



## Wetlands Overview

Wetlands are areas of land saturated with water. There are [33 different types of wetlands](#) worldwide that include rivers, swamps, marshes, peatlands, coral reefs, mangroves, and more. Wetlands can be permanent or temporary, natural or human-made, and contain flowing or still water.

Even though wetlands only account for 6% of the Earth's land surface, they provide major wildlife habitats that are home to [40% of all plant and animal species](#) across the globe. These biodiverse species range from the near-threatened tiny bubble-nest frog (*[Gracixalus supercornutus](#)*) found in Vietnam to the critically endangered flowering tree (*[Calophyllum africanum](#)*) that lives in Mali.

Wetlands provide many ecosystem services and also help combat climate change. Some scientists argue that compared to rainforests, wetlands are the real "[lungs of the planet](#)" since they sequester [50 times more carbon](#), grow faster, and remain stable for longer periods of time when left undisturbed. Additionally, wetlands provide benefits such as filtering pollutants and preventing flash flooding into downstream communities.

Many communities depend on wetlands to uphold their social and cultural ties to the land. Several Indigenous groups, such as the Aboriginal people throughout Australia, regard wetlands as [cultural heritage sites](#) and depend on the land to hunt and gather food. In addition, wetlands serve as an ideal location for recreational activities, and the United States experienced a record high spending of [\\$394 billion](#) on wetland recreational activities in 2022.

Despite their importance, wetlands have often been left unprotected. They have been viewed without value because they can be breeding grounds for mosquitoes and other pests, as well as barriers to transportation and development. An estimated [103 million acres](#) of wetlands were destroyed between the 1600s to the 1980s due to the expansion of European settlements in the United States.

As the human population continues to grow, so does the need for more housing, food, and fuel. Building coastal homes, creating more agricultural land, and mining for fuel continue to be prioritized over wetland protection. This leads to the dredging and draining of wetlands, causing a loss in ecosystem services, social and cultural values, and biodiversity. In recent decades, governments on a local to global scale have enacted legislation to protect wetlands, but more still needs to be done.

