ENVIRONMENT AGENCY – ABU DHABI

Marawah Marine Biosphere Reserve (MMBR), Abu Dhabi, UAE and the Extractive Industry: An Exemplary Model

The 4th World Congress of Biosphere Reserves
14-17 March 2016 – Lima, Peru
Why Presenting Marawah MBR?

How we do things in Abu Dhabi?

State-Pressure-Response

Case Study: Marawah MBR & Energy Sector

The Way Forward
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MARAWAH MBR & PROTECTED AREA NETWORK OF ABU DHABI
Accounts for nearly 9% of the Marine Biome & high representation of critical habitats
ECOLOGICAL VALUES OF MARAWAH BIOSPHERE RESERVE

Indicator of wildlife & critical habitats

• Over 80% of endangered Dugong population, 2nd largest after Australia
• Nearly 83% of the total turtle population within the MPAs
• Stable & suitable to Increasing Critical Habitats – mangrove and coral reef areas are increased
MMBR AND CLIMATE CHANGE VALUES
Species & habitats survive in extreme environment

- Water Temperature reaches 36°C & persist for weeks
- Coral Bleaching & Species migration rates - less comparable to other tropical seas
- Species highly resilient & adapted to harsh conditions

*MMBR is an open laboratory for climate change studies on the biological systems*
MMBR AND ARCHAEOLOGICAL VALUES

Richest Archaeological records of any island in the Gulf region - late Stone Age

- Evidence from 6th millennium BC to Bronze Age, Iron Age, Pre-Islamic & Islamic periods

Discovery of the oldest human remains at Marawah Island
Fish landing at BR is 30% of the whole Emirate

50% of the fish biomass produced from MPAs

Direct use value of the MMBR is estimated at $12 million/annum

Indirect use value of mangroves in the MMBR is estimated at US$ 9 M/y
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UPHOLDING LEGACY OF FOUNDERS

Integrated Planning to ensure sustainable development

• Diversified economy to guarantee long-term prosperity for current and future generations

• Sustainable range of energy sources

• Conscious responsibility to safeguard nature and mitigate the effects of climate change and reduce footprint on its habitat and ecosystems
WHOLE OF GOVERNMENT APPROACH
From Policy Agenda to Operation Plans

Policy Agenda

Abu Dhabi Policy Agenda

Abu Dhabi Environment Vision 2030

Abu Dhabi Emirate Plan

EAD Strategy

Entities Strategic Plans

EAD Strategic Plan

Entity Operating Plans

20-year view

5-year view

1-2 year view

Abu Dhabi Emirate Plan
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STATE & PRESSURE: DEMAND FOR RESOURCE EXPLOITATION

9 million population and 10 GDP

**6th & 7th largest oil & gas reservoirs**

**8th largest producer of oil**

**17th largest producer of gas.**

The world’s **3rd largest oil exporter**

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<thead>
<tr>
<th>Potential Impact</th>
<th>Climate change</th>
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<td>Habitat destruction</td>
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<td>Endangered Species</td>
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Potential Impact:

- Climate change
- Habitat destruction
- Endangered Species
Integration tactic dissolves the fragmented zones into areas of compatible uses & provides a platform for integration in:

- Spatial 3D Space
- Time: 4D
- Function: 5D

Mechanism to ensure the MMBR maintains a balanced and diverse array of uses and activities within a responsibly managed planning framework.
RESPONSE 2
From Challenges to Opportunities

<table>
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<tr>
<th>Challenge</th>
<th>Opportunity</th>
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<tbody>
<tr>
<td>Global economic recession</td>
<td>• Government support continued</td>
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<td>Natural &amp; anthropogenic threats on ecosystems</td>
<td>• Well conserved unique natural land and sea scape</td>
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<td>Impact of development processes</td>
<td>• Stringent EIA review &amp; assessment</td>
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<td></td>
<td>• Habitat rehabilitation (mangrove plantation, artificial reef projects)</td>
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<td>• Port developments</td>
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<td>• Community waterfront facilities</td>
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<td>• Highest EHS standards for oil and gas exploration / exploitation</td>
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CO-EXISTENCE
Optimum Compatible uses of Maritime Domain
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OIL & GAS FIELDS AT MMBR (HAIL & GHASHA)

