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## The socio-ecologic aspects of nature-based solutions for coastal flooding mitigation

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Coastal flooding has been historically mitigated through engineered artificial (grey) infrastructures such as breakwaters, dikes, and sea walls. However, these structures have a pervasive long-term impact on coastal ecosystems (e.g. sediment transport disruption), and require constant maintenance, and have little resilience to climate change (e.g. hurricanes, sea-level rise) related events. Grey infrastructures failed to mitigate the effects of coastal floods, and the damages were significantly less in areas where healthy coastal ecosystems were present. This highlighted the role and contribution of coastal habitats to mitigate coastal floods and adapt to new conditions. The inefficiency of grey infrastructure to mitigate the impact of extreme events and following ecosystem-based management led to the development of the Nature-Based Solutions (NBS) concept. In the context of coastal flooding mitigation, to reduce the effects of storm surges, wave action, and erosion, NSB can be designed using (1) natural solutions (e.g., the creation of marine protected areas), (2) soft engineering and ecological restoration practices (e.g., mangrove plantation), and (3) hybrid solutions, which integrates natural and grey infrastructures (e.g. artificial reefs). NBS integrate multiple international environmental agendas, for their capacity to provide multiple co-benefits (e.g. recreation, fisheries). NBS are also key for supporting other agendas and global objectives: the Sustainable Development Goals (e.g. SDG14), Green/Blue economy, coastal resilient and climate-adapted coastal communities, biodiversity targets of the Convention for Biological Diversity and Circular Economy.

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