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Input to partnership dialogues

Prepared by the International Council for Science (ICSU)

1. Addressing marine pollution. This theme would address target 14.1.

a. Issues:

- i. This goal can be expanded to include microbial (bacterial, viral, parasitic) and chemical (both natural such as harmful algal bloom (HAB) toxins and anthropogenic chemicals) – and other related effects such as antimicrobial resistance due in part to human and veterinary use of antibiotics.

b. Knowledge needed:

- i. Lack a global approach to limit land-based marine pollution, and are still learning about the pernicious impacts of nanoplastics, antimicrobial resistance, the future interactions with ocean acidification, and other less-surveyed and studied aspects of the issue-area in the context of climate, environment and other interlinking issues.

c. Potential Actions:

- i. Establishment of a global governance framework for land-based marine debris prevention and appropriate disposal – through strengthening of existing frameworks such as UNCLOS and Honolulu.
- ii. Address the conflicts between increased production on land (nutrient pollution, plastic pollution, nanoparticles and radioactive and toxic substance) and proper waste management and recycling.

d. Potential Outcomes:

- i. Addressing marine pollution will be beneficial for the health and wellbeing of coastal communities and for food security, as well as ensuring biodiversity relevant for the potential research and development of vaccines and medicines.

2. Managing, protecting, conserving and restoring marine and coastal ecosystems. This theme would address targets 14.2 and 14.5.

a. Issues:



- i. Ocean and coastal ecosystems provide a variety of benefits to humans, from coastal inhabitants to global populations.
 - ii. Ocean governance in the Anthropocene era requires improved global responsiveness to wicked-problems through profound and ambitious innovation processes in multilevel and polycentric, ecosystems-based governance structures.
 - b. **Knowledge needed:** This means a need for new or adaptations (reforms and/or simplifications) in existing regional and global institutions with local community involvement.
 - c. **Potential Action:** Focus on delivering targeted restoration of ecosystem services and on increasing ecosystem resilience upon restoration can address multiple SDGs at once (e.g Goal 2 (hunger), Goal 3 (health), Goal 8 (work and economic growth), as well as Goal 14 (water, ocean, seas) and others.
 - d. **Potential Outcome:** Ocean and coastal ecosystems are essential climate regulators. Restoring and protecting the health of oceans and coasts contributes to strengthening the resilience and adaptive capacity of both natural and human systems to climate and other environmental change.
3. **Minimizing and addressing ocean acidification. This theme would address target 14.3.**
 - a. **Issues:** The ocean plays a major role in carbon cycling by currently taking up 25% of the annual emissions and being the dominant long term sink for atmospheric CO₂. The ecosystem goods and services of the ocean are vulnerable to these forcings through ocean acidification, deoxygenation, warming, and eutrophication.
 - b. **Knowledge Needed:** There are as yet unknown effects on the organisms that live in the marine environment from acidification as well as changes to the effects of natural and anthropogenic pollutants on these organisms. Minimally significant impacts on the marine food chain and food security are expected.
 - c. **Potential Action:** creation and implementation of effective controls of atmospheric CO₂ emissions from human activities such as through the UNFCCC framework.
 - d. **Potential outcome:** Minimising ocean acidification will reduce pressure on marine ecosystems and help protect food supplies from the ocean.



4. Making fisheries sustainable. This theme would address targets 14.4 and 14.6.

a. Issues:

- i. Addressing the conflict between food security (fishing, mariculture, and aquaculture) energy (oil and gas, renewables) and sustainable consumption (living marine resources, sands, raw materials, coastal development).
- ii. Marine fish populations that are commercially harvested are managed through a patchwork of state/provincial, regional, national, and international laws and conventions.

b. Knowledge Needed:

- i. Exploring the interactions between growing global use of aquaculture and its impacts on the health of both ecosystems (including wild fisheries) and human populations is essential to sustaining fisheries into the future.
- ii. What adaptations are needed in the architecture of regional fisheries organizations and other regional seas frameworks to a more ecosystems' based approach?

c. Potential Action:

- i. Fostering better engagement between the scientific community and fisheries management, particularly when data is limiting.
- ii. Enforcement of existing laws and regulations and application of existing knowledge.
- iii. The multiuse conflicts between food security (fishing, and freshwater and marine aquaculture) energy (oil and gas, renewables) and sustainable consumption (living marine resources, sands, raw materials, coastal development) must be addressed.