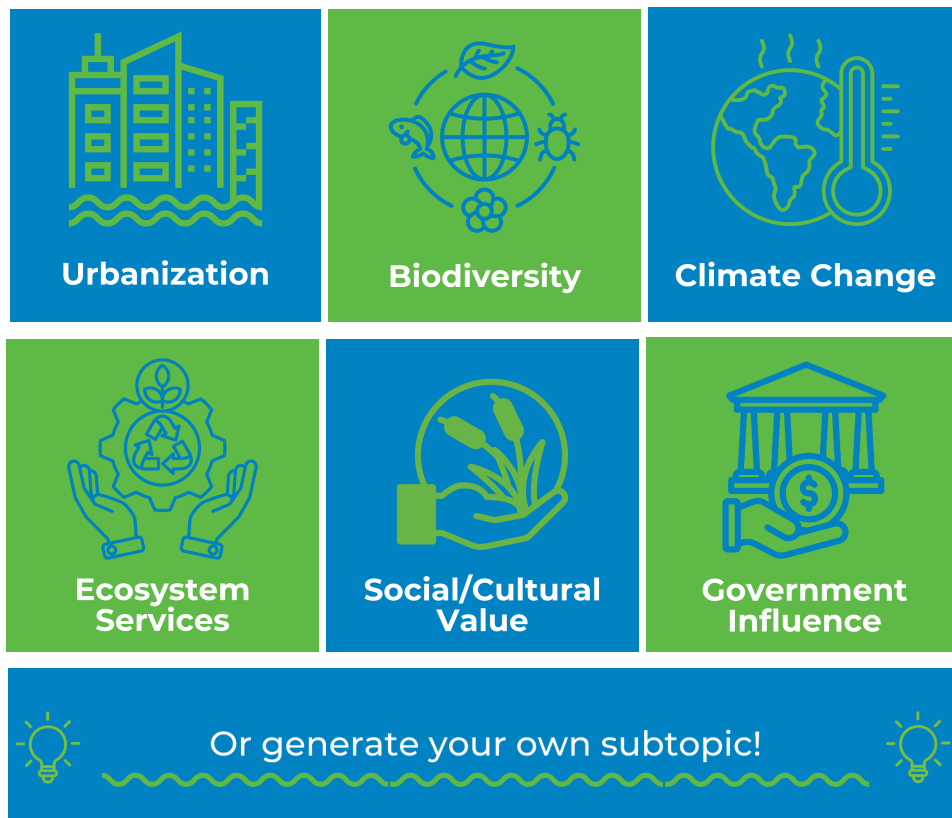
## Narrow Your Focus

The topic of wetlands is broad and encompasses many challenges, but you only have one minute to address this global topic in your video. Rather than tackling the entire topic of wetlands, we recommend focusing on a specific part of it (a subtopic). **Remember, your [World of 8 Billion](#) video should also connect how human population growth impacts wetlands and offer a sustainable solution.**

We've curated a list of subtopic angles for wetlands that you could take (see below), and linked them to a variety of credible sources. But there are many other wetlands subtopics, and numerous additional sources, so no need to limit yourself to what's included in this document.

As you conduct your [research](#), remember to keep a [works cited list](#). You will need to submit your sources if your video is chosen as a finalist.

Click on the colored tiles below to navigate to information about each subtopic, or click the bottom rectangle for a planning document to help generate your own ideas!



Looking for more resources to help you plan your video? Check out the [full video project organizer](#) or the [abbreviated version, the video project guide](#).

## Urbanization

Urbanization is when more people move to cities, often causing urban sprawl where developments expand into rural areas. As the human population continues to rise, more and more land is needed for housing, transportation, and businesses. This rapid expansion puts increasing pressure on natural ecosystems such as wetlands, which are often cleared or altered to support these developments.

- From 1970 to 2015, 35% of the wetlands worldwide were destroyed by urbanization, population growth, and more, and since 2000, the rate of wetland loss has continued to increase. (Source: [United Nations Climate Change](#))
- Wetlands are at risk of destruction in order to be used for agricultural spaces, commercial developments, and natural resource extraction. This is known as wetland reclamation, or the conversion of wetlands into dry spaces to build human developments. (Source: [Greener Landscapes](#))
- Wetlands are often replaced by human-made water structures, including dams and channels, which causes a disruption to natural flood regulation and nutrient cycling. (Source: [Maryland Department of the Environment](#))
- Urbanization has introduced toxic metals, hydrocarbons, and other pollutants into wetlands and affects their water quality. (Source: [Sustainable Technologies Evaluation Program \(STEP\)](#))
- Urban runoff and household sewage carry microplastics that enter freshwater wetlands, cause soil contamination, and physically and chemically harm organisms' bodies. (Source: [India Water Portal](#))
- In Michigan alone, 4.3 million acres of wetlands have been lost since the 1800s due to housing and road construction. (Source: [Flow Water Advocates](#))

## Biodiversity

Biodiversity is the variety of species and organisms found in a particular habitat or ecosystem. Wetlands are among the most biologically diverse ecosystems on Earth, supporting countless species of plants, animals, and microorganisms. Wetland habitats are being damaged and destroyed by increased human activities from a growing population, putting these diverse ecosystems at risk.

- Invasive wetland species, like the nutria or swamp rat from South America, spread aggressively and displace native species, resulting in biodiversity loss. Nutria were brought into Canada and the U.S. by humans for meat and the fur trade. However, they clear native wetland vegetation and displace native species like muskrats. (Source: [The Wetlands Initiative](#) and [Invasive Species Centre](#))
- Wetlands are drying up due to infrastructure being built on top of and near them. Numerous bird species, like grass owls and muscovy ducks, are being displaced. (Source: [Al Jazeera](#))

