

Overview on Sustainable Coastal Protection Structures

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Abstract : Sustainable design is a prominent concept across all sectors of engineering and its importance is widely recognized within the Arabian Gulf region. Despite that sustainable or soft engineering options are not widely deployed in coastal engineering projects and a preference for utilizing 'hard engineering' solutions remain. The concept of soft engineering lies in "working together" with the nature to manage the coastline. This approach allows hard engineering options, such as breakwaters or sea walls, to be minimized or even eliminated altogether. Hard structures provide a firm barrier to wave energy or flooding, but in doing so they often have a significant impact on the natural processes of the coastline. This may affect the area locally or impact on neighboring zones. In addition, they often have a negative environmental impact and may create a sense of disconnect between the marine environment and local users. Soft engineering options, seek to protect the coastline by working in harmony with the natural process of sediment transport/budget. They often consider new habitat creation and creating usable spaces that will increase the sense of connection with nature. Often soft engineering options, where appropriately deployed can provide a low-maintenance, aesthetically valued, natural line of coastal protection. This paper deals with an overview of the following: The widely accepted soft engineering practices across the world; How this approach has been considered by Ramboll in some recent projects in Middle East and Asia; Challenges and barriers to use in using soft engineering options in the region; Way forward towards more widespread adoption.

Keywords : coastline, hard engineering, low maintenance, soft engineering options

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