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A REPORT ADVOCATING
FOR SOCIALLY RESPONSIBLE
SUSTAINABLE DEVELOPMENT

PLANTING MANGROVE TREES LEADS THE GREEN SUCCESSES FOR SAUDI NATIONAL BANK

ENEREF INSTITUTE EXAMINES HOW MANGROVES ARE A BLUE CARBON SEQUESTRATION SUCCESS FOR SNB.

In 2022 Saudi National Bank affirmed their commitment to using their position as a regional financial powerhouse to support the Kingdom's goal of achieving net zero emissions by 2060.

In line with this drive, the Saudi bank is supporting environmental groups that are planting as many as 200,000 mangrove trees—part of the Saudi Vision 2030 effort to plant more than 100 million trees.

“THE MANGROVE NURSERY SUPPORTS OUR GOAL TO PLANT 50 MILLION MANGROVE TREES BY 2030.”

RAED ALBASSEET | *Chief Environment Officer, Red Sea Global*

SAUDI NATIONAL BANK COLLABORATES WITH RED SEA GLOBAL

Mangroves provide numerous environmental benefits, including carbon capture and storage, water filtration, and protection against coastal erosion and storms. Mangroves also filter pollutants and trap sediments, thereby improving water quality.

In the arid Arabian Desert, with limited rainfall, Mangroves offer an advantage over other forest trees. “Mangroves do not need irrigation water since they are planted directly in the coastal areas of the sea,” explained Professor Hong, Associate Professor at King Abdullah University of Science and Technology.

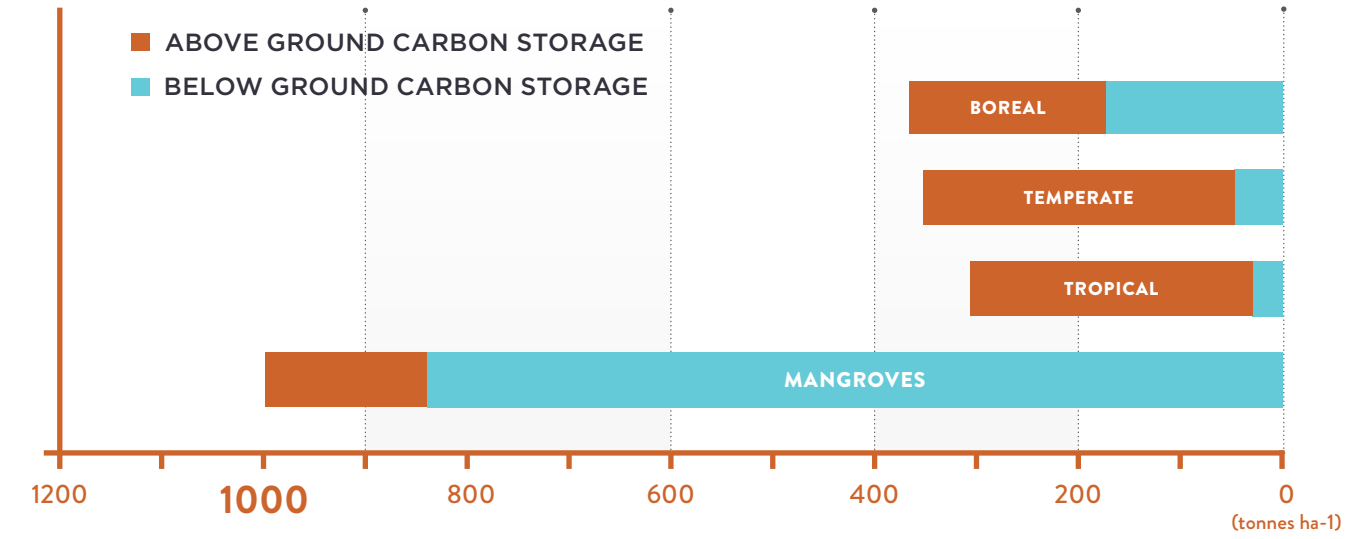
The Saudi National Bank’s efforts are part of their Green Environmental Initiative, and in collaboration with Red Sea Global and the Saudi Ministry of Environment Water & Agriculture. The mangrove-planting campaign was launched when the bank entered into a memorandum of cooperation with the Ministry in 2022.

