



WELCOME

To this third Happy Hour focus on

‘ENVIRONMENTAL ASPECT OF RISK AND RESILIENCE’

The webinar will begin shortly .

Please mute your microphone and switch off your video camera.

During the webinar please type all questions in the chat box.

Q&A session is scheduled at the end of the webinar to answer them.

PORT



CO INNOVATION

- ANTWERPEN

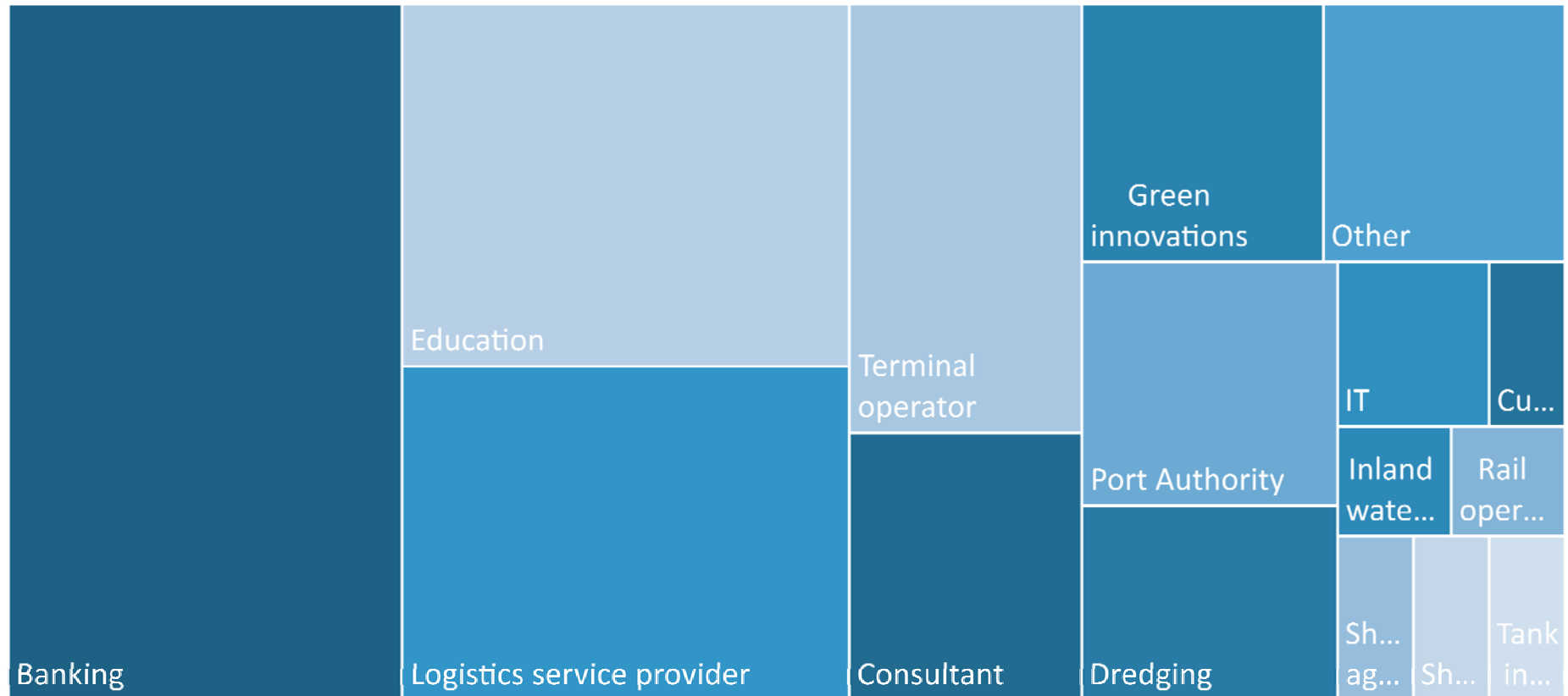
WELCOME @

BNP Paribas Fortis Port Co.Innovation Happy Hour 3

Prof. Dr. Christa Sys

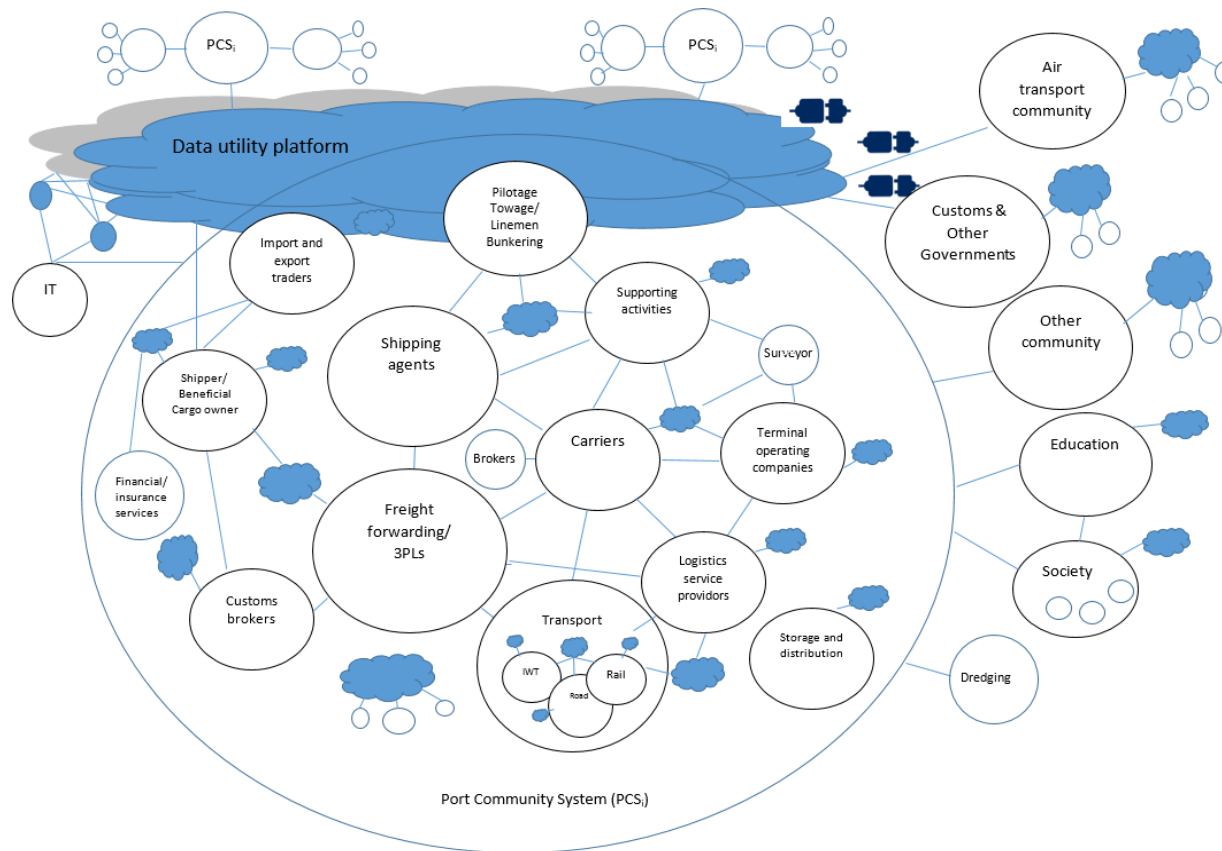
Holder of the Chair BNP Paribas Fortis Transport, Logistics and Ports