- d. **Potential Outcome:** Adapting fisheries to sustainable levels and eradicating illegal, unregulated and unreported fisheries has a direct link to stabilising and increasing productivity, profitability, and net economic benefits.

5. Increasing economic benefits to SIDS and LDCs and providing access for small-scale artisanal fishers to marine resources and markets. This theme would address targets 14.7 and 14.b.

a. Issues:

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- i. SIDS and LDCs are highly dependent on coastal and marine resources for economic development.
 - ii. Sustainable development needs to take into account the health and wellbeing of the human populations but also the « health » of the ecosystems since they are inextricably intertwined.
 - b. Knowledge Needed:**
 - i. How can we accelerate multi-level implementation of the Voluntary Guidelines for Securing Small-scale Fisheries in the context of Food Security and Poverty Eradication (adopted by Member countries of the FAO in 2014)?
 - c. Potential Action:** This partnership dialogue should be broadened to include “Increasing economic, **environmental** and **nutritional** benefits to SIDS and LDCs.” It is clear that traditional economic development will not have trickle down effects to nutritionally vulnerable segments of society in these locations without nutrition-sensitive policy programming.
 - d. Potential Outcome:** Sustainable development of tourism, fisheries, coastal agriculture, mining, and mariculture can create economic development.
- 6. Increasing scientific knowledge, and developing research capacity and transfer of marine technology. This theme would address target 14.a.**
 - a. Issues:** For some areas of sustainable ocean development, basic scientific knowledge is lacking and investments need to be made to fill knowledge gaps. In many cases, however, the scientific knowledge and expertise may exist, and is applied, in developed countries, but scientific knowledge, expertise, or technology is not available in developing countries.
 - b. Knowledge Needed:**
 - i. We need to best understand how changes in fisheries management and marine conservation will support the nutritional wellbeing of people in SIDS and LDCs in addition to more developed nations. To do this, we must empirically understand the role of seafood in the diet in supporting health. Empirical research must be done on the current diets of coastal nations around the world. And the data requirements needed.



- ii. Research on the nutritional impacts through the foodchain of sea temperature rise, ocean acidification, ocean pollution, and coral bleaching.
- c. **Potential actions:**
 - i. Stimulate the production of knowledge around key areas (in part by developing research capacity around the world through training and transfer of marine technology).
 - ii. Aspects of UNCLOS related to marine scientific research and technology transfer should be implemented more effectively.
- d. **Potential outcomes:** Sustainable ocean science communities in member states that need them the most (better generation of local knowledge for local management, more effective and efficient resource management, more equality with outside resource users in negotiations of usage rights, etc).

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**7. Implementing international law, as reflected in UNCLOS.
This theme would address target 14.c.**

- a. **Issues:** Many pressures and drivers of ocean decline are located on land, outside the mandates of marine management organisations. Greater integration between legal governance regimes for land, air/climate, and ocean will create synergies for SD14, SDG3 and SDG12.
- b. **Knowledge needed:** UNCLOS divided the global ocean into different zones, creating a very complex system of jurisdiction. How can this different jurisdictional entitlement and responsibility be reconciled to create an effective environmental governance architecture of the global ocean?
- c. **Potential Actions:** Greater integration between legal governance regimes for land, air/climate, and ocean will create synergies for SD14, SDG3 and SDG12.
- d. **Potential Outcomes:** UNCLOS divided the global oceans into different zones creating a very complex system of jurisdiction. How this different jurisdictional entitlement and responsibility can be reconciled for environmental governance architecture of the global ocean.



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