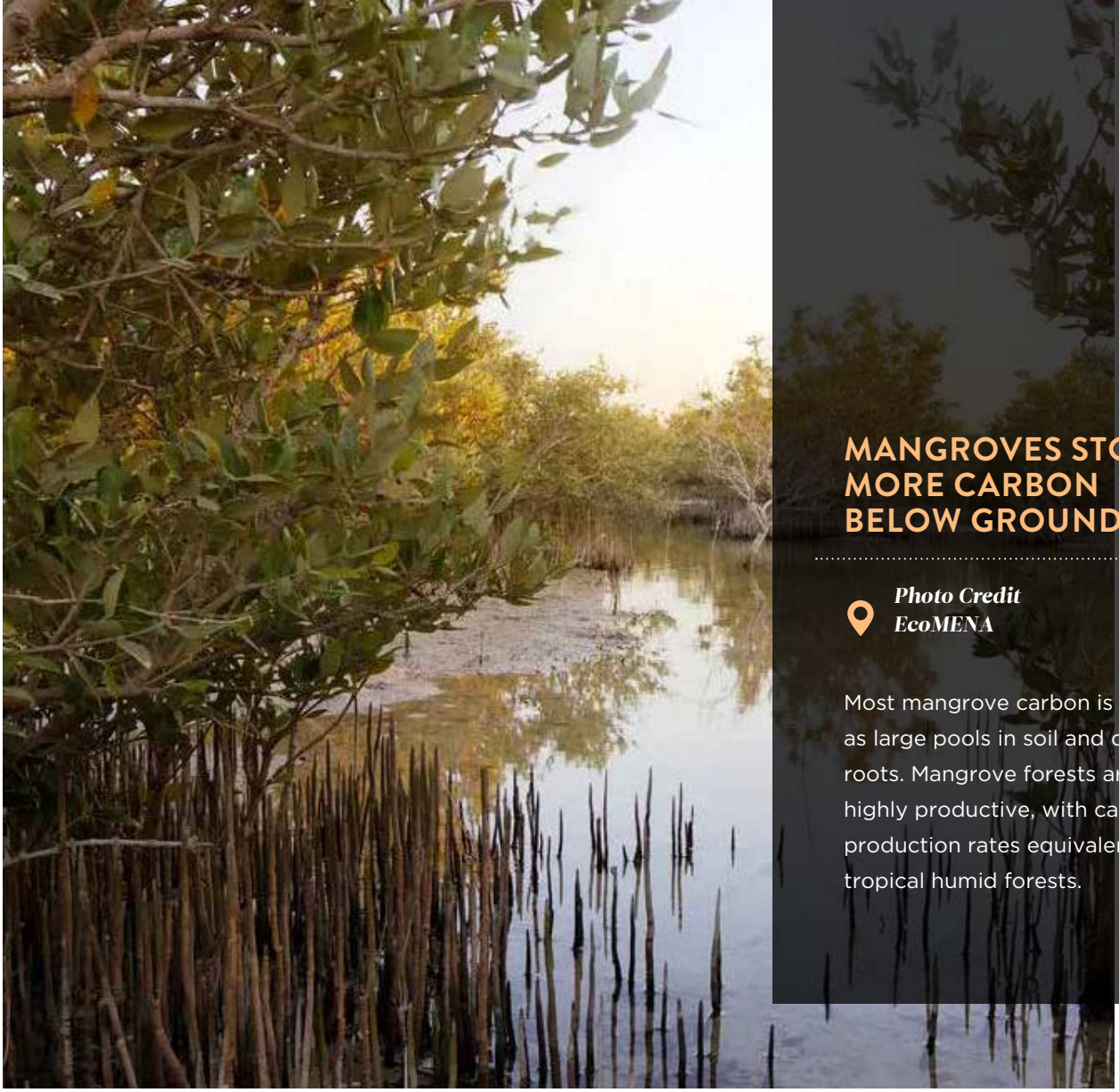
The bank’s Corporate Responsibility head, Ms. Basma Al-Jawhari, expressed pride in reaching this agreement. The Saudi bank’s efforts fall under their more wide-ranging corporate responsibility program which engages in several philanthropic projects, named “Ahalina.”

Raed Albasseet, Group Chief Environment and Sustainability Officer at Red Sea Global explained that their mangrove nursery supports their goal to plant 50 million mangrove trees by 2030. “In collaboration with National Center for Vegetation Cover this project supports

ECOSYSTEM CARBON STORAGE

DIFFERENCES IN WHOLE-ECOSYSTEM CARBON STOCK





MANGROVES STORE MORE CARBON BELOW GROUND.

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Most mangrove carbon is stored as large pools in soil and dead roots. Mangrove forests are highly productive, with carbon production rates equivalent to tropical humid forests.

Saudi Green Initiative's national objectives as well as Red Sea Global's ambition to deliver a 30% net conservation benefit by 2040."

Mangrove tree growth creates one of the most effective types of forests for mitigating climate change. They are salt-tolerant trees and shrubs that typically grow in tropical and subtropical intertidal zones.

