

# The ocean in a changing climate: Rapidly growing risk of loss and damage?

Building upon the existing momentum and looking ahead towards a year of exchanges strongly related to the ocean and to an entire decade dedicated to ocean science for sustainable development, GIZ invites you to a timely expert dialogue among science and research, civil society, international organisations and policy to:

- Foster a common understanding of current and future nexus' related challenges, particularly with regards to needs of developing countries at risk, e.g. SIDS,
- Exchange experiences and good practices including tried-and-tested approaches for adaptation and effective management of climate related risks,
- Discuss solutions and options for advanced multi-stakeholder collaboration towards enhanced ocean's and coast's resilience.

## State of departure

The Nexus of Ocean and Climate Change is complex. On the one hand, the ocean plays a crucial role in supporting life on earth. It is the world's largest carbon sink, stores vast amounts of the warming generated by the CO<sub>2</sub> emissions released during the industrial age and acts as a regulator of the global climate<sup>1</sup>. The UN Special Envoy for the ocean Peter Thomson recently stated: "*the ocean [...] is our greatest buffer against climate change, providing us with everything from food to energy, from medicine to employment, along with the oxygen of every second breath we take*". The ocean and adjacent coasts are home to the majority of the world's population<sup>2</sup>; more than 650 million people even live in coastal zones that are lying at a maximum of 10 m above sea level<sup>3</sup>.

On the other hand, climate change is an increasingly important factor to be considered regarding the interactions between the climate, the ocean and communities living in coastal zones. Direct and indirect effects of climate change range from increasingly frequent and severe storms and flooding events to the warming and acidification of ocean waters and the accompanying degradation of biodiversity, to coastal erosion and the loss of land and the salinisation of coastal soils due to rising sea levels. Furthermore, the IPCC sees **compound events and cascading impacts** as a strong threat to coastal communities. The trend of more frequent and severe extreme weather events is predicted to continue in the future; in combination with the described mutual reinforcing effects the risk of loss and damage to both coastal dwellers and the habitats is subject to significant growth.



- What does that mean for the ocean, coasts, ecosystems and communities?
- What is needed at both, the international development and the community level to safeguard and strengthen livelihoods, biodiversity and cultural values in the long-term?

