



World's Oceans (including coasts) Ecosystem Services

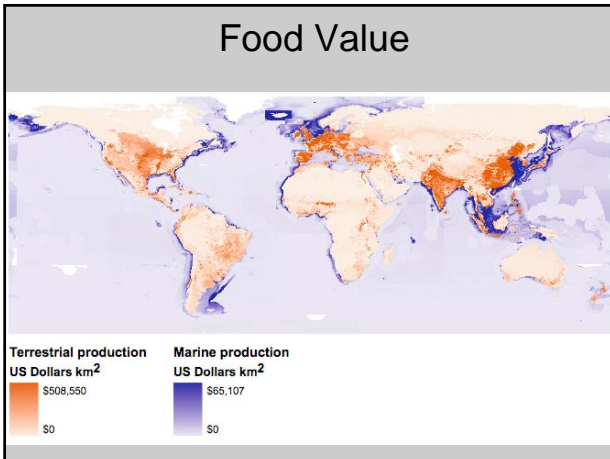
- Oceans, seas, islands and coasts provide many ecosystem services
- Key to
 - global food security
 - economic well-being
 - regulating the world's atmosphere, climate and freshwater systems

Ocean Ecosystem Services

| | Inner Shelf | Outer Shelf | Seamounts | Deep Sea |
|-----------------------------------|-------------|-------------|-----------|----------|
| Food - human | ** | ** | ** | ** |
| Food - animal | ** | ** | | |
| Fiber, fuel | * | * | | * |
| Medicines | * | | | |
| Biodiversity | ** | ** | * | * |
| Nutrient cycling | * | * | * | * |
| Atmosphere/ climate regulation | * | * | | * |
| Employment | ** | ** | * | * |
| Cultural Amenity | ** | | | |

Coastal Ecosystem Services

| | | |
|-----------------------|-----------------------------------|------------------|
| Food | Freshwater | Flood Protection |
| Fiber, timber | Biochemical | Erosion control |
| Medicines | Hydrological | Cultural |
| Biodiversity | Atmosphere/ climate regulation | Recreational |
| Biological Regulation | Human disease control | Aesthetic |
| Nutrient cycling | Waste Processing | |

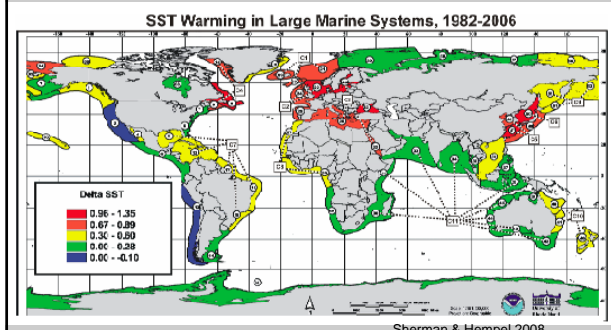


Drivers of Change

- Over-exploitation of living resources
- Population growth/wealth
- Habitat alteration/urbanization
- Nutrient and pollution loading
- etc.

and
Climate Change..

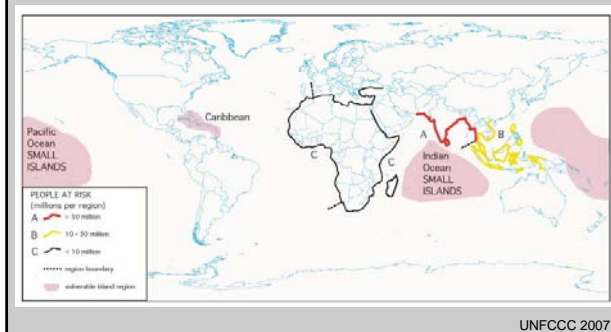
Climate



Ocean/Coastal Changes

- Sea level rise
- Warmer inshore water
- Increased cyclone incidences and severity
- Increased wave action
- Increased rainfall
- Erosion
- Flooding
- Salt water contamination
- Increased harmful algal blooms and diseases
- Coral bleaching
- Invasive species
- Biodiversity decline