"We are proud of our track record as a reliable corporate citizen and our close association with projects that support the common good," said Ammar Abdulwahid Alkhudairy, Chairman, Saudi National Bank.

As with almost all types of terrestrial flora (plants), mangroves sequester carbon through photosynthesis, converting atmospheric CO2 into organic matter. Much of this carbon is stored in the tree's biomass: roots, stems, and leaves. Importantly, mangroves also trap carbon-rich sediments within their extensive root systems. This carbon is stored in the soil—for centuries—due to the slow decomposition rates of the waterlogged, oxygen-poor environment. It is because of their unique water-saturated soil environment that mangroves hold four times the amount of carbon dioxide when compared to other forested ecosystems, such as temperate and boreal forests. This was confirmed in a study by the United States Department of Agriculture Forest Service Southwest Research Station, in

2011, authored by Prof Daniel C. Donato.

“Mangrove forests rank among the most intense carbon sinks in the biosphere, locking much more carbon into their soils than tropical forests,” explained Professor Duarte. Carlos Duarte is a distinguished Professor of Marine Science at King Abdullah University of Science and Technology.

MANGROVES AND BIODIVERSITY FLOURISH ALONG SAUDI ARABIA'S COAST

Saudi Arabia has an extensive coastline along the Red Sea and the Arabian Gulf (Persian Gulf) that is rich in biodiversity. The Kingdom’s mangrove habitat in 2020 was 77.10 km2 according to Global Mangrove Watch, an organization that monitors mangrove growth. The Kingdom’s General Authority for Statistics estimates Saudi Arabia’s Red Sea coastline runs for 1,760 kilometers (1,100 miles) while its Arabian Gulf coastline is roughly 560 kilometers (350 miles). Based on a report by the Saudi Council of Economic and Development Affairs, the marine and coastal ecosystems holds over 1000 fish species, 300 species of coral, 100 species of birds, and more than 2000 mollusks species.

Mangroves are found in coastal areas where saltwater and freshwater mix, such as in estuaries and coastal tidal areas. In Saudi Arabia, the majority of mangrove forests are found on the eastern coast of Red Sea between Jizan in the south and Dibain in the north while on the Gulf coast they are limited to the Dammam area. Along the Red Sea, mangroves are found in areas such as Al Darb, Al Raqabah, Al Qahmah, Wadi Dhahaban, Rabigh area in Jeddah, Jizan and Farasan Island.

CARBON REDUCTION IS KEY RESULT OF SNB'S MANGROVE PLANTING

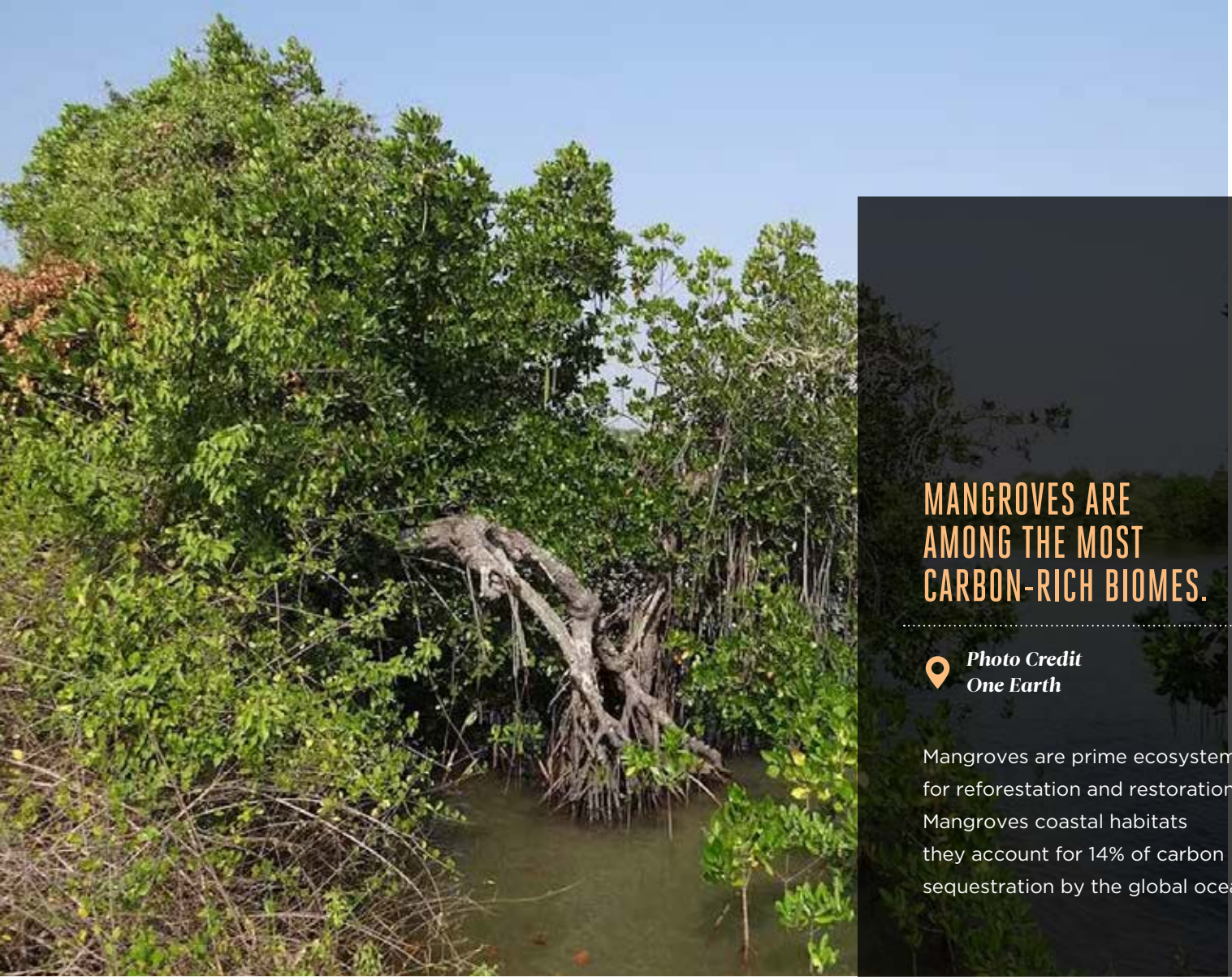
Each new mangrove tree planted by the Saudi National Bank reduces the total amount of carbon dioxide in the atmosphere. Global Mangrove Watch estimates that the amount of organic carbon all mangrove forests sequester globally is estimated at 22,000 Mt CO e. Roughly 85% of carbon is stored in the top one meter of soil while the remaining 15% of the carbon is stored in the above-ground biomass. The Saudi mangrove carbon storage is estimated to be nearly 10.00 Mt COe.