Welcome @participants (92 registrations)



Goal

Creating resilient maritime ecosystem



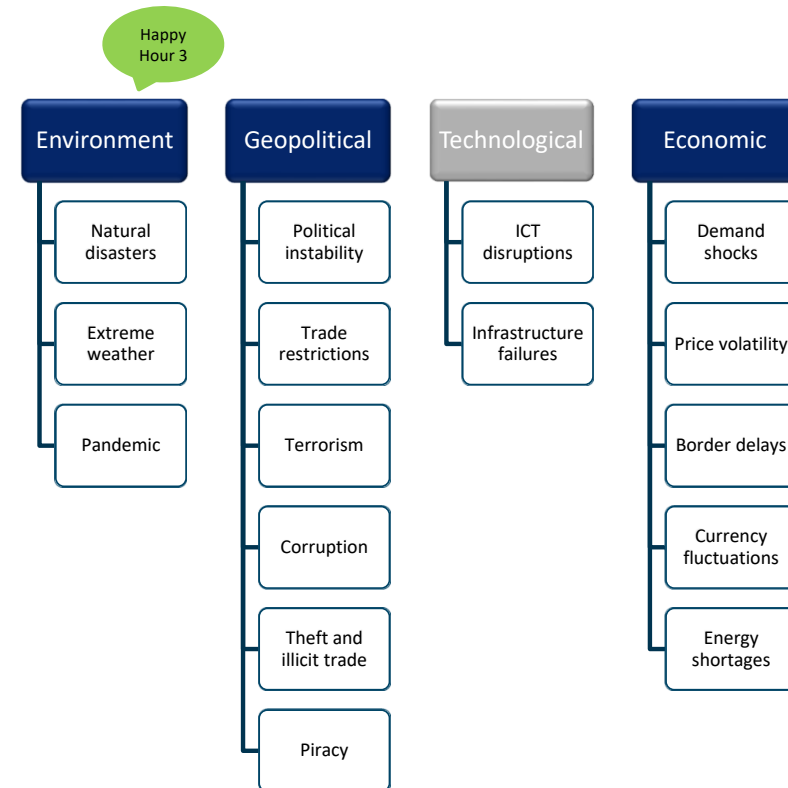
Theme: risk & resilience

Risk

- a situation involving exposure to danger (threat)((Oxford dictionary)
- the combination of the probability of occurrence of an event and its negative consequences (Holton, 2004).
- with respect to supply chains, a risk could be **any factor that obstructs the flow of information, materials, and products from the supplier to the consumer** (Juttner et al., 2003).

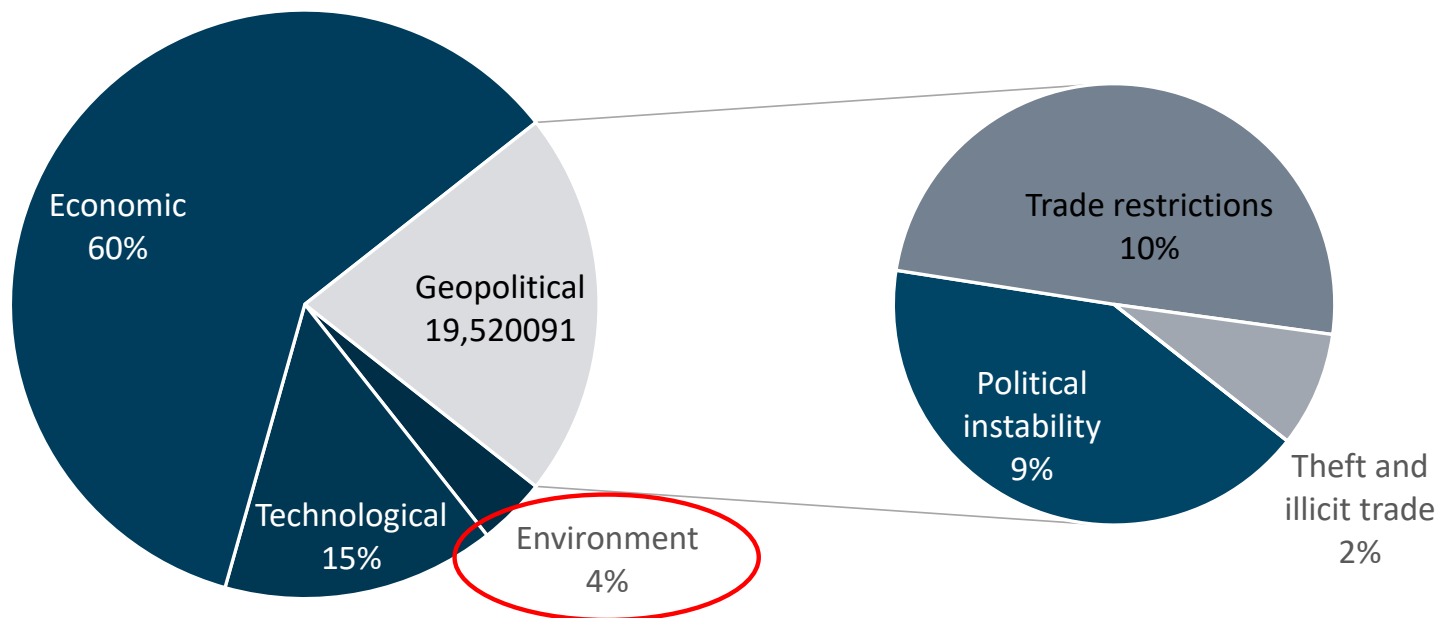
Resilience

- the capacity to recover quickly from difficulties (Oxford dictionary)
- means **the ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions**
- the ability of a system to return to its original state or move to a new desirable state after being disturbed (Christopher and Peck, 2004)



Theme: risk & resilience

From the survey (30)



Theme

1.5, on building the resilience of the poor and those in vulnerable situations and reducing their exposure to climate-related extreme events and other economic, social and environmental shocks and disasters



