

# How to survive rising sea levels in coastal areas

Regardless of one's political stance on global warming, it's undeniable that it is taking place right now, and it is impacting our daily lives.

Arid regions are becoming even drier, while wildfires are now a year-round occurrence in the western hemisphere. Moreover, hurricanes are forming earlier, more frequently, and with greater strength than before, and the melting of ice caps is causing ocean levels to rise, posing a threat to coastal cities and their infrastructure.

The National Oceanic and Atmospheric Administration (NOAA) states that 40% of the US population resides in densely populated coastal regions. Given the effects of flooding, shoreline erosion, and storm-related structural damage, this should be a concern for a large number of people.

According to NOAA, sea levels have been rising globally for the past century, with an accelerating rate of increase in recent decades. Both government and private sector scientists concur that carbon emissions significantly contribute to the current situation.

## So what does this mean for those living in coastal regions?

Rising sea levels can cause water damage to coastal property even during normal tidal changes and, on the extreme end, result in devastating and potentially fatal storm surges. According to NOAA, this could affect urban infrastructure such as roads, bridges, water sources, energy, and sewage facilities, among others, leading to a potential major

catastrophe. This issue cannot be ignored anymore as it poses a grave danger.

NOAA cites two primary reasons for the global rise in ocean levels: warming water causing expansion and increased melting of land-based ice adding water to the oceans.

According to a report by the National Aeronautics and Space Administration (NASA), the melting of the Greenland and Antarctic ice sheets could potentially double the projected sea-level rise by 2100. If the current rate of ocean rise continues, the report estimates a 26-inch increase by the same year.

## **What should we do?**

Though the year 2100 is still far off, the impacts of rising sea levels are being felt now. US naval bases along the Atlantic and Gulf coasts, such as the Naval Air Station Key West, are struggling with flooding and require significant changes, at a cost to taxpayers potentially in the billions.

Coastal property owners and municipalities are also grappling with the issue. Cities like Boston are experiencing flooded tunnels and issues in underground transit systems. New York and New Jersey were severely impacted by Hurricane Sandy, which flooded subway tunnels, knocked out underground power and gas lines, and devastated homes in its path. New Orleans, already below sea level, and Key West, barely above sea level, are especially vulnerable to future impacts.

## **What can be done to address this pressing issue?**

According to scientists, even if there were a significant decrease in carbon emissions – the primary cause of global warming – sea levels will continue to rise for centuries. This

is due to the time required for oceans to cool and ice sheets to stabilize. Hence, the rise in sea levels is a permanent reality and will result in more frequent flooding in the future.

It is important to focus on evaluating current damage, fixing it, and preventing future damage. It is also necessary to prepare a plan in case of a need to evacuate to higher ground.

Inspect your home for any signs of damage. Check for cracks in the foundation, new water damage, and erosion. Living near the ocean means experiencing storm surges, but have the conditions changed?

Have the surges or even high tides become stronger and more damaging?

Are they reaching farther inland?

Do roads frequently flood, and is the water deeper, or is there more debris noticeable?

It's important to keep track of these observations as they will aid in future planning. Local governments are making efforts to mitigate the impact of rising sea levels, but property owners can also take steps to protect their property and families. The approach will vary depending on location. For example, a property owner near the water will have different solutions compared to someone living further inland.

## **Learning from Nature is always a good starting point**

Nature has had a long history of coping with rising sea levels and the resulting consequences. Barrier islands, made of sand, serve as the initial line of defense, slowing down the impact of storm surges. Sand dunes with dune grass then absorb most of the energy from the surge and retain a significant amount

of water. The final line of defense is the salt marshes, which work like sponges and absorb what was not absorbed by the sand dunes.

Preserving natural barriers is crucial in mitigating the effects of rising sea levels. Barrier islands, sand dunes, and salt marshes are Nature's first line of defense against ocean surges and storm damage. These areas absorb shock and water, slowing down the impact of ocean surges and reducing damage to coastal properties. By protecting these natural barriers, you are not only helping to preserve the environment but also safeguarding your property and family.

Building on or filling in these natural barriers can have disastrous effects. It can increase the vulnerability of your property and surrounding areas, as the absence of these barriers can result in greater ocean surges, flooding, and damage. Replanting dune grass and other salt-tolerant flora can help maintain the integrity of the dunes and provide additional protection from ocean surges. By preserving these natural barriers, you can make a positive impact on the environment and reduce the impact of rising sea levels on your property and community.

## **Use man-made protections**

Seawalls, bulkheads, and jetties have been popular choices for people who want to protect their property from incoming seawater. However, it is important to understand that these structures do not prevent water damage completely. They only help divert water to prevent it from reaching the land, but over time the land near these structures will erode, leading to the failure of the wall.

This is because the pressure of the water can cause the sand at the base of the wall to erode, making it weaker over time. Therefore, if you are relying on these structures to protect your property, it is crucial that you maintain them and be

proactive in checking their condition.

It is also important to keep in mind that these structures only work effectively if everyone in the community is doing the same thing. A seawall, for example, that is not being maintained by other property owners in the community will be less effective, as the water will still reach unprotected land.