Strategic & economic importance to the UAE

• Field development commenced Hail 1968, Ghasha 1970
• Largest undeveloped gas reservoir in the Arabian Gulf
GHASHA / HAIL FIELD HISTORY AND RECOGNITION OF MMBR

An example of close collaboration of Environment & Oil Industry

**HAIL TIMELINE**

- Hail-2 Drilled Arab Gas Discovery
- Hail-1 Drilled Thamama Oil Discovery
- Hail-3 & Hail-4 Drilled
- Marawah declared as an MPA 2001
- Marawah accredited UNESCO BR Status 2007
- Hail-6 Results

**GHASHA TIMELINE**

- 1968
- 1970
- 1971
- 1972
- 1983
- 1985
- 1993
- 2002
- 2007
- 2008
- 2012
- 2013-2014
- 2015

- Field Discovered
- Report: Future Prospects of Ghasha
- Last Appraisal Well Drilled
- Report: Ghasha Geological Evaluation
- Report: Ghasha Butini Study
- Ghasha Task Force Assess & Select Stage Studies
- 3D Seismic Feasibility Pilot
- ADNOC, ADMA, Occidental Joint Study
- ADNOC- OXY TEA
OIL AND GAS EXTRACTION CHALLENGES
Hail & Ghasha Oil & Gas Reservoir at the core of UAE energy strategy

• Diverse environmental settings
• High protection status
• Rare and endangered species & habitats
• Fragile core areas, buffer & transition zones

exploitation of the resources in the most safest manner
EXTRAORDINARY PRECAUTIONS TAKEN DURING EXPLORATION
Application of JNCC guidelines during 3D Seismic Surveys and strict EIA review

• Minimize risk of injury & disturbance to marine mammals in shallow coastal 0-25m depth (normally oceanic >100m water depth)

• Develop H&G project specific 3D seismic guidelines for transition zone habitats

• Comprehensive pre-acquisition surveys to identify & geo-reference sensitive fauna & habitats

• Minimum 50m no entry cordons around active nests, species congregations or sensitive habitat

Photo Credit: UAE: Grandweld Shipyards Delivers DMSV ARADAH to ADNOC
EXTRAORDINARY PRECAUTIONS TAKEN DURING EXPLORATION

Follow ADNOC guidelines for operation in mangrove areas

- Apply strict near sensitive habitats
- Independent deployment of PAM systems for marine mammals
- Presence of MMR & PAM operators with 500m radial sweeping during surveys
- Monthly meeting & reporting of MMR observations to EAD
- Post-acquisition surveys to confirm restoration of baseline conditions
- End of project environmental & HSE reporting
SUCCESS INDICATORS
MMBR – Energy & Extractive Industry

- **$ 174M**
  - Environmental expenditure
  - 20% for emission abatement and improving energy efficiency

- **76.4%**
  - Reduction in flaring compared to 1995 levels

- **2**
  - Clean Development Mechanism (CDM) projects registered with the UNFCCC
  - 16% Reduction in CO2 emissions from Oil and >8% from Gas
  - Increase investment on renewable energy production (500 times) mainly from solar energy

- **18%**
  - Reduction in NOx emissions due to adopting “Selective Catalytic Reduction DeNOx” process – most efficient method in the market.

- **85%**
  - Effectiveness in MMBR management compared to 53% worldwide level
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WAY FORWARD
MMBR as model for other Biosphere Reserves

• Abu Dhabi will continue to support MMBR for inscription and 10 years review

• MMBR may serve as a role model for other BRs
Thank you