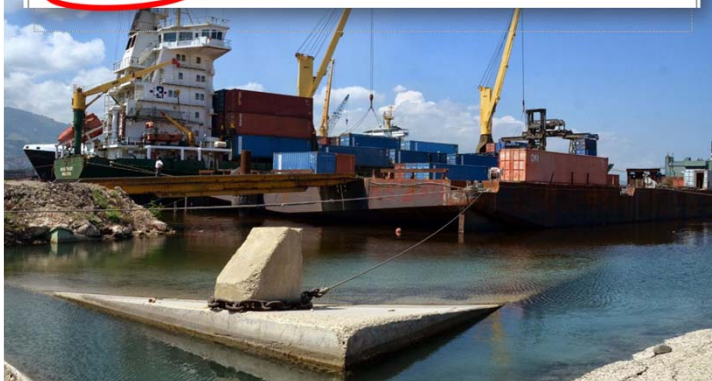
9.1, on developing quality, reliable, sustainable and resilient infrastructure



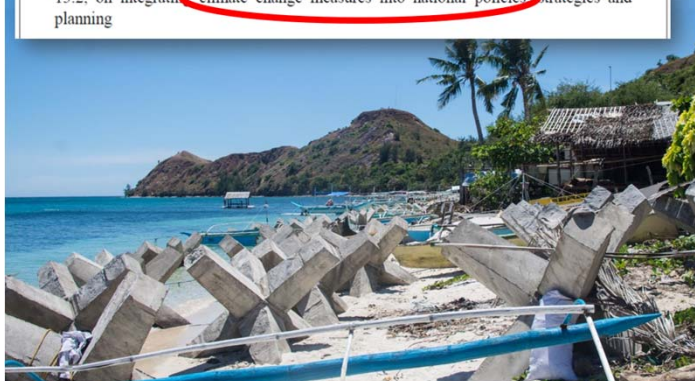
11.b, on increasing the number of cities adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change



13.1, on strengthening resilience and adaptive capacity to climate-related hazards and natural disasters in all countries



13.2, on integrating climate change measures into national policies, strategies and planning



14.2, on sustainably managing and protecting marine and coastal ecosystems to avoid significant adverse impacts



Dr. Jan Hoffmann, Unctad

1

Natural disasters

design adaptive enforcement mechanisms that set a minimal standard to reduce pollutants and develop sustainable infrastructure for seaborne activities



2

Extreme weather

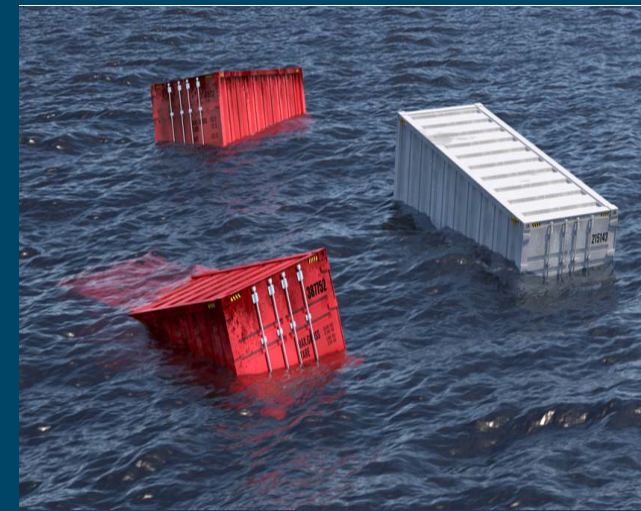
enabling a global framework to assess climate change and extreme event risks in maritime activities



3

Pandemic

ensure that future infrastructure investments contribute to mitigating climate change and extreme events (such as pandemics)



When poll is active, respond at **Pollev.com/christasys665**

Text **CHRISTASYS665** to **22333** once to join

Will the current environmental disruption accelerate a new era of co.innovation in service of social and environmental goals?

Yes

No

What is hampering this development (new era of co.innovation in service of social and environmental goals)?

Top

What kind of collaborative innovations do we need?

Top

Program

Time	Topic
17.00-17.15	Welcome by Prof. Christa Sys, Holder of the BNP Paribas Fortis Chair on Transport, Logistics and Ports at University of Antwerp
17.15-17.45	The sea rises: nature or concrete? by Capt. Marc Nuytemans, Chief Executive Officer at Blauwe Cluster vzw (Blue Cluster)
17.45-18.30	How hydrogen can support energy transition by Mrs. Astrid Behaghel, Energy Transition expert for BNP Paribas - Hydrogen Coordinator
18.30-18.40	Q&A
18.40-18.55	COVID Safe Happy Hour by Joris Brams, CEO Konings NV
18.55-19.00	Closing word by BNP Paribas Fortis

Our speakers



Capt. Marc Nuytemans,
CEO Blue cluster



Mrs. Astrid Behaghel,
BNP Paribas



Mr. Joris Brams,
Konings nv

When poll is active, respond at **Pollev.com/christasys665**

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The sea rises: nature or concrete?

Yes

No

No idea

When poll is active, respond at **Pollev.com/christasys665**

Text **CHRISTASYS665** to **22333** once to join

Do you think hydrogen will be future fuel for personal cars?

Yes

No



The sea rises: nature or concrete?

