

# The financial impact of blown sand: an assessment at the Belgian coast

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The 67km long Belgian coast runs through 10 municipalities. Approximately half of the coast consists of the natural system of beaches and dunes, the other half is densely built and consists of a beach, running into a dike. Although Aeolian sand transport is a necessary physical mechanism to increase the resilience of beaches (and dunes) after storms, it is mostly regarded as nuisance to many coastal towns. Sand blows into the streets, on railroads, promenades and squares, endangering pedestrians and cyclists and preventing safe car and tram traffic. It further causes obstruction in the sewerage system. Moreover, the accumulation of sand in the touristic centers leaves a filthy image. As a result, local authorities invest largely in keeping the sand out of the built environment, mostly by cleanup works.

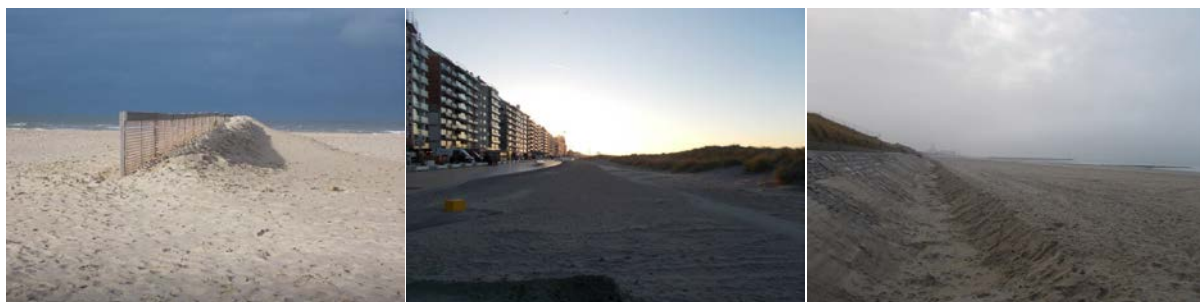
In order to assess the actual cost of blown sand, we conducted interviews with all partners involved: the coastal communities and several Flemish agencies (Coastal Division, Public Transport De Lijn, Roads and Traffic Agency) to acquire information on

- The location of critical points
- The actual cost of cleanup works on an annual basis
- Measures done to decrease the amount of Aeolian sand transport towards the dike.

Mostly, no records are being held of the specific cost related to blown sand, and the actual volume of sand transported into the town is unknown. It was found that there is a large variation in cost over the coastal municipalities, which can be partly explained by the spread in natural and built environment over municipalities, and partly by the policy at which level they want to keep the streets clean.

Based on the interviews, the total annual cost for the entire Belgian coast is estimated to be almost 5M euro, which boils down to 150 euro per meter dike per year.

Over the years, this cost has increased, mostly due to the beach nourishments in the framework of masterplan coastal safety, increasing the dry beach both in height and width, and several measures have been implemented to decrease the sand transport rate. The placement of sand screens or the creation of a vegetated dune seawards of the dike, as is done in one spot, captures the Aeolian sand on the beach. Towns are experimenting in how to increase the obstructing capacity of the dike against blown sand by placing concrete blocks on top or making a ditch in the sand at the dike's foot during winter season.



*Measures against the nuisance of blown sand: sand screens are placed at various locations (left), a dune in front of the dike (Nieuwpoort) and the creation of a ditch at the dike's foot (Ostend)*

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