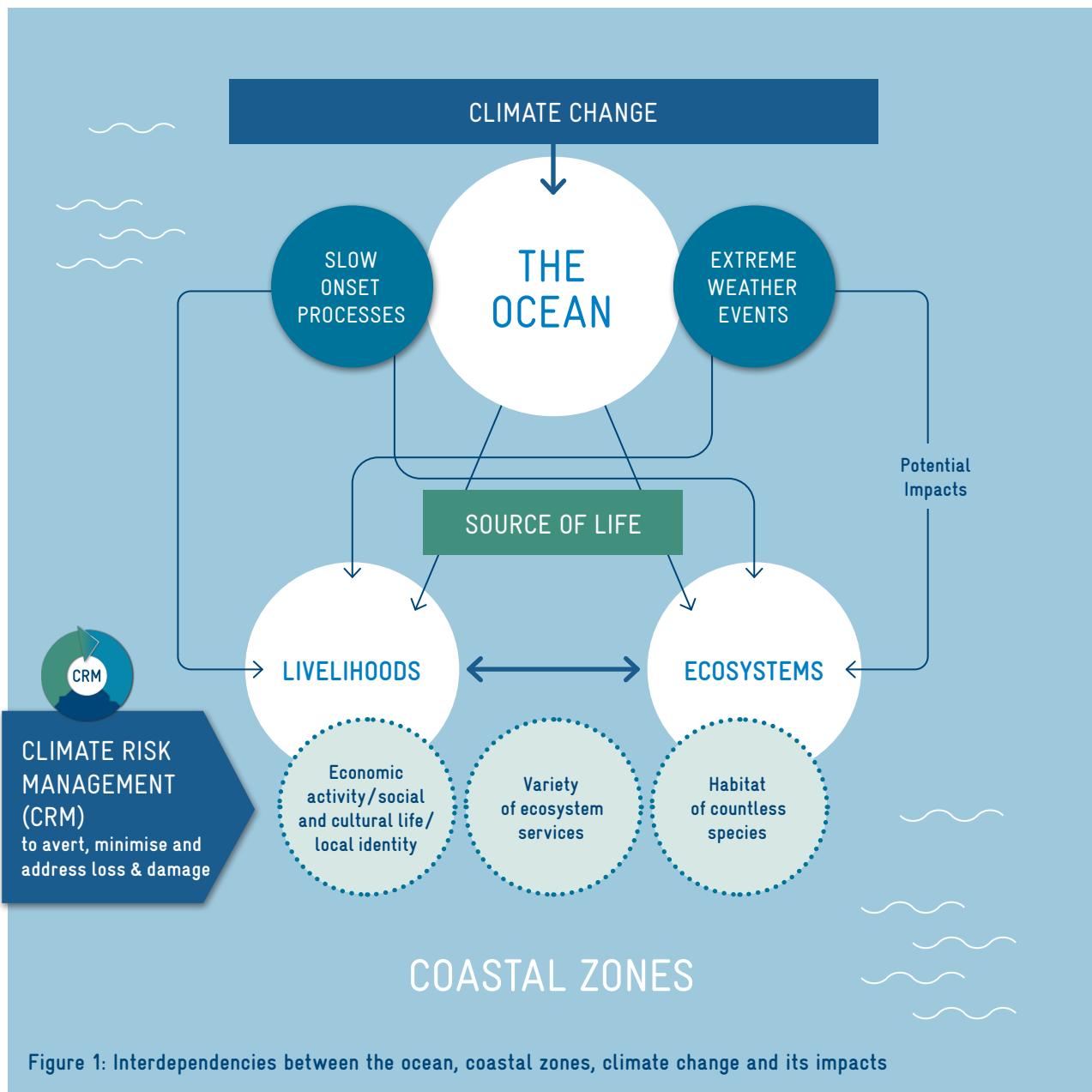


Figure 1 makes an attempt to illustrate the complex interdependencies between the ocean, coastal zones, climate change and its impacts mentioned in the previous paragraph. It becomes obvious that the ocean plays a fundamental role for livelihoods and ecosystems, while at the same time the impacts of climate change are increasingly threatening biodiversity and coastal communities and their social, economic and cultural life.

### The situation of small-scale fisheries

One of the sectors most affected by climate change impacts on the ocean is the fisheries sector. Small-scale marine fisheries are of central importance for economies, local identities, and social and cultural life in many developing countries. Vital oceans are the core of living for SIDS. For more than one billion people, fish represents the main source of animal protein. About half of the fish caught worldwide comes from small-scale fisheries and about 90 % of the total number of people employed in fisheries are working in this very sub-sector. Overall, 97 % of these live and work in developing countries<sup>4</sup>.

<sup>4</sup> FAO (2020): The State of World Fisheries and Aquaculture 2020. Sustainability in Action.

The high level of dependence, both as food and as a source of income, also leads to an increased pressure on nature.

*“The percentage of fish stocks that are fished at biologically sustainable levels has been decreasing and it’s now 65.8 % by number. This means that 34.2 % of all exploited fish stocks, by number, are unsustainably fished” (Manuel Barange, 2020).* Climate change is putting additional pressure on the sector. Not only is the health of ecosystems such as coral reefs threatened which are home to about 25 % of all marine life and provide breeding grounds for fishes<sup>5</sup>. Additionally, the gear of fishermen and required infrastructures are being affected by storms and rising sea levels. Lastly, fish populations migrate due to changes in water temperature among other stressors and catches are projected to decrease.



## Towards a joint agenda: enhancing the ocean's and coast's resilience

Although research in this particular area is advancing, knowledge and modelling of the drivers, processes and consequences is not only limited but involves a high degree of uncertainty. This makes the choice of selecting existing and developing new effective solutions challenging. From the development cooperation perspective, the recognition and understanding of climate-related loss and damage is essential to further advance effective management solutions and their mainstreaming into existing and future projects supporting adaptation measures on the ground. The aforementioned risks cannot only have serious implications globally, but on a regional and local level GIZ's work will be affected, as the majority of our partner countries are directly and to a great degree depending on coastal and marine resources and ecosystem services.

This expert dialogue provides a forum to jointly discuss the identified questions and problems and intends to not only gain an insight into each other's realm of expertise but to merge the different angles in a complementary approach to advance management solutions needed. Distinguished speakers and evidence-based perspectives shall enrich the exchange, while joint discussions shall serve to develop recommendations on pathways and tangible approaches that help developing, piloting and validating innovative solutions needed. With regards to these solutions, specific emphasis will be put on activities within the mandate of development cooperation. Eventually, outcomes of the dialogue can be used to inform future action at the interface of the ocean, coastal communities and industries in a changing climate and shall as well be used as inputs for further discussion, upcoming events and actionable programmes.

<sup>5</sup> [WWF: Oceans. Build ocean resilience to protect nature and secure the needs of people](#)

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