

# Factsheet Business Case Sand Motor Delfland

## About Sand Motor Delfland

The Sand Motor Delfland is a mega-nourishment along the coast of the Dutch province South Holland. It has the form of a peninsula and was made with 21.5 million m<sup>3</sup> of marine sand (of which part is placed under water). The mega nourishment was constructed in 2011 with a research and monitoring programme from 2011 until 2021. The objectives of the Sand Motor were providing opportunities for recreation, nature development and taking an innovative approach to (long term) coastal flood protection. The project was initiated by the province of South Holland, in collaboration with the Ministry of Infrastructure and Environment - Rijkswaterstaat, the Water Board of Delfland, the municipalities of the Hague, Westland and Rotterdam, Milieufederatie Zuid Holland, the World Wildlife Fund and EcoShape.

## Business case approach

What type of business case was used to compare BwN to alternative solutions, and what role did it play in realizing funding for the project?

Considering only the design and construction costs in the light of the primary function (maintaining the coastal flood defense system), the traditional periodic nourishment practice might be more cost-efficient than a Sand Motor. As such, a cost-effectiveness analysis would have resulted in another project than the Sand Motor. Yet, there was a strong preference for an innovative type of nourishment, as additionally, this would create an island or peninsula that would create new possibilities for recreation and nature development. These co-benefits, including the showcase, the learning experience and the fact that the area might be clear of maintenance for the next 20 years (less frequent disturbance of environment) weighed more than cost-effectiveness in the light of the primary function. These considerations were not formally assessed in a business case, but you could describe it as an informal societal cost-benefit analysis.

After the decision to construct a Sand Motor pilot, an Environmental Impact Assessment (EIA) was conducted to compare alternative designs and evaluate several scenarios for sustainable long-term nourishment strategies (DHV, 2009). The alternatives were evaluated based on criteria in four categories: safety and coastal morphology; spatial quality and use of space; investments and economic effects; and knowledge development.

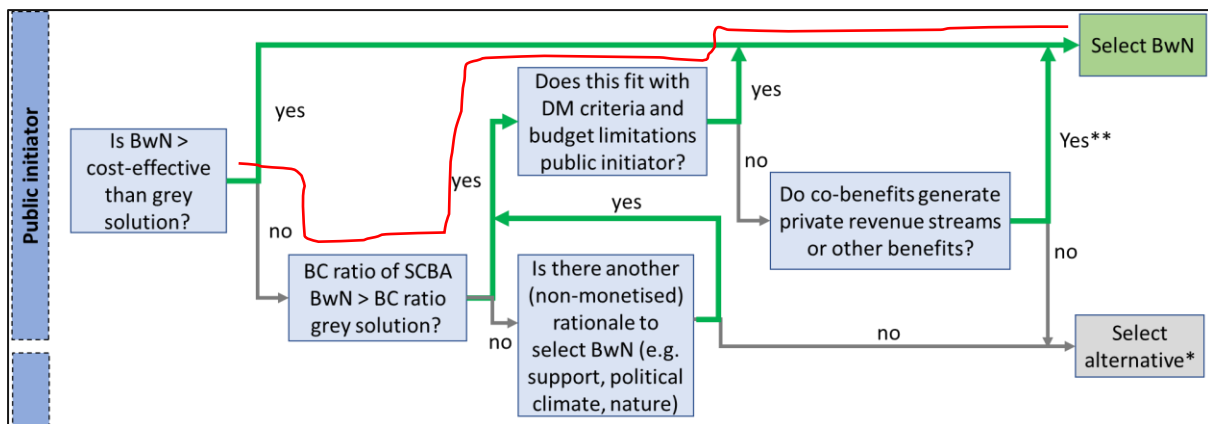


Figure 1 Decision-tree to select BwN or alternative measures, based on the business case.

### Reason for investors to select BwN approach

A BwN approach was important because of the added value for nature and recreation (for province of South Holland) and the innovative approach (for Rijkswaterstaat).

### Coping with uncertainty in the business case

Uncertainty was not part of the (informal) business case. However, since it was an innovative design, a research and monitoring programme were put in place to learn from the pilot experiment for future projects.

### Barriers and opportunities in BC approach

Because no formal business case was developed, barriers and opportunities in developing a business case cannot be described here.

## Finance

### Who funded the project and how was the financing arranged?

#### Funding of construction project

Total costs of the Sand Motor were 70 Million euros. The province South Holland payed 12 Million and the national government 58 Million. Of these 70 Million euros, 50 is used for the construction and 20 will be used for planning, monitoring and maintenance ([www.dezandmotor.nl](http://www.dezandmotor.nl)).

Funder	Source of finance	% of initial investment costs	Motivation	Type of finance (choose from figure #)	Conditions of finance
Rijkswaterstaat	Ministry of Infrastructure and Environment	83%	Coastal management, innovation	Public - Domestic government	-
Province South Holland	Province South Holland	17%	Recreation, nature development	Public - Domestic government	-

#### Funding of knowledge programmes

The Sand Motor had several knowledge programmes: MEP (Monitoring and Evaluation Programme, financed by the Ministry of Infrastructure and Environment; NEMO (Nearshore Monitoring and Modelling: Inter-scale Coastal Behavior, ERC Grant); and NatureCoast (financed by NWO-TTW).

<b>Research programme</b>	<b>Funder</b>	<b>Source of finance</b>	<b>% of initial investment costs</b>	<b>Motivation</b>	<b>Type of finance (choose from figure #)</b>	<b>Conditions of finance</b>
<b>MEP</b>	<i>Ministry of Infrastructure and Environment</i>	<i>Ministry of Infrastructure and Environment</i>	100%	<i>Learning from the project for future applications.</i>	<i>Public - Domestic government</i>	
<b>NEMO</b>	<i>European Research Council</i>	<i>ERC-Advanced Researchers Grant</i>	100% (3M)	<i>Support knowledge development</i>	<i>Public - European</i>	
<b>Nature Coast</b>	<i>NWO-TTW</i>	<i>NWO-TTW</i>	<i>major part</i>	<i>Develop fundamental knowledge about mega-nourishment</i>	<i>Research funding with external contributions</i>	
	<i>Diverse parties (Boskalis, Deltares, Province SH, RWS, Van Oord, WMR)</i>	<i>Diverse</i>	<i>minor part, in-kind</i>	<i>Knowledge development to use for future projects</i>	<i>Diverse</i>	

### What are the motives to invest in BwN?

For Rijkswaterstaat the reason to finance the project (via the Ministry) was to investigate how a coastal system would respond to a mega nourishment. The RWS is responsible for the Dutch coastal flood safety. The Sand Motor is a different method (experiment) to explore future-proof ways of coastline management considering sea-level rise.

For the province of South Holland, the opportunities of recreation and nature creation which the Sand Motor brought were important reasons to initiate the project and to finance part of it.

In general, the fact that the province stressed the multiple functions (co-benefits) of the Sand Motor, is regarded as an important factor to realize financing and support for the project (Luijendijk et al. 2019). The project was presented as a solution to protect the coast, enable leisure activities and stimulate economic development at the beach, while simultaneously sparking national and global interest for an unprecedented Dutch coastal innovation.

### Barriers and enablers in financing BwN

An opportunity was to combine the need of province South Holland, for more nature and recreation area, with the wish of Rijkswaterstaat, to experiment with long-term coastal maintenance and to have an iconic project for (international) exposure.

### Procurement, how is it arranged and does it affect the BwN approach?

After the location and volume were determined following the EIA process, the Sand Motor was contracted with a set maximum budget. The Design and Construct contract was awarded to the contractor that could deliver the largest volume of sand for the set price.