the mitigation hierarchy: avoid impacts first, minimize what cannot be avoided, restore damaged systems, and use offsets only as a last resort.

5. Strengthen community stewardship and environmental justice

Local communities and Indigenous Peoples should not be treated only as consultation audiences. Their rights, knowledge, institutions, and livelihood priorities are central to durable conservation. Effective processes include free, prior, and informed participation; equitable benefit sharing; access to information; support for community monitoring; and protection of environmental defenders.

Actions for Different Stakeholders

National and local governments

- Build complete wetland inventories and make data publicly accessible.
- Integrate wetlands into climate adaptation, biodiversity, water, agriculture, and spatial-planning policies.
- Fund enforcement, monitoring, restoration, and community participation.
- Coordinate across ministries and jurisdictions rather than managing wetlands as isolated sites.

Private landowners and producers

- Maintain natural water regimes and vegetated buffers.
- Reduce nutrient, pesticide, sediment, and waste runoff.
- Adopt sustainable harvesting and grazing practices.
- Work with neighbours and authorities at landscape scale.

Businesses and financial institutions

- Assess wetland dependencies and impacts across operations and supply chains.
- Avoid projects that cause irreversible wetland loss.

- Disclose water, biodiversity, and climate risks with measurable targets.
- Support restoration without using it to justify continued avoidable damage elsewhere.

NGOs, universities, and research institutions

- Produce accessible evidence, maps, and long-term monitoring.
- Support community organizations and locally led conservation.
- Document traditional ecological knowledge with consent and appropriate attribution.
- Translate technical findings into practical policy and public communication.

Citizens and communities

- Learn about local wetlands and participate in monitoring and restoration.
- Report illegal dumping, drainage, infilling, or habitat destruction.
- Use water responsibly and reduce pollution from households and gardens.
- Support public policies and organizations that protect wetlands.

Wetlands and Climate Resilience

Reducing flood and drought impacts

Healthy wetlands can moderate hydrological extremes by storing water, slowing runoff, and sustaining flows. Their protective value is greatest when they remain connected to rivers, floodplains, groundwater, and surrounding habitats. Conservation should therefore be integrated with early-warning systems, resilient infrastructure, and risk-sensitive urban and rural planning.

Protecting coasts

Mangroves, salt marshes, seagrass beds, tidal flats, and coastal lagoons can reduce wave energy, trap sediments, and help stabilize shorelines. Their performance depends on local geomorphology, storm intensity, ecosystem condition, and the space available for landward migration.[8]

Safeguarding peatland carbon

Peatland protection is a high-priority climate action because drainage and fire release carbon accumulated over centuries or millennia. UNEP estimates that conserving intact peatlands and restoring degraded peatlands in tropical countries could reduce greenhouse-gas emissions by up to 800 million metric tonnes per year.[6]

Using nature-based solutions responsibly

Wetland conservation and restoration are important nature-based solutions, but claims must be realistic and measurable. Projects should demonstrate ecological additionality, permanence, social safeguards, transparent monitoring, and compatibility with rapid economy-wide emission reductions.[10]

A Call to Action

Wetlands are not empty land waiting for a more profitable use. They are living infrastructure that supports water security, biodiversity, climate stability, food systems, culture, and human

well-being. The latest evidence is clear: continued loss is costly, while conservation and restoration generate benefits across multiple sectors.

- Governments must place wetland protection at the centre of water, climate, biodiversity, and development policy.
- Communities must have the rights, resources, and decision-making power needed to steward wetlands.
- Businesses must avoid preventable damage and account for wetland dependencies and risks.
- Researchers and communicators must make evidence accessible without exaggerating uncertain claims.
- Individuals can support local conservation, reduce pollution, and demand accountable public decisions.

The next decade will determine whether wetlands continue to sustain societies or become casualties of short-term planning. Protecting them is both a practical investment and an ethical responsibility.

Source and authorship note

This guide was researched, written, and edited by Katherine Stehberg Liberman as an English-language adaptation and expansion of environmental content developed for Biodiversidad.cl. Statistics and institutional facts were checked against the sources listed below on 2 August 2026.

References

[1] Convention on Wetlands. (2025). Global Wetland Outlook 2025: Valuing, conserving, restoring and financing wetlands. Gland, Switzerland: Secretariat of the Convention on Wetlands. DOI: 10.69556/GWO-2025-eng. Source

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[8] Spalding, M., Kainuma, M., & Collins, L. (2010). World Atlas of Mangroves. London: Earthscan.

[9] Convention on Wetlands. (2026). The importance of wetlands. Accessed 2 August 2026. Source

[10] United Nations Environment Programme & International Union for Conservation of Nature. (2021). Nature-based Solutions for Climate Change Mitigation. Nairobi and Gland. Source

Educational resource. Site-specific conservation and restoration decisions should be based on local ecological, hydrological, legal, and social assessment.