- Frogs, like the gray tree frogs in Chicago, are an example of indicator species that determine the health and monitor the biodiversity of some wetland ecosystems. Since frogs are extremely sensitive to pollutants, a possible population decline indicates that the health of other species in that ecosystem could also be at risk, lowering the biodiversity of the ecosystem. (Source: [Kids Frontiers](#))
- Wetlands serve as major bird migratory rest stops where birds can feed, establish nesting grounds, and breed as well. It is important to conserve wetland habitats so bird species and local human populations can coexist. (Source: [BirdLife International](#))
- While cattails (*Typha*) were brought into the U.S. and Canada during the 1800s from Europe, it is the hybrid cattails that are known to be highly invasive. Named *Typha x glauca*, they outcompete native wetland vegetation and negatively affect the ecosystem services offered by wetlands. (Source: [National Park Service](#))

## Climate Change

Wetlands are becoming more vulnerable to the effects of climate change as they continue to be degraded or destroyed. Degraded wetlands, in return, speed up climate change in this vicious cycle. Over time, more carbon dioxide will be released into the atmosphere from the burning of fossil fuels and the destruction of carbon sinks like wetlands. A growing population ultimately exacerbates the effects of climate change, putting wetlands at risk.

- Wetlands are critical carbon sinks. When they are drained or destroyed, greenhouse gases, primarily carbon dioxide and methane, are released into the environment, which accelerates climate change, causing further damage to wetlands. (Source: [National Association of Wetland Managers \(NAWM\)](#))
- Sea level rise due to climate change increases flooding and threatens wetlands. Excess water can alter the functionality of the ecosystems and lead to a decline in wetland vegetation. (Source: [Texas A&M AgriLife Extension](#))
- Altered weather patterns, such as droughts and warmer temperatures due to climate change, can affect the health of wetlands across the globe and result in water loss. (Source: [Indiana University](#))
- Droughts and a reduction in wetlands lead to water contamination, resulting in less drinking water for animals and humans. This is evident in the Rio Grande River, which stretches from the southwestern portion of the U.S. to eastern Mexico. (Source: [National Wildlife Federation](#))
- The density of invasive species, like the lionfish living in shallow Caribbean coral reefs, continues to rise and outnumber native species populations because they can survive in warmer temperatures created by climate change. (Source: [U.S. Geological Survey](#))

## Ecosystem Services

Wetlands offer many ecosystem services, including water and air filtration, that support humans and the environment. Wetlands specifically serve as climate change buffers – they sequester carbon dioxide and contain a variety of vegetation that protects against habitat destruction from sea level rise, droughts, and storm surges. As human populations expand and develop into wetland areas, the ecosystem services they provide are lost. Recreating these services artificially can be extremely expensive.

- Wetlands act as a natural barrier to storm surges, taking in large amounts of water to reduce the speed and volume of flooding. Flood damage can be extremely costly to coastal infrastructure and communities downstream. (Source: [Ramsar.org](https://www.ramsar.org/))
- One study found that the Congaree Hardwood Swamp in South Carolina removed as many pollutants each year as a \$5 million water treatment facility. (Source: [Environmental Protection Agency](https://www.epa.gov/))
- Acting as a sponge, wetlands provide a more stable supply of surface water for both animals and people by increasing the amount available in reservoirs, ponds, and rivers during dry periods. (Source: [North Andover](https://www.northandover.com/))
- Plants in wetland areas prevent shoreline erosion by using their roots to hold the soil and sediment particles together. Plants with strong roots also lower wave activity in coastal areas. (Source: [Johnston Soil and Water](https://www.johnstonsoil.com/))
- Similar to trees providing shade, wetlands create a cooling effect for cities that experience the urban heat island effect. The bigger the water body, the more heat is absorbed before the water can evaporate into the atmosphere and raise the local temperatures. (Source: [Wetland International](https://www.wetlandinternational.org/))

## Social & Cultural Values

Wetlands have existed in some form for millions of years and play an important role in supporting various aspects of human life and culture. Indigenous groups, like the [Pennacook-Abenaki people](https://www.pennacookabenaki.com/) in New Hampshire, use wetlands to gather plant materials for medicine and food making. Women in rural areas worldwide rely on wetlands to provide [clean drinking water](https://www.cleanwaterfund.org/) for their families. As wetlands are destroyed to accommodate a growing population, the vast social and cultural values of wetlands are under threat. [The UN's Sustainable Development Goal 5](https://www.un.org/sustainabledevelopment/goals/) states that women should be involved in conversations about wetlands management, which would help preserve social and cultural values.

