



**Regional Organization for the Protection of the Marine Environment (ROPME)**

**ROPME POLICY BRIEF**

# **BLUE CARBON IN THE ROPME SEA AREA**

**Blue carbon is carbon captured and stored in the marine environment.**

The ability of blue carbon ecosystems to remove CO<sub>2</sub> from the atmosphere means that they play an important role in climate change mitigation. Tidally influenced coastal ecosystems are particularly efficient at the capture and long-term storage of carbon.

Blue carbon ecosystems also provide a range of benefits that are essential for climate change adaptation, including coastal protection and food security.

Despite their importance, blue carbon ecosystems are being degraded and lost at an alarming rate. Damage to these systems results in the reduction or loss of their carbon capture ability and can lead to the release of carbon back into the atmosphere.

The ROPME Sea Area (RSA) is host to a diverse set of blue carbon ecosystems including mangroves, seagrass and saltmarshes, along with coastal sabkhas (saltflats) and microbial mats.

Effective management strategies are required to protect, restore and expand blue carbon ecosystems across the RSA, if the full potential benefits of blue carbon are to be realised.

**2021**

# BLUE CARBON ECOSYSTEMS

To support effective management of these ecosystems, ROPME coordinated the first regional-scale analysis of the extent and location of blue carbon ecosystems in the RSA and compiled data on the amount of carbon they capture and store.

The ROPME regional blue carbon map (opposite) provides an estimate of the location and extent of the five key blue carbon ecosystems. This was compiled from national, regional and global datasets, and refined and validated by regional blue carbon experts to create the final map.

Table 1: Estimated blue carbon ecosystem extent, organic carbon storage and accumulation rates across the RSA. There is significant uncertainty associated with these estimates, as explained in the ROPME Blue Carbon Inventory Report.

Ecosystem	Spatial extent (km <sup>2</sup> )	Carbon stock (Mega-tonnes)	Carbon accumulation (Tonnes per year)
Seagrass	6,759	40,824	60,831
Saltmarsh	336	2,856	2,621
Mangrove	302	5,605	6,946
Coastal sabkha	7,350	60,564	No data
Microbial mat	262	3,506	No data



## ● SEAGRASS

Despite only storing limited amounts of carbon per unit area, seagrass is the most widespread blue carbon ecosystem in the RSA and, as a result, accumulates the most organic carbon each year.

## ● SALTMARSH

Saltmarsh extent in the RSA is uncertain due to very limited data for some parts of the RSA. They are most extensive along the low-lying coastline of the Inner RSA, although they are under pressure from coastal development and rising sea levels.

## ● MANGROVE

Although mangrove extent in the RSA is relatively small, of all of the blue carbon ecosystems found in the RSA they are the most extensively studied. Mangrove patches in the RSA are highly fragmented and include mature mangroves as well as patches of planted mangroves. Mature mangroves typically capture and store more organic carbon than planted mangroves.