Regions Vulnerable to Flooding Mid-estimate (45 cm) by ~ 2080

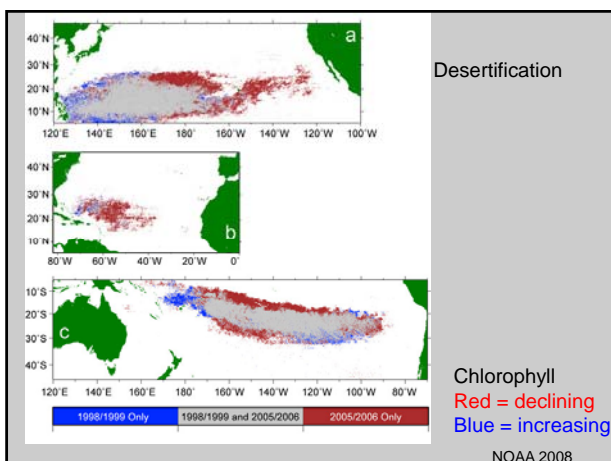


Climate Change Oceans

- Increased sea temperature
- Acidification
- Current patterns
- Storm/waves
- Changes to nutrient cycling - desertification of oceans
- Fish distribution changes

Hobbrook et al 2002

Desertification



UNEP's Response

- Mid-Term Strategy has climate change as one of the six themes
- Climate Change one of the marine priorities
- Small Island Developing States also a marine priority

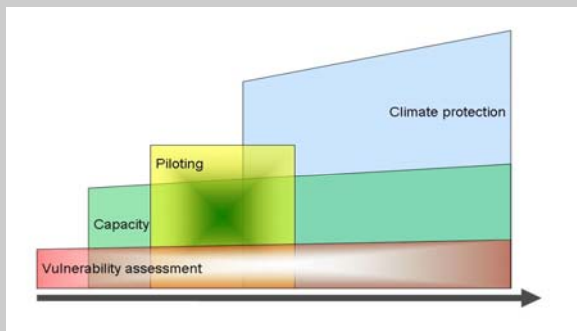


MTS / Marine Priorities

| MTS | Marine Priorities |
|---------------------------|---|
| Climate Change Adaptation | Nutrients/Pollution from LBSA |
| Disasters | Habitat Alteration |
| Ecosystem Services | Climate Change |
| Energy | Ecosystems & Fisheries |
| Harmful Substances | Biodiversity |
| Resource Efficiency | Environmental aspects of high seas governance |
| | Vulnerability of SIDS |

UNEP Climate Change Strategy: 4 themes

- Mitigation: facilitating a transition towards low carbon societies
- **Adaptation: adapting by building resilience**
- Science: improving understanding of climate change science
- Outreach: communicating and raising public awareness



UNEP's Strength

- Meeting the **twin needs** of vulnerable countries for environment protection and economic development and,
- Assisting them in integrating adaptation into their multi-faceted planning and delivery processes.

Challenges to UNEP

- Over-simplification of adaptation as economic development
 - ⇒ Little room left for the environmental aspect which jeopardizes the ecosystem services supporting development
- UNEP's country presence is mainly through environment ministries
 - ⇒ Partnerships with national planners and sectoral ministries as well as local governments are yet to be strengthened

3 Key pillars to support UNEPs Strategy

- Building key adaptive capacity of the developing world
- Increasing ecosystem resilience and reducing the risk of climate-related disasters and conflicts
- Mobilizing and managing knowledge for adaptation policy and planning

Building key adaptive capacity of the developing world

1. Global Adaptation Network
2. Legislators and Planners Forum

Increasing ecosystem resilience and reducing the risk of climate-related disasters and conflicts

1. Sustainable Water Resource Management
2. Integrated coastal zone management
3. Conserving biodiversity
4. Highland-Lowland Partnership
5. Building climate resilient cities
6. Reducing the risk of climate-related disasters and Conflicts

Mobilizing and managing knowledge for adaptation policy and planning

1. Mobilizing knowledge for policy setting
2. Knowledge-Based Planning
3. Adaptative Knowledge-based Management
4. Technology for Adaptation

Thank You

National Adaptation Programmes of Action

For Lesser Developed Countries (49) supported by the UNFCCC

- Human health
- Socio-economic development
- Water
- Agriculture
- Coastal management

32/49 NAPAs completed - Africa, Asia primarily

Common Themes for Coasts and Marine Areas (16 countries)