- Women are important stewards of wetland areas in many rural African countries, like Zambia, and other countries such as India, where freshwater is collected from these environments. (Source: [The Convention on Wetlands](https://www.conventiononwetlands.org/) and [The Water Project](https://www.waterproject.org/)).
- Wetland restoration projects in urban environments may lead to gentrification and the displacement of minority communities that have adapted to live on this land that is less than ideal. (Source: [Yale](https://www.yale.edu/))

- Conserving wetland habitats provides an opportunity for various stakeholders to form partnerships and collaborate around strategic planning. (Source: [Wilderness Society](#))
- Arctic wetlands are critical for Indigenous groups like the Sámi people in parts of Norway, Sweden, Finland, and Russia, who rely on the land to herd and raise their reindeer. (Source: [Arctic Council](#))
- Wetlands are a popular destination for recreational activities, including swimming, boating, waterfowl hunting, and fishing. Within the U.S., approximately 90% of fish and shellfish caught from recreational fishing rely on wetlands for food and habitat. (Source: [Chesapeake Bay Foundation](#))

## Government Influence

Governmental cooperation and policy have helped preserve wetland ecosystems globally. In 1971, 18 countries gathered at the [Ramsar Convention](#) to discuss how to protect wetlands. As a result, more than [170 countries today protect over 257 million hectares](#) of wetlands worldwide. In addition, under the [Transboundary Wetlands of International Importance](#), countries with wetlands crossing over national borders have agreed to work together to protect them. Governments must continue to create policies at local and global levels that support sustainable development for a growing population while protecting wetland habitats.

- Governmental disputes over the definition of the “waters of the United States” (WOTUS) weakened the protection of wetlands and their resources. (Source: [American Society of Landscape Architects \(ASLA\)](#))
- Following the final ruling of *Sackett v. EPA* (2023), the U.S. government rolled back protections on wetlands, leaving over 60 million acres of wetlands unprotected by the Clean Water Act and vulnerable to development. (Source: [Population Education](#))
- In the U.S., most money for wetland protection is pieced together from multiple sources, and it can be challenging to secure sustained funding due to budget cuts, limited money available, and specific rules and guidelines. (Source: [National Association of Wetland Managers \(NAWM\)](#))
- Peatland in the United Kingdom faced destruction due to agricultural development and downstream flooding. To combat this, the UK government enacted the Peatland Code in 2015. Backed by research from the International Union for Conservation of Nature and Natural Resources (IUCN), the code aims to restore “thousands of hectares of peatland” annually and has established a carbon market, or a carbon credit trading system. (Source: [Earth.org](#))
- In the United Arab Emirates, mangroves and coral reef habitats continued to be destroyed by coastal developments and global warming effects. The Abu Dhabi Marine Restoration organization has teamed up with the Environmental Agency of Abu Dhabi to protect these vital habitats and species. Their goal is to restore sea grass beds, the dugong populations that rely on the sea grass, 500 different species of fish, and more. (Source: [Wetlands International](#))



## Generating Your Own Subtopic

Coming up with your own subtopic can be intimidating if you don't know where to start. To help, we've created the following list of questions and reminders to help you formulate your own subtopic. Ask yourself these questions, and as you answer them, notice what stands out or find repeating trends in your answers. Those are what you should focus on to generate your subtopic!

### Probing questions

1. Have you noticed anything related to this global topic in your community? If so, how does what is happening locally connect to challenges globally?
2. Does this topic connect to an area of interest to you? If so, how does it connect?
3. What does this topic first bring to mind when you think about it? What emotions does this topic make you feel?
4. What do you already know about this topic? What do you want to know?
5. Have you read any books or articles, or listened to podcasts about this topic? If so, what did you learn from them?

### Keep in mind that the subtopic you choose should be:

- Connected to human population growth – *how does population growth impact it?*
- Focused on a single problem or issue
- Researchable using primary and/or secondary sources
- Feasible to answer within the timeframe of 60 seconds
- Specific enough to answer thoroughly