As important as mangroves are for reducing atmospheric carbon, they serve as critical nurseries and habitats for Saudi’s diverse array of marine life, including fish, crustaceans, and various bird species. The intricate root systems provide shelter and breeding grounds, protecting young marine organisms from predators. Nutrient-rich detritus from mangroves forms the base of complex food webs, supporting abundant and diverse life forms. Additionally, mangroves contribute to water quality by filtering pollutants and trapping sediments.

Globally, there are approximately 70 species of mangroves, belonging to around 28 genera and 20 families. The two species of mangroves in Saudi Arabia are Avicennia marina (Forssk.) and Rhizophora mucronata (Lam.). In many parts of the world, including Saudi Arabia, mangrove forests provide food sources, like fish and shellfish. Economically, they support industries such as fishing and tourism.

WHILE OCEAN ACIDIFICATION THREATENS MARINE LIFE, MANGROVES PROVIDE VITAL PROTECTION

Carbon dioxide (CO2) is harmful to marine ecosystems because it makes the oceans more acidic. When carbon dioxide (CO2) dissolves in ocean water, it undergoes a chemical reaction with water molecules to form carbonic acid (H2CO3). The chemical reaction increases



MANGROVES ARE AMONG THE MOST CARBON-RICH BIOMES.

Photo Credit
One Earth

Mangroves are prime ecosystems for reforestation and restoration. Mangroves coastal habitats they account for 14% of carbon sequestration by the global ocean.

the concentration of hydrogen ions resulting in a decrease in the ocean's pH level. Corals are highly sensitive to changes in pH levels. Increased acidity inhibits the growth and calcification of coral reefs, leading to coral bleaching, decreased resilience to stressors, and reduced biodiversity. Acidic conditions make it challenging for shellfish to form and maintain their shells and exoskeletons. Overall changes in ocean chemistry disrupt the balance of the marine food web and alter marine ecosystems leading to shifts in biodiversity and the collapse of fish populations.

Mangroves help to reduce ocean acidification, explained Professor Carlos Duarte, "We discovered that Red Sea mangroves activate an additional mechanism — an alkalinity emission from dissolution of the carbonate in the bedrock they grow on, which we estimate amplifies their carbon removal capacity by 23 times."

The Saudi National Bank commitment to tree-planting contributes to carbon reduction globally and biodiversity locally. When interviewed for this report, Rawan M. Alharbi said, "SNB Bank is committed to corporate social responsibility. We actively engage in initiatives that support the community, promote sustainability, and create a positive impact on society." Alharbi is an officer with SNB.

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