# [***KAUST drive in mangrove forest conservation to offset carbon emissions***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:6615-5Y41-JDJN-61XH-00000-00&context=1516831)

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**Body**

THUWAL - ***Mangroves*** are increasingly being recognized as important players in the fight against climate change. King Abdullah University of Science and Technology (KAUST) has embarked on an ambitious drive in the ***mangrove*** forest conservation and enhancement as a key part of the university ever since its establishment.

The university is spearheading the planting of ***mangroves*** in the winter of 2022 in KAUST's Nature Conservation Area as a project initiated to raise awareness of the negative environmental impact associated with travel-related carbon emissions. With one "foot" on land and one in the water, these amphibious plants provide food and shelter for many animals, including birds, crabs, lizards, shrimp, mollusks, stingrays, snails and fish.

"KAUST is home to a thriving ***mangrove*** forest spanning more than 110 hectares, including a Nature Conservation Area," said Dr. Mohamed Omar, Environmental Protection Manager in the KAUST Health, Safety and Environment (HSE) department. "Compared to other terrestrial forests, the extensive network of ***mangrove*** roots provides an ample opportunity for carbon to sink."

On his part, KAUST Professor Dr. Carlos Duarte said: "***Mangrove*** forests rank among the most intense carbon sinks in the biosphere, locking much more carbon into their soils than tropical forests. However, when disturbed, the carbon in the soils may be emitted as CO2, so there is an opportunity for climate benefits in both avoiding ***mangrove*** losses and restoring lost ***mangroves***."

***Mangroves*** are referred to as ***blue carbon*** sinks because of their association with coastal areas; "blue" for water, in contrast to "green" carbon that is linked with land-based trees.

Although ***mangrove*** forest conservation and enhancement have been a key part of KAUST since its early days, the planting of ***mangroves*** in the winter of 2022 in KAUST's Nature Conservation Area was a project initiated to raise awareness of the negative environmental impact associated with travel-related carbon emissions.

As part of KAUST's 2022 Winter Enrichment Program (WEP), Event Chair and KAUST Professor Dr. Peiying Hong discussed with the HSE Department about ways of collaborating to make the event more sustainable. "Every year, WEP aims to enrich our students' learning experience by inviting globally renowned speakers to share their perspectives in person at KAUST. This incurs a large carbon dioxide footprint," Hong said, adding: The WEP theme for 2022 was resilience, and a main focal message of the program was to explore ways to mitigate various tipping points, such as climate change and exhibit resilience. Hence, we wanted to stay true to our theme."

Indeed, the HSE team estimated that this year's WEP speakers covered about 200,000 kilometers in long-distance travel. Having calculated their carbon emissions, the WEP team, in collaboration with HSE and Facilities Management (horticulture), decided to plant more than 200 ***mangrove*** plants to not only offset their emissions overtime but also raise awareness about their carbon capture abilities.

In the years since KAUST has become a custodian of ***mangroves***, some important discoveries have been made. Duarte said, "We discovered that Red Sea ***mangroves***, which rank toward the low end in terms of organic carbon sequestration in their soils and biomass, activate an additional mechanism - an alkalinity emission from the dissolution of the carbonate in the bedrock they grow on, which we estimate amplifies their carbon removal capacity by 23 times."

KAUST's ***mangrove*** conservation efforts have also revealed how quickly and effectively ***mangrove*** colonies can expand when preserved properly. "Our ***mangrove*** forest has grown around 45 percent between 2005 and 2020," Omar said, adding, "this remarkable growth is a combination of natural colonization, replantation efforts, and environmental policy intervention."

***Mangrove*** planting and restoration projects represent a cost-effective way of boosting carbon capture capacity, especially if planned and executed properly, as has been the case at KAUST so far. Hong said, "The planting of ***mangroves*** in this instance is more beneficial than planting land-based trees, which require freshwater irrigation. ***Mangroves*** do not need irrigation water since they are planted directly in the coastal areas of the sea."

Already part of the natural landscape of many communities around the world, ***mangroves*** serve as a non-invasive carbon mitigation measure, a nature-based solution that has an important role to play in the future.

"***Mangroves*** are definitely one of the ways to achieve our carbon mitigation goals, not simply because they sequester carbon, but also because they offer huge benefits for coastal protection and many other advantages, including fishery enhancement," Duarte said. Over the past decade, the level of awareness on ***blue carbon***, and specifically the role of ***mangroves***, has grown. This education must continue, both at policymaker and public levels to boost engagement and uptake of ***mangrove*** projects;" he added.

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