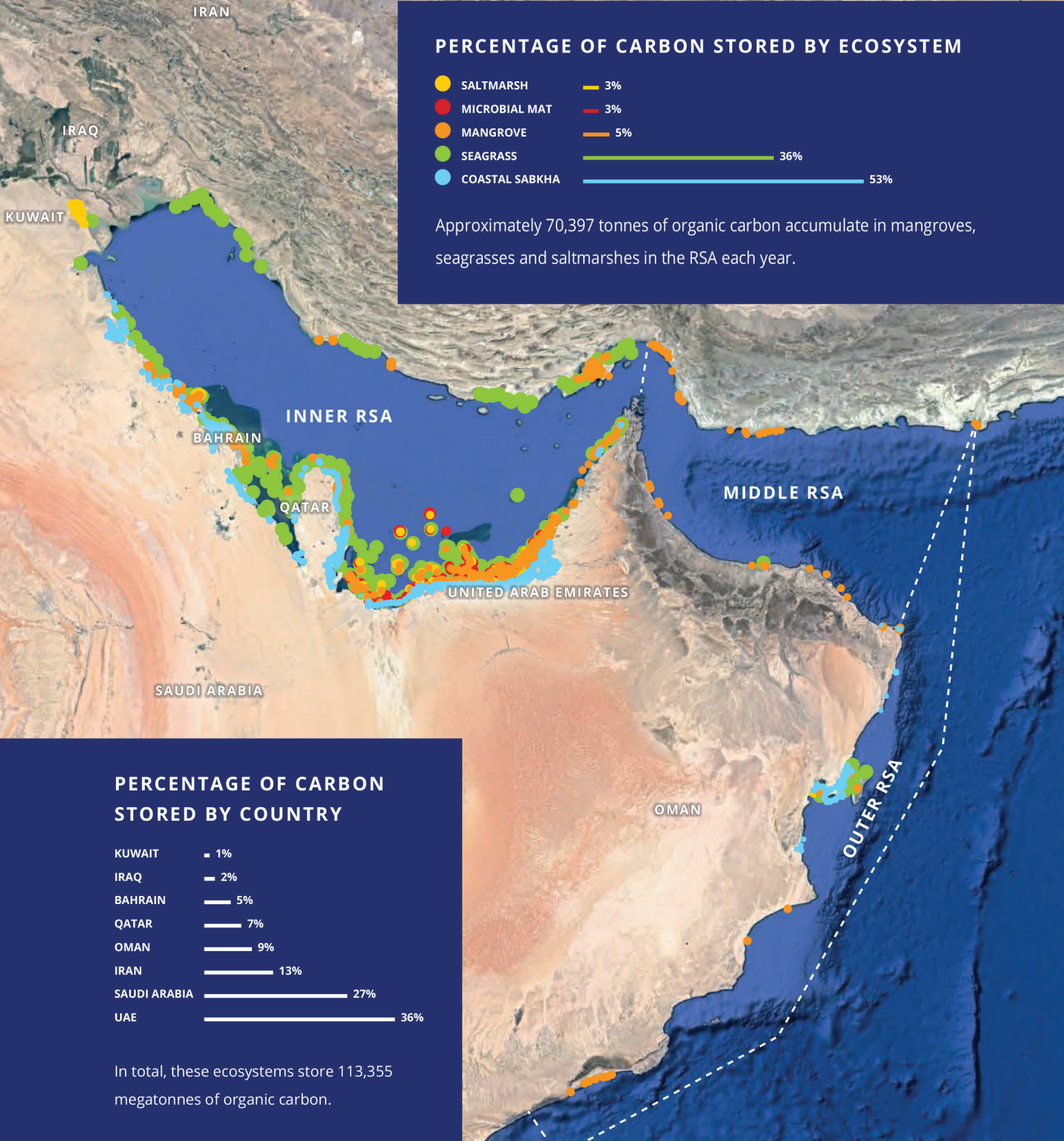
## ● COASTAL SABKHA

Coastal sabkhas are the most extensive of the five blue carbon ecosystems assessed in this study. They are not currently included in internationally recognised lists of blue carbon ecosystems but they have been shown to store approximately 50% more organic carbon per unit area than seagrass. There are currently no estimates of the rate of carbon accumulation for this ecosystem.

## ● MICROBIAL MAT

Regional studies on the extent of microbial mats are scarce and they are not currently included in internationally recognised lists of blue carbon ecosystems. However, research indicates that this ecosystem has the highest carbon density in the RSA. There are currently no estimates of the rate of carbon accumulation for this ecosystem.



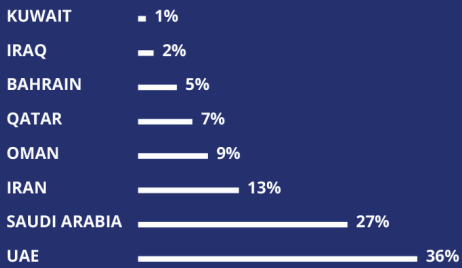


**PERCENTAGE OF CARBON STORED BY ECOSYSTEM**



Approximately 70,397 tonnes of organic carbon accumulate in mangroves, seagrasses and saltmarshes in the RSA each year.

**PERCENTAGE OF CARBON STORED BY COUNTRY**



In total, these ecosystems store 113,355 megatonnes of organic carbon.

## BENEFITS OF BLUE CARBON ECOSYSTEMS

Blue carbon ecosystems in the RSA make a relatively small contribution to the removal of carbon from the atmosphere, when compared to total greenhouse gas emissions from ROPME Member States. However, maintaining these ecosystems ensures the continued capture and storage of carbon and that existing carbon stocks are not released into the atmosphere.

Furthermore, blue carbon ecosystems provide a wide range of important environmental and societal benefits which make the conservation, restoration and expansion of these systems of critical importance. Among others, these benefits include the provision of feeding and nursery grounds for marine species, and the role of blue carbon ecosystems as physical barriers to storms and coastal flooding.

## ROPME MARINE CLIMATE CHANGE REGIONAL ACTION PLAN

This Policy Brief and the underlying ROPME Blue Carbon Inventory Report are part of the ROPME Marine Climate Change Regional Action Plan. This Plan is building a coordinated regional evidence base and sharing best practice across the RSA to support ROPME Member States to meet UNFCCC requirements.

### ACKNOWLEDGEMENTS

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