

FinEst Centre
for Smart Cities

SMART CITY CHALLENGE 2025

City Challenge

Max 3 pages

send to smartcity@taltech.ee by Sept 30, 2025

Challenge Title – Clean Coastline for Citizens

City/county and country – Hundipea area in Tallinn, Estonia

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1. What is the future urban challenge that would need a solution to?

Coastal areas adjacent to former industrial or harbor sites frequently retain residual pollutants from past activities. Pollution in the marine environment often goes undetected for extended periods, posing significant health risks to the local population. Industrial contaminants can persist in marine sediments and mud for long durations, necessitating active remediation or removal efforts. Such extraction projects tend to be large-scale and prohibitively expensive. When disturbances to the seabed release pollutants from the sediment into the water column and surface, affected coastlines are deemed unsafe for public use, yet comprehensive cleanup measures are rarely implemented¹². There is a pressing need for effective services and technologies dedicated to the remediation of coastal and urban marine environments.

This challenge is primarily in the Happy City category.

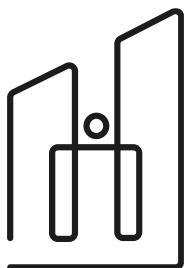
For Hundipea OÜ it is of great importance to address this challenge to ensure that citizens can fully enjoy the Tallinn coastline at Hundipea. If the issue of historical pollution in the marine environment remains unresolved, the seawater may present a potential health risk to individuals engaging in swimming, diving, or other recreational activities in the bay.

This problem probably exists in all cities that have had industries near the coastline or industrial harbors inside the current city borders.

2. Innovation.

¹ <https://www.err.ee/1609611230/miinisadama-suvendamise-kaigus-sattus-reostust-merre-kahel-korral>

² <https://www.oh tuleht.ee/1066189/stroomi-supluskohas-voib-kutteoli-jaakreostus-levida-piiratud-alast-valjapoole>



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To date, only two potential solutions have been proposed: the extraction of polluted sediment or the covering of the seabed with new material. Both options, however, are associated with significant costs. Extraction often requires the removal of water from the affected area, a process that is technically complex and difficult to implement. Covering the seabed, in turn, demands minimal or no water movement in the area to prevent waves and currents from displacing the added material.

A new solution is therefore required—one that can eliminate pollution in situ without necessitating the removal of water. Such an approach would not only reduce purification costs but also provide a more permanent remedy.

In principle, seaweed and clam farming could contribute to the removal of pollutants. However, the establishment of such farms requires project-specific design, local expertise, and skilled practitioners to construct the necessary physical infrastructure. At present, these preconditions are not sufficiently developed in Tallinn or Estonia, making it difficult to pursue this option effectively.

3. Expected impact of your pilot solution.

If this challenge is successfully addressed, the coastal areas can be purified and made safer for all residents of Tallinn.

4. Piloting

At Hundipea, the issue of historic industrial pollution in the marine sediments remains a pressing concern, and our objective is to restore the bay so that citizens may once again swim, dive, and engage in other recreational activities in the water without concern for their safety.



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