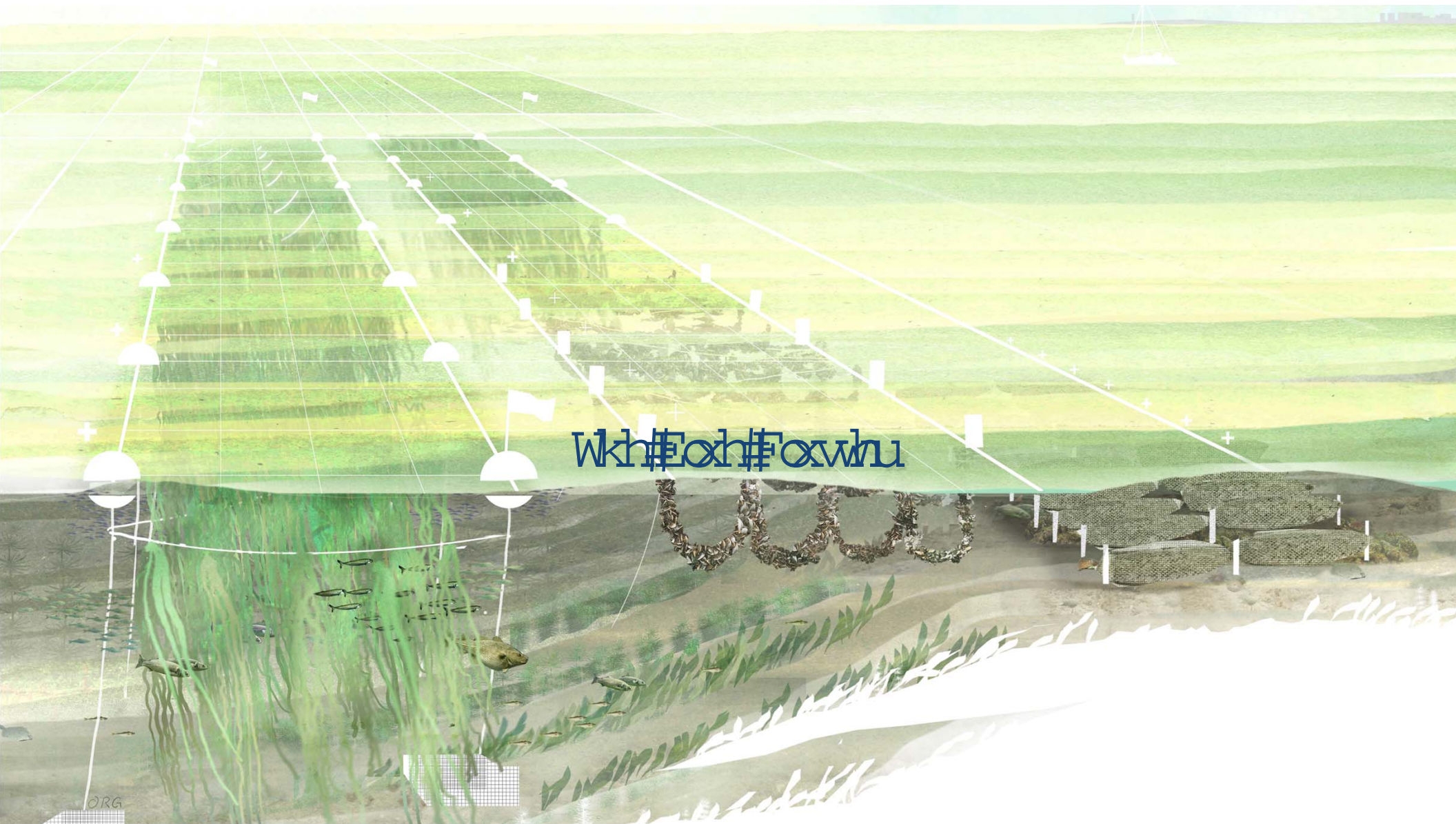
Capt. Marco Nuytemans, FNI

CEO Blue Cluster





Towards a resilient & dynamic coast for Flanders, inspired by nature



Wkh#Eoh#Foxwu




The Blue Economy in Belgium



Source: IDEA Consult

The Blue Economy: an unknown strong pillar

Direct Impact

 Turnover		 Employment		 Added value	
Chemistry & life sciences	€ 46B	Blue Economy	77,000 FTE	Blue Economy	€ 7.2B
Food	€ 41B	Chemistry	68,000 FTE	Chemistry	€ 5.5B
Blue Economy	€ 31B	Food	51,000 FTE	Food	€ 1.9B



Mission:

DBC wants to be the preferred partner for businesses who want to develop innovative activities and to valorize their expertise in the sustainable blue economy.

What does Blue Cluster do?

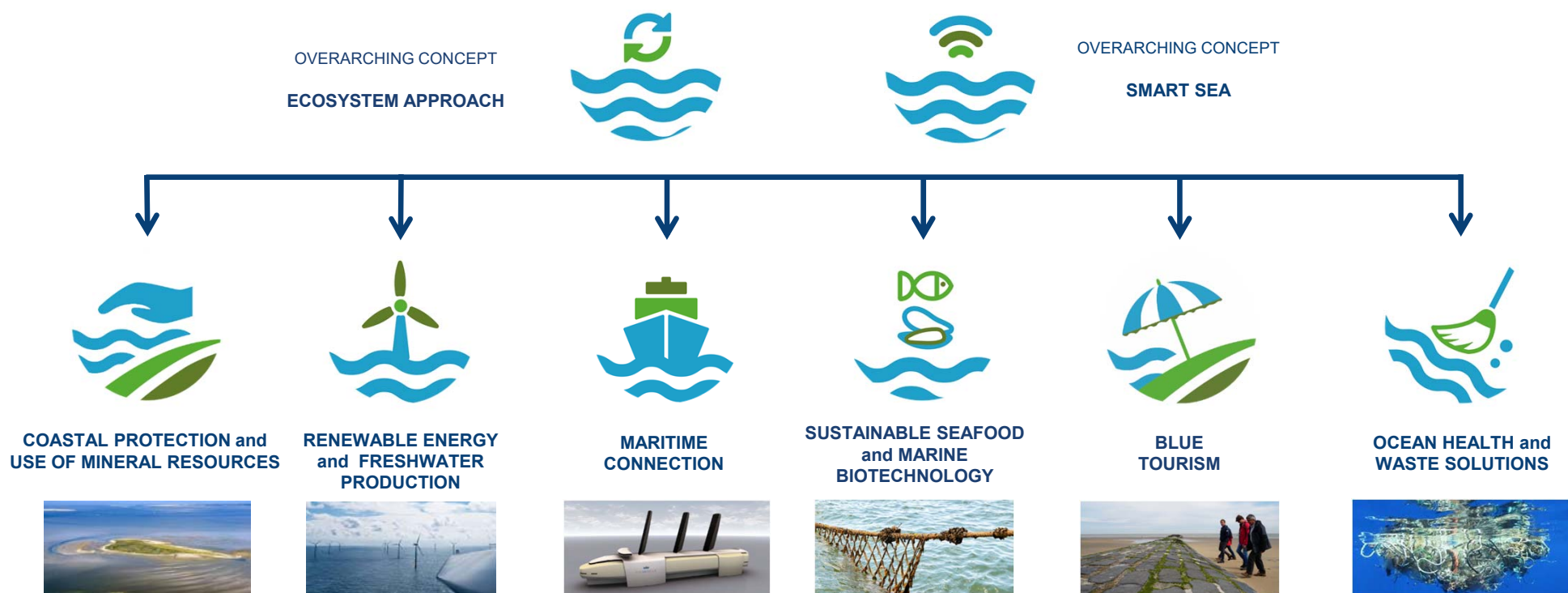
We **de-risk innovation** in five areas:

- Strategy (roadmaps)
- Finance (subsidies and external financing)
- Resources (partners)
- Commerce (market knowledge)
- Rules and regulations (policy & stakeholder management)

In which areas are we active?

