Marine Pollution: Impacts, challenges, approaches

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Outline

• Why do we care?
• Some facts and figures
• Sources, Pathways, Activities
• Impacts of marine pollution
• Existing conventions and processes
• Challenges for development cooperation
• Potential approaches for development cooperation
Why do we care?

- Increasing scientific attention/ knowledge on fragility of oceans, e.g.
  - 2/3 of fish stocks need to recover
  - 1/5 of coral reefs disappeared, ¾ are in danger
  - Concentrations of acid have increased by 1/3 since industrialization
  - Huge garbage gyres, accumulation of micro-plastics in food chain
- Increasing public awareness, especially for marine litter
- Increasing importance accorded to the topic in main client ministries, European policies and global processes
Some facts and figures

• Input of 6-10 million tonnes of litter into the oceans each year, 70-80% from land-based sources, in total 100 million tonnes of plastic

• Great Pacific Garbage Patch four times the size of Germany

• 100,000 marine mammals and 1 million sea birds per year die due to entanglement and ingestion of marine debris

• Economic loss from marine debris in fishing, shipping, and tourism industries in the APEC region estimated at US$1.265 billion annually

• Only 10% of marine oil pollution generated through tanker accidents, rest through regular operation, burned oil particles transported over the atmosphere, wastewater and oil platforms

• Growing exploitation of offshore oil and gas reserves and of marine methane-hydrate and CO2 storage
### SOURCES
- Land-based
- Marine/sea-based

### ACTIVITIES
- Solid Waste Management
- Wastewater Management
- Agriculture/Aquaculture
- Shipping and fishing
- Off-shore Activities
- Air pollution

### PATHWAYS
- Direct discharge
- Runoff
- Atmosphere
- Wind transport
TED talk excerpt – Jeremy Jackson on biological pollution

https://www.ted.com/talks/jeremy_jackson
Impacts: e.g. Marine (plastic) litter

• Entanglement of marine animals
• Destroyed corals, destruction or smothering of seabed
• Ingestion by marine animals: intoxication, malnutrition/ starvation, accumulation in the food chain
• Changed occurrence of microorganisms or temperature in sediments
• Spread of alien species „rafting“ on marine debris
• Important negative effects on income in tourism industry
Impacts: e.g. liquid pollutants, oils and nutrients

- Poisoning, contaminated seafood, bioaccumulation
- Eutrophication: massive creation of algae toxic for animals and humans, reduction of oxygen in deep waters
- Invasive species through ballast water
- Pathogens spread diseases
- POPs (pesticides, PCBs, PFCs etc.) change hormonal system, reduce fertility, weaken immune system, create cancer etc.
Relevant Conventions

- **London Convention** on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1972)
- **Barcelona Convention** (Mediterranean Sea)
- **Lima Convention** (South-East Pacific)
- **Nairobi Convention** (Eastern Africa)
International programs and processes (examples)

- Global program of action for the protection of the Marine Environment from Land-Based activities (UNEP)
- CBD Aichi target 8 on marine biodiversity, CBD Sustainable Ocean Initiative
- SDG process foreseeing a goal on marine protection and a target on marine pollution
- EU Environment Action Program and EU/ ENI support programs with links to marine protection: e.g. Horizon 2020+
Challenges for development cooperation

- Transboundary character: most polluted areas are not necessarily biggest pollution sources
- Sources of pollution difficult to assign and monitor
- Problems of marine pollution not strongly recognized by decision makers
- Priority sectors and programs structured differently (making integrated marine protection or pollution prevention difficult)
Innovative ideas: Clean-up
Potential approaches for development cooperation

• Strengthening the science-politics interface for research, policy design, monitoring…

• Cooperation with tourism sector, fishing industry or port authorities for specific measures to reduce pollution: procurement and waste management standards, fee systems…

• Collaborative and regulatory instruments for mobilizing productive industries to reduce pollution: Extended Producer Responsibility, deposit-refund systems, emission or treatment standards …

• Integrated awareness raising approaches for biodiversity conservation and reduction of pollution

• Economic incentives for reduced use of substances and products polluting the oceans
Thanks for your attention!!

What's in the barrel? Clean water