If a seawall fails, it can be an expensive and time-consuming process to rebuild it. Therefore, if you are planning to use these structures, it is important to consider the cost and responsibility involved in maintaining them over time.

Raising structures is a cost-effective solution to prevent damage caused by rising sea levels and flooding. This method involves constructing homes or buildings on stilts that are high off the ground, typically made of strong materials like telephone poles. By elevating the structure, it can protect it from being damaged by the incoming water.

This technique is widely adopted in flood-prone areas, particularly in South Louisiana, where the water can flow freely underneath the building without causing any harm. This method helps to ensure the safety of property and its inhabitants, as well as reducing the cost of repairs and maintenance in the long run.

In addition to the traditional methods of seawalls, bulkheads, and jetties, you can also combine the best of both Nature and technology to protect your property.

One effective method is the integration of natural barriers such as oyster beds and mussel reefs or offshore rock and rubble deposits with man-made structures like seawalls and bulkheads.

Another way is to create a “living shoreline” by planting sea grass and other vegetation to help stabilize the soil and

prevent erosion. This not only provides a barrier against rising sea levels but also enhances the overall ecological health of the area.

In conclusion, it is important to find a balance between utilizing technology and preserving natural resources in order to effectively tackle the rising sea levels and protect your property and community.

## **Making a plan**

It is important to have a solid evacuation plan in place in case rising sea levels pose a threat to your safety. Delaying evacuation until the last minute can be dangerous and leave you with limited options. Coastal communities are often congested with traffic, and many areas have limited roadways leading in and out. This is why having multiple escape routes is crucial.

Plan ahead and make sure you have a clear understanding of all possible escape routes in case of an emergency. Don't take any chances with your safety. If you are advised to evacuate, it is best to do so immediately. By having a well-thought-out evacuation plan in place, you can ensure that you and your loved ones can evacuate safely and efficiently.

In the event of an evacuation, it is important to have a comprehensive and well-thought-out plan to ensure the safety of you and your loved ones. Along with finding a safe shelter, it is crucial to have enough fuel to make it there, as the roads can become congested, and fuel consumption may be higher. It is recommended to keep your vehicle full and to carry extra fuel if possible. Having multiple escape routes is also essential in case one becomes blocked by debris or flooding.

In addition to having a safe destination, it is important to have a backup plan in case you are unable to evacuate. In this

scenario, having a shelter that is well-stocked with supplies for up to a month is crucial. This can include food, water, medicine, and other essential items. Keep in mind that popular destinations and hotels in the safe zone may quickly become filled, so it is important to have a designated safe house in place.

## **Supplies to always have on hand**

If you are unable to evacuate and need to shelter in place during a storm, it is crucial to have essential supplies on hand. Here is a list of items that must be included in your emergency kit:

**WATER:** Access to safe drinking water is essential for survival. The recommended amount is 1 gallon per day per person for both drinking and hygiene needs. This amounts to 30 gallons per person for a one-month supply. It's best to store water in water-safe containers, which will save space and money.

**FOOD:** Make sure to have non-perishable food items that don't require cooking, such as canned meats and vegetables or freeze-dried meals. Suppose you have the means to cook food safely; consider including some food items that need to be prepared, such as pasta or rice.

**COMMUNICATION:** Communication is critical during a disaster, so make sure your cell phones and other electronics are fully charged. Consider having rechargeable two-way radios as well as hand-crank radios, which can be used to receive emergency broadcasts even if the power is out.

**POWER:** Having a generator on hand is ideal, but make sure to only use it when it is safe to do so. If it's not safe to use a generator or if you run out of fuel, portable solar panels can provide enough power to keep your cell phones charged and provide some light.

**SANDBAGS:** Sandbags can be a valuable tool in preventing water damage during a storm. At the first sign of an impending storm, start collecting empty sandbags and fill them with sand. Build a wall around your home to keep water out until help arrives. While sandbags are not a perfect solution, they can provide a level of protection until assistance arrives.

Remember, being prepared is key to surviving a disaster. Make sure to have a comprehensive plan in place and have all the necessary supplies ready to go.

## Concluding

The problem of rising sea levels, and the adverse effects it has on coastal communities, is a rapidly growing concern that must be addressed. The extent of the damage is still uncertain, but it is widely agreed upon that the situation will only continue to worsen in the future. With this in mind, it is crucial for individuals to take proactive steps to ensure the safety and survival of themselves and their loved ones in the face of potential natural disasters.

Preparation is key in this scenario, and it's essential to start taking the necessary steps to safeguard against the effects of rising sea levels as soon as possible. This may involve updating your emergency plan, stocking up on essential supplies, reinforcing your home, and protecting natural barriers in your area. Additionally, it is also essential to stay informed on the latest developments and recommendations regarding coastal flood protection so you are always up-to-date on the best practices for safeguarding your community.

In conclusion, rising sea levels pose a significant threat to coastal communities, and the need for preparedness cannot be overemphasized. By taking proactive steps, we can help ensure the safety and security of ourselves and our loved ones in the face of potential disaster.