6 focus areas
2 cross-sectional areas

A roadmap for each area



Team



Marc Nuytemans
CEO



Ann Overmeire
COO



Marijn Rabaut
Marine Policy Expert



Stani Matusikova
Office Manager



Bart Hillewaert
Communication & Grants Manager



Lien Loosvelt
Innovation Manager



Kristien Veys
Innovation Manager



Dries Debruyne
Innovation Manager

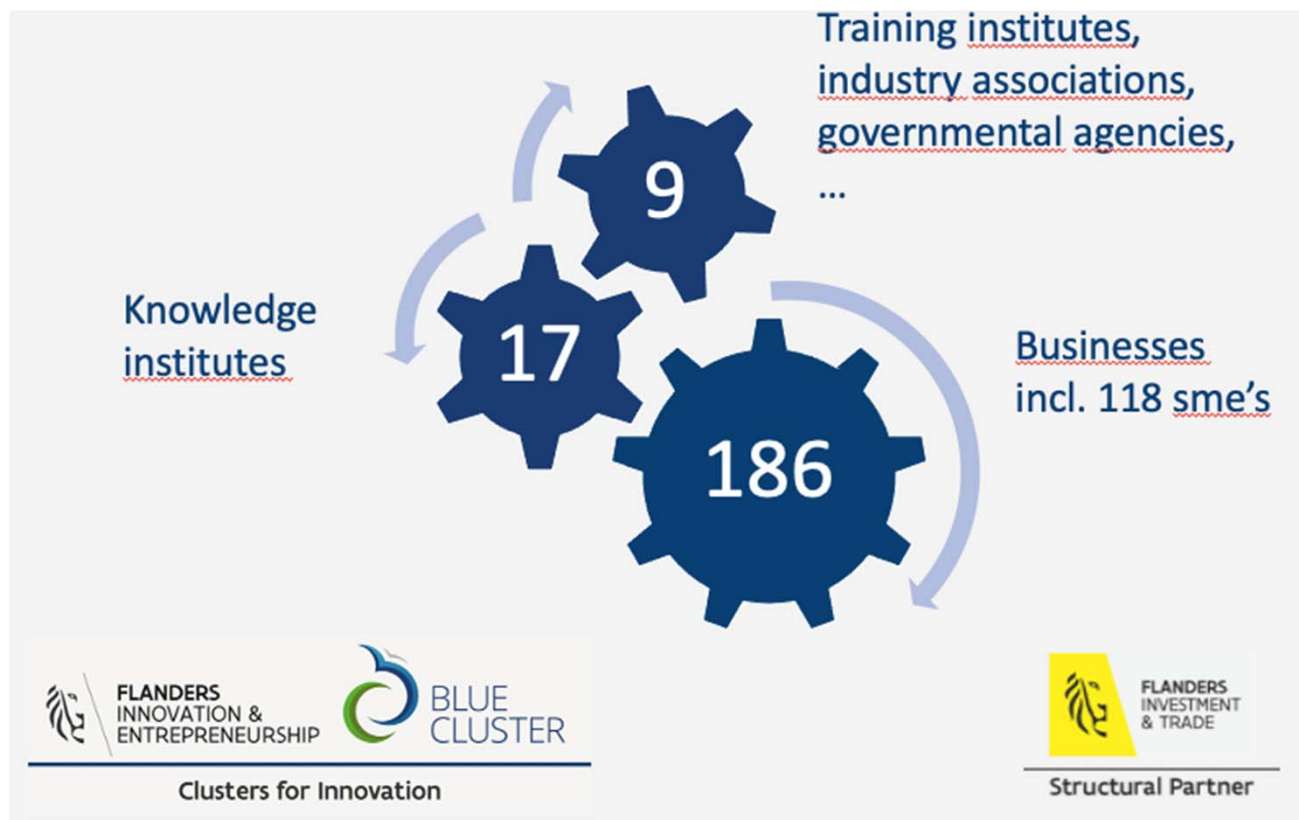


Stefaan Mensaert
Innovation Manager



Karen Vanderstraeten
Business Development Manager

Members & partners



Zh#un#kh#Eon#Foxwu



Global Sustainable Technology & Innovation Community

(GSTIC www.gstic.org)

Blue Innovation
Awards

2020



INSPIRING WORLD-RENOWNED KEYNOTE SPEAKERS ON SUSTAINABLE DEVELOPMENT

Empowering breakthrough innovations for the SDGs



H.E. António Guterres
United Nations



H.E. Gro Harlem Brundtland



Jean-Pascal van Ypersele
UCLouvain



Doreen Bogdan-Martin
International Telecommunication
Union

Nearshore Mussel
Project



Coastbusters



Dual-fuel Hydrogen
Engine



Renovation of the
seawall of Westende

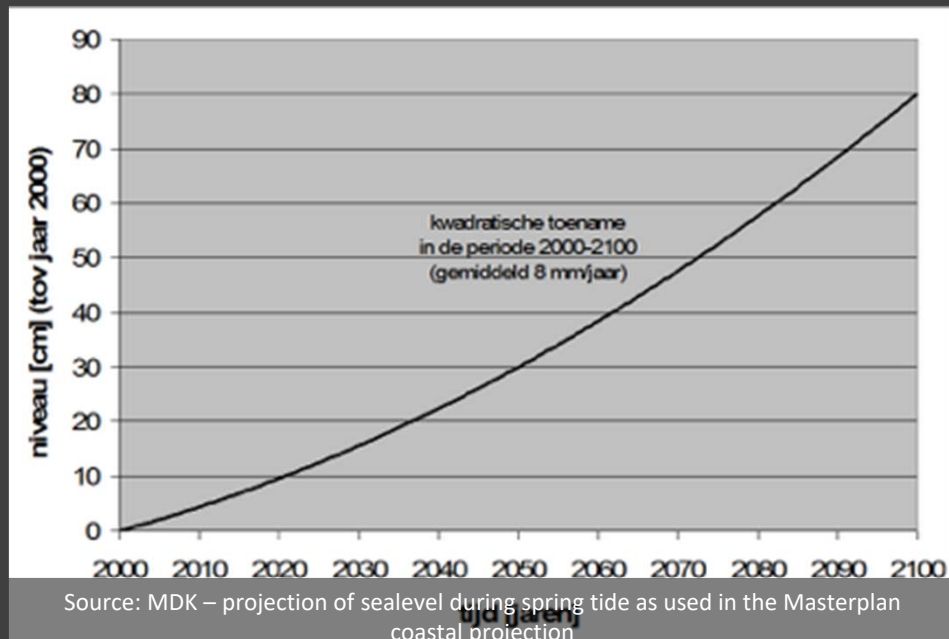






Embankment, seafront,
seawall, bank, dike or dyke?

