Blue carbon in the Middle East and North Africa (MENA)

What is blue carbon?

Blue carbon: Carbon stored in coastal and marine ecosystems, such as mangroves, seagrasses, and seagrasses.

Why is blue carbon important?

- Blue carbon ecosystems capture and store carbon and provide a range of ecosystem services, including biodiversity conservation, coastal protection, and fisheries.

Blue carbon as a climate solution

The MENA region still experiences increasing impacts of climate change. Climate change damage is expected to reach between 1.1 and 1.9% of the regional Gross Domestic Product (GDP) by 2050.

Mitigation: Blue carbon ecosystems can sequester and store up to 5 times more carbon than terrestrial ecosystems.

Adaptation: Blue carbon ecosystems protect coasts from flooding and erosion, contribute to food security, and support livelihoods for local communities.

Blue carbon ecosystems in MENA

MENA’s blue carbon ecosystems cover around 44,600 km², representing 99% of the blue carbon ecosystems in the region.

<table>
<thead>
<tr>
<th>Region</th>
<th>Seagrass area</th>
<th>Mangroves area</th>
<th>Total carbon sequestered</th>
</tr>
</thead>
<tbody>
<tr>
<td>MENA’s total</td>
<td>3,529 km²</td>
<td>1,422 km²</td>
<td>1,447 (ton CO₂e)</td>
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</tbody>
</table>

These three blue carbon ecosystems capture about 6.2 million tC per year, or nearly 8% of the world’s blue carbon potential.

The economic value of blue carbon in MENA is estimated at US$974 million – US$16.2 billion per year, depending on the social cost of carbon used. In addition, blue carbon has a potential to generate financial revenue through carbon markets.

How to assess blue carbon ecosystems?

1. Remote sensing and in-situ data.
2. Seagrass meadows occupy 18% of the total areas that are good for 80% of the world’s seagrasses.
3. Seagrasses meadows can provide the best available information on the seagrass ecosystems.

How to assess blue carbon ecosystems?

1. Remote sensing is one of the techniques to map and monitor blue carbon ecosystems. In Tunisia, seagrass meadows in the Gulf of Gabes and around Kerkennah islands were mapped using remote-sensing satellite data.

2. Seagrass meadows occupy 18% of the total areas that are good for 80% of the world’s seagrasses.

3. Seagrasses meadows can provide the best available information on the seagrass ecosystems.

4. Seagrass meadows play a crucial role in fisheries by providing nursery habitats. In the Mediterranean Sea, seagrass declined by 20% during 1986-2016. Monitoring should be strengthened to better conserve and manage the blue carbon ecosystems.

5. Changes in oceanic conditions, such as temperature and sea level rise, can affect the accuracy of monitoring blue carbon ecosystems. Therefore, oceanographic surveys and local knowledge can enhance monitoring.

6. Monitoring and management of blue carbon ecosystems are essential to support the Paris Agreement.

Recommendations

Data and Analytics

- Improve knowledge on the blue carbon ecosystems.
- Data on the blue carbon ecosystems is limited in MENA, and the blue carbon ecosystems should be measured, including the area covered, the species compositions, the ecosystem health, and the carbon storage. Earth observation can be a useful and cost-effective tool for mapping blue carbon ecosystems and estimating carbon storage.
- Earth observation has a potential to map seagrass ecosystems in the region and monitor changes and species.
- However, limitations and uncertainties of the earth observation data, such as pixel size, spatial and temporal resolutions, can affect the accuracy of monitoring blue carbon ecosystems. Therefore, local knowledge can enhance monitoring.

Policy and Institutions

- Integrate blue carbon conservation in the blue economy strategies and roadmaps.
- Establish Marine Protected Areas (MPAs) or other Effective Area-Based Conservation Measures (EABCs) with management measures for blue carbon ecosystems.
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Finance

- Use public expenditure review or blue economy needle assessments.
- Integrate blue carbon into nationally-determined contributions (NDCs) under the Paris Agreement.
- Establish Marine Protected Areas (MPAs) or other Effective Area-Based Conservation Measures (EABCs) with management measures for blue carbon ecosystems.
- Adaptation: Blue carbon ecosystems protect coasts from flooding and erosion, contribute to food security, and support livelihoods for local communities.

Use the Blue Carbon Readiness Framework to assess your country’s blue carbon readiness.