

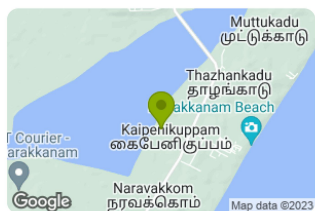
Trees for Coastal Ecosystems Viluppuram, Tamil Nadu, India



Project Purpose

Trees for Coastal Ecosystem

Location



The plantation project for 50000 mangroves is being implemented along the Kazhuveli wetlands in Marakkanam, a coastal taluk, Thalangadu from taluk Tindivanam, and Muttugadu, all of which are located within the administrative district Viluppuram of the Southern Indian state- Tamil Nadu.

Aim



Enhancement of
Biodiversity



Carbon Sequestration



Disaster Mitigation



Groundwater
Recharge



Control Soil Erosion

Why Trees?

A mangrove is a small tree or shrub that grows along coastlines, frequently underwater, taking root in saline sediments. They can thrive in adverse situations with high salt levels and low oxygen levels. According to the India State of Forest Report, 2019, the mangrove cover in India is 4,975 sq km, or 0.15 percent of the country's total geographical area. These salt-tolerant trees and the ecosystems they sustain are being rapidly replaced by aquaculture, coastal expansion, rice and palm oil production, and industrial activities.

According to UNESCO, mangroves are disappearing at three to five times faster rate than overall losses of global forest cover in the face of infrastructure development, urbanisation and agricultural land conversion. In the previous 40 years, mangrove coverage has decreased by half. Mangroves make up less than 1% of tropical forests. The emergence of shrimp farms have caused at least 35% of the overall loss of mangrove forests.

Planting trees aids in the long-term management, conservation, and development of mangroves. It focuses on climate change mitigation through coastal and marine ecosystem protection and restoration. Planting new mangroves aids in shoreline stabilisation and buffering which coastal communities rely on. The abundant biodiversity near the water's edge is also supported by new growth, which fuels a robust economy. As a result, the restoration effort is maximised by implementing this project.

Storm surges, currents, waves, and tides all cause erosion along the shore, and mangroves help to stabilise it. They provide a frontline defence for people and property along the coasts which is one of their most critical ecosystem roles. They help safeguard maritime environments from hazardous nutrients and runoff that would otherwise affect seagrass, coral reefs, and fisheries.

The National Oceanic and Atmospheric Administration investigation indicated that the roots help filter water coming off the ground, including contaminants, heavy metals, pesticides, and agricultural runoff. As a result, mangroves help to keep water clean and clear. They also manage the distribution of nutrients to seagrass beds and coral reefs.

This project focuses on planting 50,000 mangroves in Villupuram district, Tamil Nadu which will be an ideal area for them to grow. Many of the resources on which the area's coastal residents rely on for survival and livelihood are provided by mangrove forests. The mangroves will also ensure livelihood security for fishing communities. People can collect clams, shellfish, and shrimp by walking across the tidal flats at low tide. Fish move in to feed among the protection of mangrove roots during high tide, transforming the marshy land into rich fishing grounds. Mangrove trees also provide fuel, medicines, tannins, and wood for houses and boats.

According to the Smithsonian Ocean, mangroves are a large "blue carbon sink," meaning they are good at absorbing and storing carbon from the atmosphere. As they grow, they sequester carbon and store it in their leaves, roots, and branches. Mangroves exist along the coast, the carbon stored in their parts falls to the seafloor and is buried in the soil when they die. If it is trapped here, it will not be able to re-join the atmosphere. This CO2 storehouse, according to Hardin, can hold up to four times the amount of CO2 that rainforests can, making its existence essential to the planet's survival in the face of climate change. Planting trees in the plantation site will help to improve air quality and the overall ecosystem.

Animal, bird and fish populations also benefit from mangroves. Many marine species use the complicated root systems as nursery habitats, allowing them to forage and grow while remaining safe from predators. According to the Smithsonian Ocean, the leaves, or the nutrient-rich layer of decay they generate amid the roots serve as the "basis of the coastal food web." Before migrating to the reef, everything from baby sharks to lobsters and shrimp dwell in or around the roots, according to the oceanographic organisation. On land, mangroves provide food and shelter for endangered birds, bats, fireflies, and even royal Bengal tigers. The Government of Tamil Nadu in 1986 declared the 21 islands and surrounding shallow coastal waters as Marine National Park for the purpose of protecting marine wildlife and its environment. Planting trees in and around Villupuram district would help with ecological restoration, wildlife habitat conservation, and overall quality of life. To keep the population of diverse animal and bird species under control, forests and wildlife are essential. Trees provide refuge and food for a variety of birds and animals. As a result, the planted species fulfil key functions such as fodder, livelihood diversification, and biodiversity advantages, as well as habitat in order to encourage wildlife conservation in the area.

Kazhuveli is the second largest brackish water lake in South India, located in the Tindivanam taluk of Tamil Nadu's Villupuram district. It is an ancient mangrove forest that has deteriorated over time. Human meddling, particularly the establishment of salt pans and overfishing, has entirely ruined and depleted the ecosystem of this wetland. It's also one of the most popular birdwatching spots. The deterioration of groundwater owing to seawater encroachment poses a severe problem. The first difficulty will be to reduce the negative consequences of building a check dam downstream which could affect water levels and salinity. The Kaliveli wetlands cover a huge area and aid in ground water recharge. As a result, tree planting will boost the area's greenery while also preventing more saline water from entering the inland and shielding groundwater.

Tree Species

Rhizophora Apiculata, Rhizophora Mucronata

Social Impact

Mangroves provide humans with vital green economy services. The life of mangroves is inextricably linked to our own, and our own future is inextricably linked to the survival of these essential habitats. Planting mangroves will improve the region's biodiversity. Coastal populations rely on the resources that mangroves provide.

They serve as a buffer between land and water, anchoring shorelines and protecting coastal ecosystems from hurricanes and tsunamis. Mangroves protect coral reefs from sedimentation, absorb vast amounts of carbon to prevent climate change, adapt to increasing sea levels, and serve as nurseries for marine life. They also provide crucial habitat for endangered species. It also aids in the preservation of the area's natural environment and biodiversity.

Kazhuveli is the second largest brackish water lake in South India, located in the Tindivanam taluk of Tamil Nadu's Villupuram district. Kaliveli welcomes migratory birds from their wintering habitats in Eurasia during the monsoon season. When Greater Flamingos flock in large numbers, the water turns into a sea of pink.

The mangroves will benefit local populations, particularly those who rely on the coastal region for their livelihood, by ensuring livelihood security for fishing groups and other coastal communities. The saltwater and freshwater environments that mangroves cross are both protected. The intricate root systems of mangroves filter nitrates and phosphates carried to the sea by rivers and streams. They also prevent interior streams from being encroached upon by seawater. Thus, the plantation of mangroves around Villupuram district directly impacts rural livelihoods by creating jobs in nursery and planting activities, improving fisheries catch, providing flowers, fruit, fodder, and fuel to rural communities and wildlife, producing oxygen, reducing carbon dioxide in the atmosphere, combating climate change, and benefiting the region's wildlife.