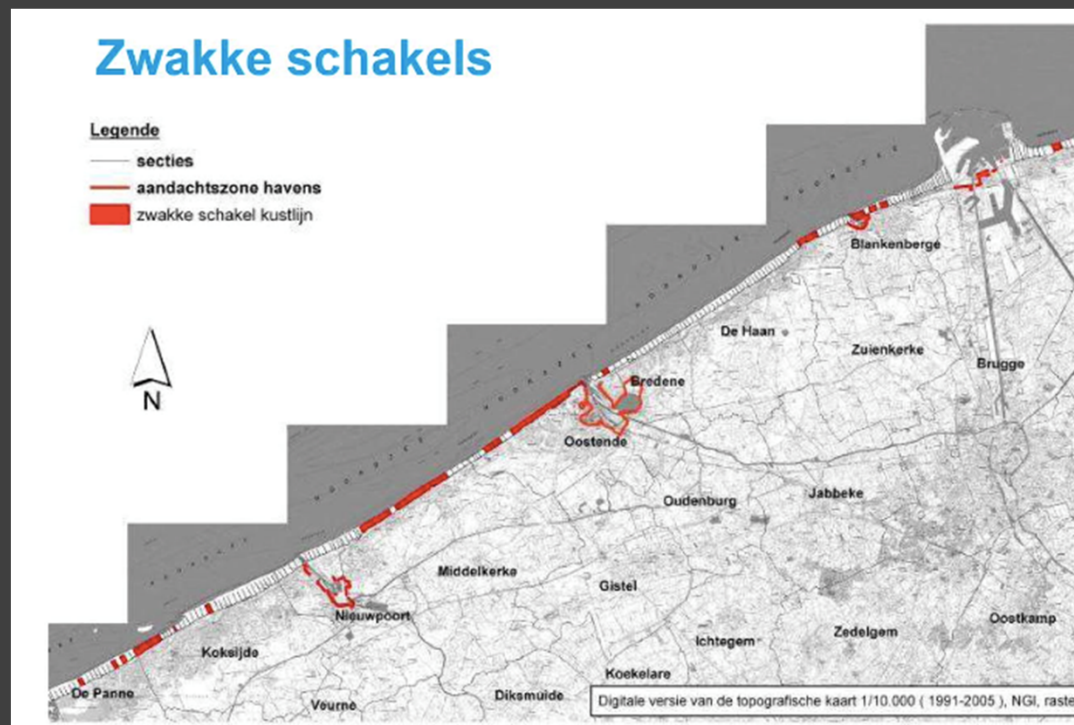




The sea rises and the increasing severity of storms threatens the coast & the hinterland which is unprepared



The Belgian Coast is unprepared



The weak links as identified in the figure are all connected to areas where hard human interventions have taken place in the past (33 kms of seawalls, seaside promenades & inevitably 4 entries into ports(8kms)). The total length of the coast is ca 65 kms.

(source: MDK, May 2012)

Want to see
the difference?

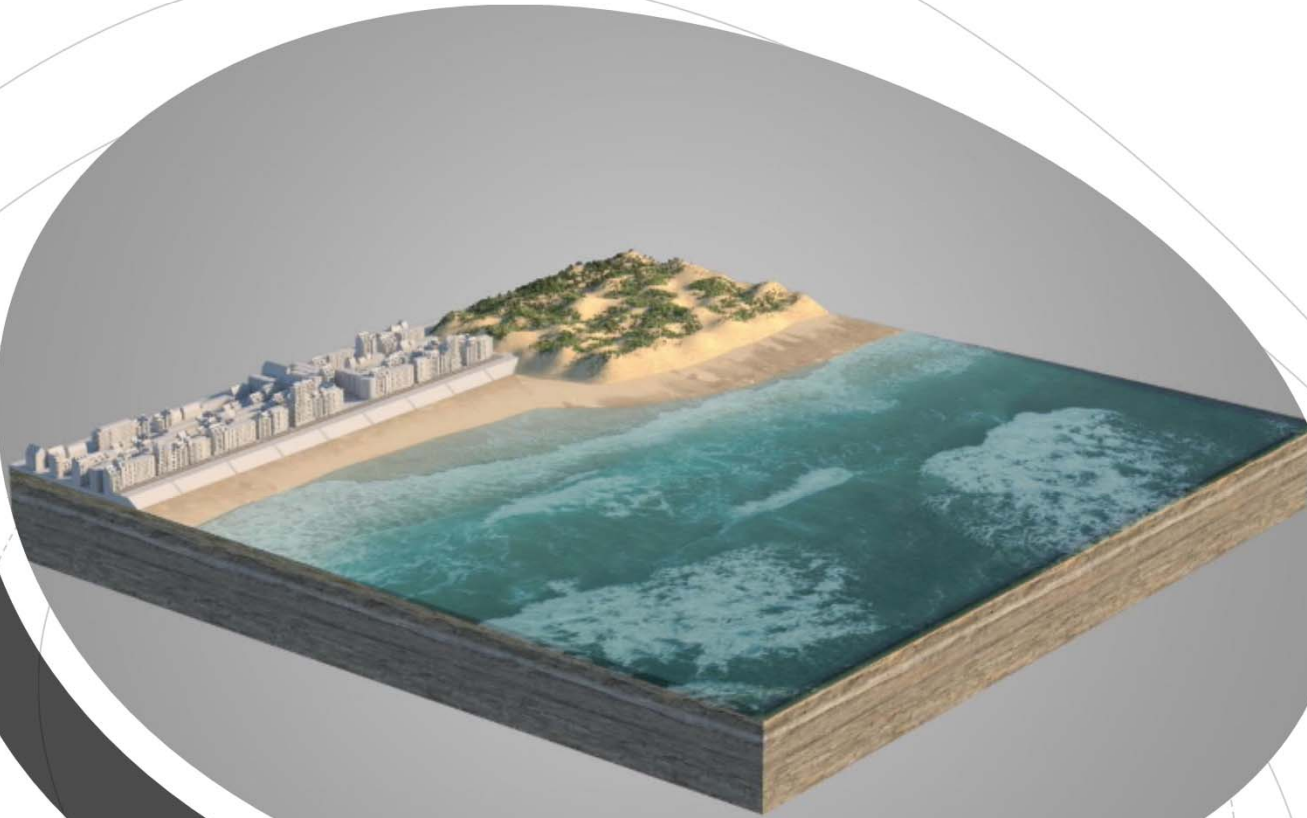
Aerial picture of
Blankenberge. The wide dune
section offers protection.
Where the seawall was built,
the coastline moves in-land
due to erosion





This is what a storm does with the coast, when you build seawalls: cliffs that have to be bulldozed away (and the sand has to be replenished every year!) + the seaspray affects buildings & other objects. Sand is swept on the seawall and hinders accessibility, traffic and blocks the tramway rails.

A squeezed coast



The current situation doesn't favour future generations


- 5% - 8% of the global CO₂ emissions stem from the production of cement (to produce concrete)
- Concrete lasts for only 3 generations

- Beaches face an increasing popularity (recreation, beach-and watertourism, ...) and we could therefore do with more space.
- Many coastal communities have become less attractive for younger people due to urbanisation and they often opt for the Dutch and the French coast just across the border: quieter, more possibilities for sports, more welcoming for a healthy outdoors family life.

But there are
alternatives:
Nature
teaches us

- The sea has been building sand walls around continents for ages and maintained a resilient coast even under extreme conditions... but in the past 2 millennia man has increasingly intervened and disturbed the fragile equilibrium of sand dynamics, leading most of the time to erosion
- We need therefore to restore that equilibrium by sand suppletions (sand replenishments, sand nourishments). In earlier days this was only done on the high beach where it was eroded away by every high water & by storms, but now we have:

Nature-Based Solutions

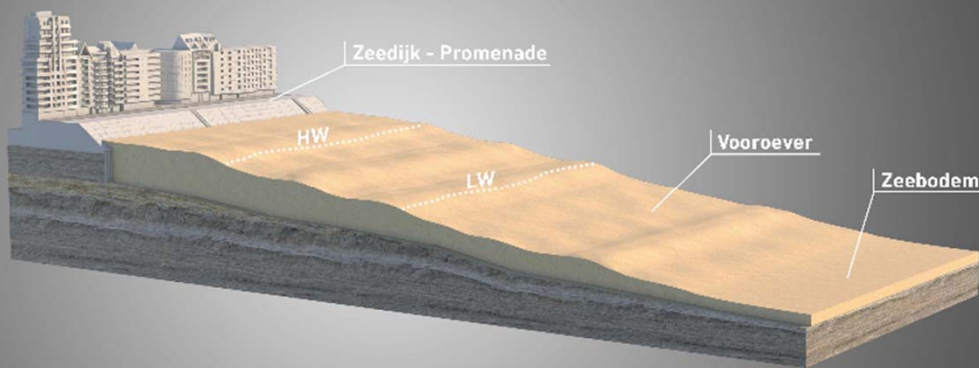


What are Nature-Based Solutions?

