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## The cost of adapting to sea level rise: ports, harbours and marinas in the south-eastern Mediterranean Sea

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Marine constructions are inevitably highly vulnerable to climate change and sea-level rise (SLR), leading to increased risk rates of destruction and potential closure of ports, harbours and marinas along the coast. We present an adaptation-cost analysis to the marine structures along the Southeast Mediterranean coast of Israel (Figure 1) for 0.5m and 1m SLR, designed to mitigate the risks of this phenomenon. The adaptation costs to SLR are function of the physical characteristics of the structure and its functionality.

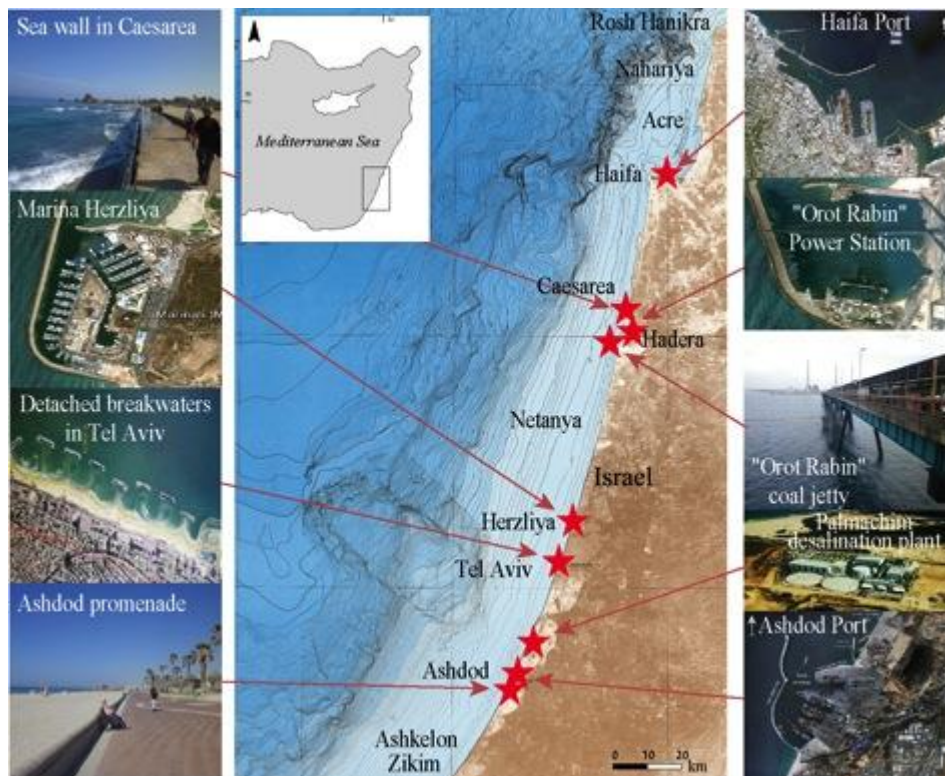


Figure 1: Marine structures along the Mediterranean coast of Israel

We estimate the cost of adaptation to SLR of marine structures along the Israeli coast at about \$280 million dollars when adapting to 0.5m SLR, and adaptation costs of about \$505 million dollars when adapting to 1m SLR. These account to 0.091% of Israel GDP and 0.165% of the Israeli GDP, respectively.

Although high, these adaptation costs are lower than the collective costs of future damage which will accrue if we fail to act, and generate increasing returns to scale. This implies that the adaptation-policy approach to control for the risk of SLR and its impacts on ports, marinas and harbours will provide economic and social benefits in this region.

