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**Coastal Ecosystems – the value of the ecosystem services which mangroves, sea-grasses
and coral reefs provide, including their contribution to climate change adaptation and CO₂
storage and sequestration.**

Breakout Session Information Note

The coastal zone is an area of highly dynamic and productive ecosystems. Human populations and economic activities are concentrated in coastal areas, with 60% of the world's population living within 100km of the seashore and 14 of the world's 17 largest cities located on the coast. This makes coastal ecosystems among the most valuable to mankind in terms of the services they provide. However, coastal ecosystems and their services are rapidly degraded due to multiple and synergistic anthropogenic threats.

The report "The State of the Marine Environment – Trends and processes" prepared for the 2nd GPA IGR meeting in 2006, identifies progress in addressing several GPA pollutant source categories, but also notes that conditions have worsened for sewage, nutrients, marine litter, and physical alteration and destruction of habitats (PADH). This situation is clearly reflected in current coastal ecosystem status and trends¹:

- A fifth of the world's coral reefs have already been lost, with over a third either at a critical stage or threatened. More than 60 percent of the world's reefs are under immediate and direct threat from one or more local sources, with over-fishing and climate change related threats the most pervasive. These threats are compounded by poor water quality due to coastal and watershed-based activities.
- Half of the world's original mangrove forest has disappeared, and the present annual global rate of loss is between one and two percent. The major driver has been conversion for agriculture, aquaculture and coastal development as well as over-harvesting, but upstream activities including diversion of fresh water and altered sediment supply is also of concern. Increasingly, sea-level rise is predicted to cause coastal squeeze or loss of mangrove where hydrography and sediment supply are altered.
- The global area of seagrass beds has declined by almost a third in the last 100 years. The main drivers are sediment loading and eutrophication, largely anthropogenic in origin, leading to an increase in the rate of loss by an order of magnitude in the past 40 years. While the effects of climate change on seagrasses are uncertain it is clear that they are vulnerable to erosion and increased sedimentation and turbidity.

¹ UNEP/GPA/IGR.3/INF/5: Coastal Ecosystems – Values and Services

- Between a quarter and half of the world's tidal marsh area is estimated to have been lost due to human activity, with current annual rate of loss 1-2%. This has been driven largely by conversion of salt marsh for agriculture and pasture. Today's most pervasive threat is believed to be accelerated sea level rise.

Some progress has been made on developing partnerships to address wastewater, nutrients and marine litter, and some national as well as regional efforts towards management of coastal areas and watersheds are underway that also address PADH. However, there remains a pressing need to enhance and scale up efforts that mitigate these key source categories, given their links to coastal water quality, ecosystem health as well as human wellbeing, and the persistent nature of the problems that they pose. Broader integrated management approaches should be catalyzed including national programmes of action effectively linked with regional and global frameworks².

Challenges in safeguarding coastal ecosystems and services

As indicated above the main drivers of coastal ecosystem degradation are known. Several coastal ecosystem services are well understood, and can in some instances be quantified and valued using available methodology. There is increasing recognition that consideration of values of ecosystems and ecosystem services, and investing in ecosystem services, constitutes key strategies in developing a Green Economy. There is also increasing recognition that healthy, well-functioning coastal ecosystems enhance natural resilience to the adverse impacts of climate change and reduce the vulnerability of coastal people. Integrated, ecosystem-based approaches are enshrined in global, regional as well as national policy frameworks, including the Regional Seas Conventions and Action Plans.

However, there are several challenges in tackling key source categories as primary drivers of loss of coastal ecosystems and services, including the following:

- National, regional and global estimates of coastal ecosystem area, loss and functioning are challenged by inconsistent datasets and assessment methodologies. This restricts quantification of ecosystem services provision and value.
- The implications of ecosystem change on ecosystem services provision is frequently not sufficiently well understood, or information is not available in formats suitable for integration into decision-making processes for ecosystem conservation, management and the wise and sustainable use of goods and services.
- Scientific and methodological aspects of understanding the role of some coastal ecosystems in regulating atmospheric carbon dioxide concentrations need to be enhanced in order to support appropriate policy and financing decisions at national, regional and global levels.
- Uncertainty in predicting how climate change effects interact with different direct drivers of coastal ecosystem loss and their impact on the functioning of the coastal ocean environment and coastal people limits vulnerability assessment and adaptation planning.
- Multi-stakeholder platforms for development and implementation of spatial planning, biodiversity conservation and marine protected areas within an integrated management framework are often wanting.
- Implementation of integrated, ecosystem-based approaches to coastal and resource management as well as adaptation planning remains restricted by limitations in practical methodology and capacity gaps.

Breakout Session on Coastal Ecosystems

The breakout session on coastal ecosystems includes presentations on priority and emerging issues, followed by a panel discussion geared towards identifying solutions to the challenges in safeguarding coastal ecosystems and the services they provide, opportunities and priorities for Governments in implementing the GPA as well as strategic priorities for UNEP.

The GPA IGR 3 meeting document "Coastal Ecosystems – Values and Service" (UNEP/GPA/IGR.3/INF/5) provides further background information, including on ecosystem status and trends, services and values as well as the international governance framework and UNEP's work.

² UNEP/GPA/IGR.3/3: Policy guidance for implementing the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities over the period 2012–2016