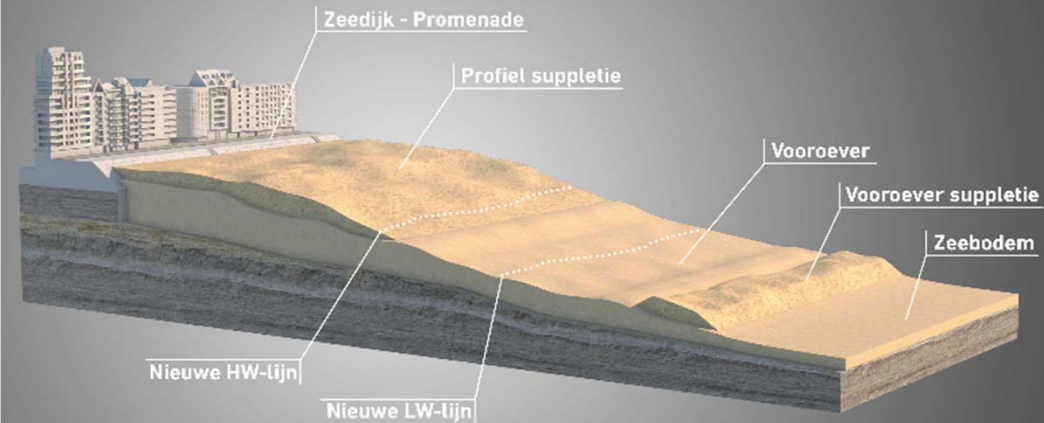
- **Nature-based solutions refer to the use of natural systems and processes to provide a service that supports the engineering function of coastal protection measures or systems.**
- In addition to valuable engineering functions related to reducing flood risks, nature-based solutions can also provide other social and environmental value, including habitat for species and recreation for communities.
- **Open, broad collaboration between scientists and engineers in government, industry, and knowledge institutions can be used to accelerate building a common requisite knowledge base.**

Morphologic beach suppletion

Bestaande toestand

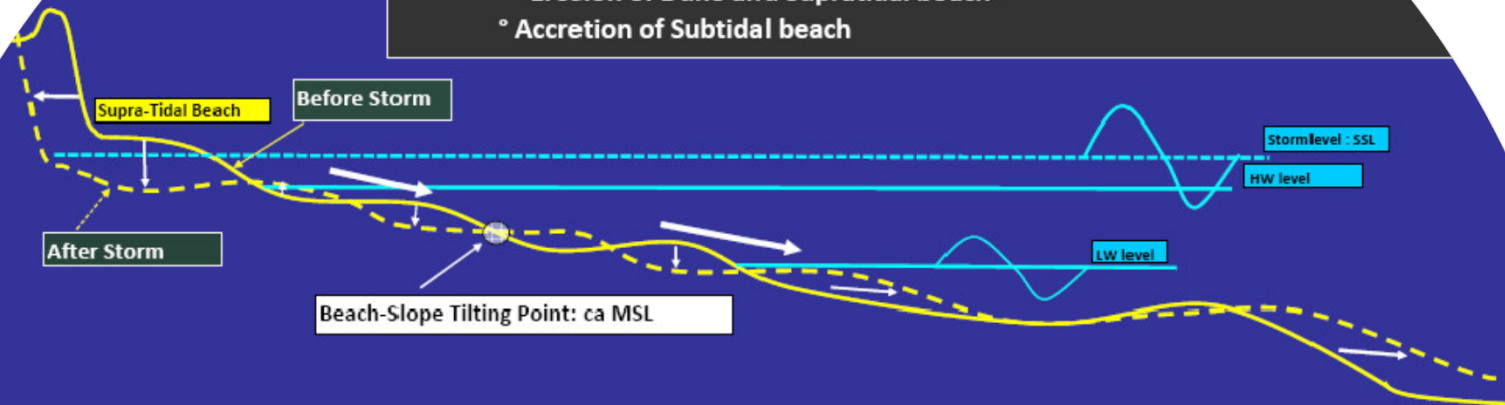


Natuur gebaseerde oplossing - MORFOLOGISCHE strand suppletie



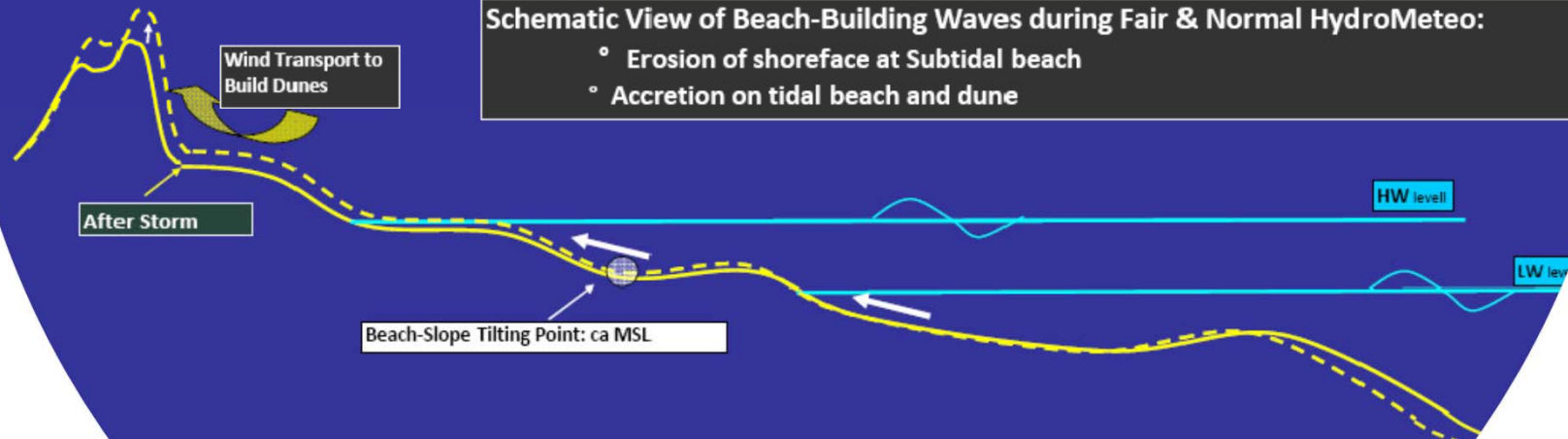
Schematic View of Beach & Dune Morpho-Dynamics during Storm:

- ° Erosion of Dune and Supratidal beach
- ° Accretion of Subtidal beach



Schematic View of Beach-Building Waves during Fair & Normal HydroMeteo:

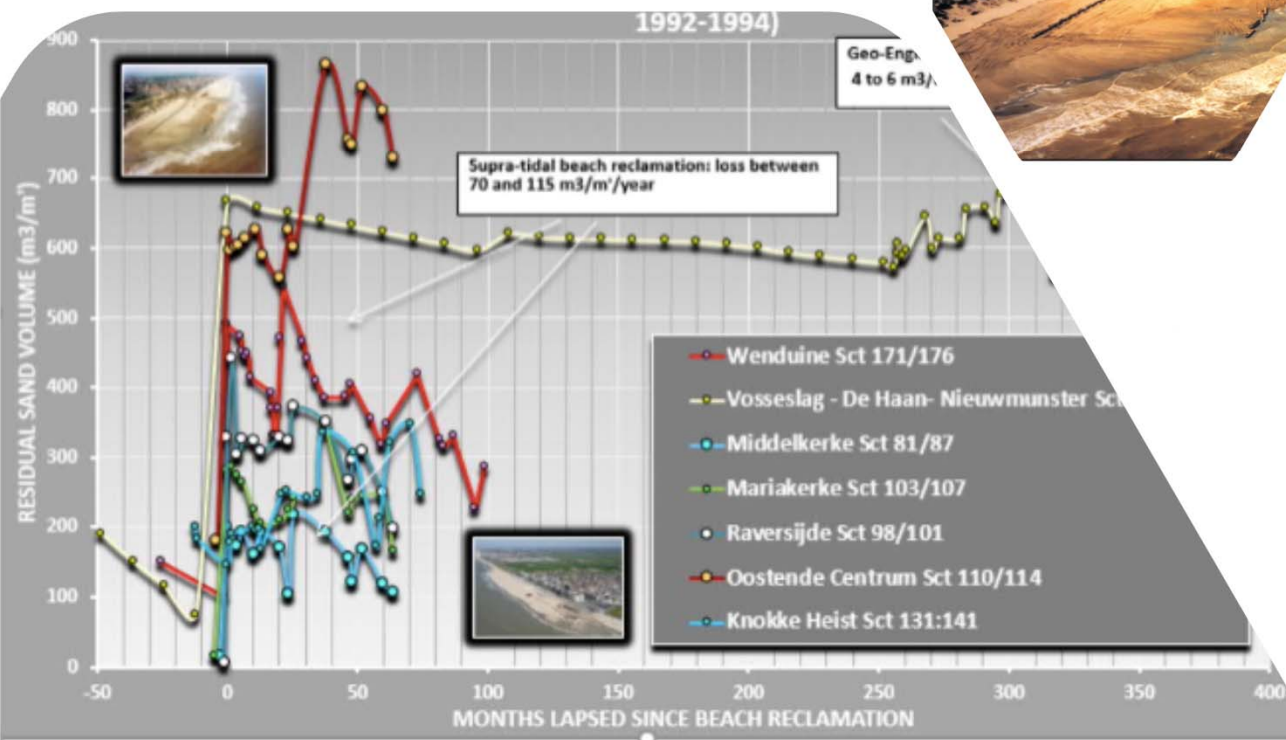
- ° Erosion of shoreface at Subtidal beach
- ° Accretion on tidal beach and dune



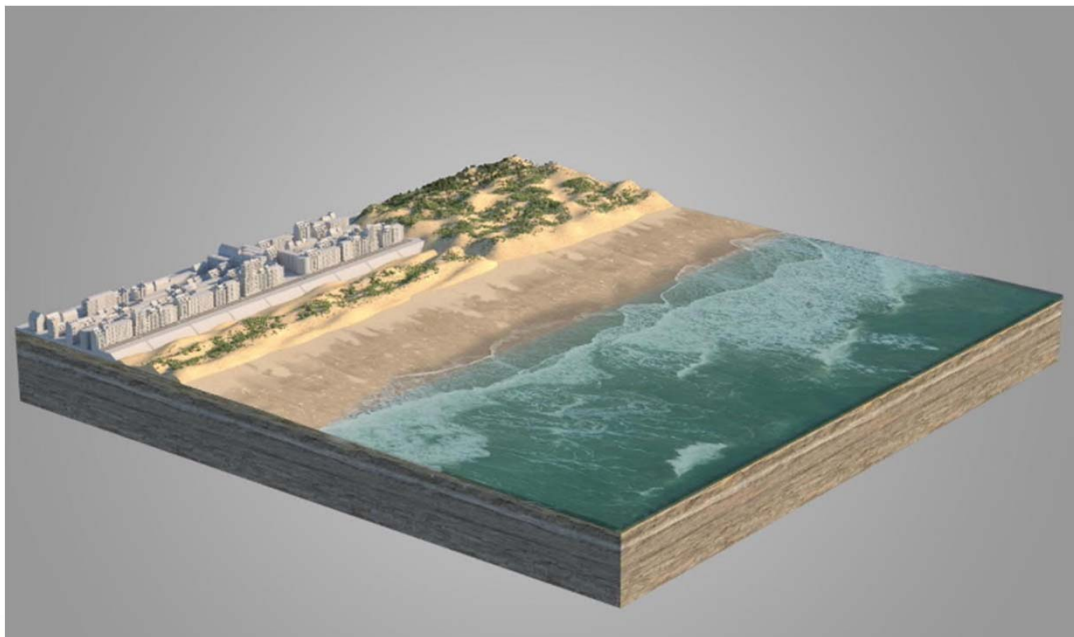


Test case: De Haan et al.

- After 25 years:
- Minimal loss of sand (85% is still present)
- No cliffs after storms (see pic taken after storm Odette in October 2020)
- Ecosystem (needing 2 years to rehabilitate) isn't disturbed



Dune before Dike



- Low dunes placed on the high beach, anchored with vegetation, in combination with a re-inforced wide tidal beach and an underwater beach (fore bank).
- Westende was the winner of DBC's blue innovation award for such a project in 2020

Sand motors



- Principle: 1 large volume of sand, allowing nature to spread it out and rebuild the coast
- Example: Ter Heijde (Scheveningen). 21 Mio cubm sand over a length of 3km. Red line = May 2011, Yellow = August 2016, White = March 2020. Seems to be fully stabilized
- 2 Possible sites in Belgium.

COASTBUSTERS



AGENTSCHAP
INNOVEREN & ONDERNEMEN



eCOAST
MARINE RESEARCH

ILVO
Instituut voor Landbouw-
en Visserijonderzoek

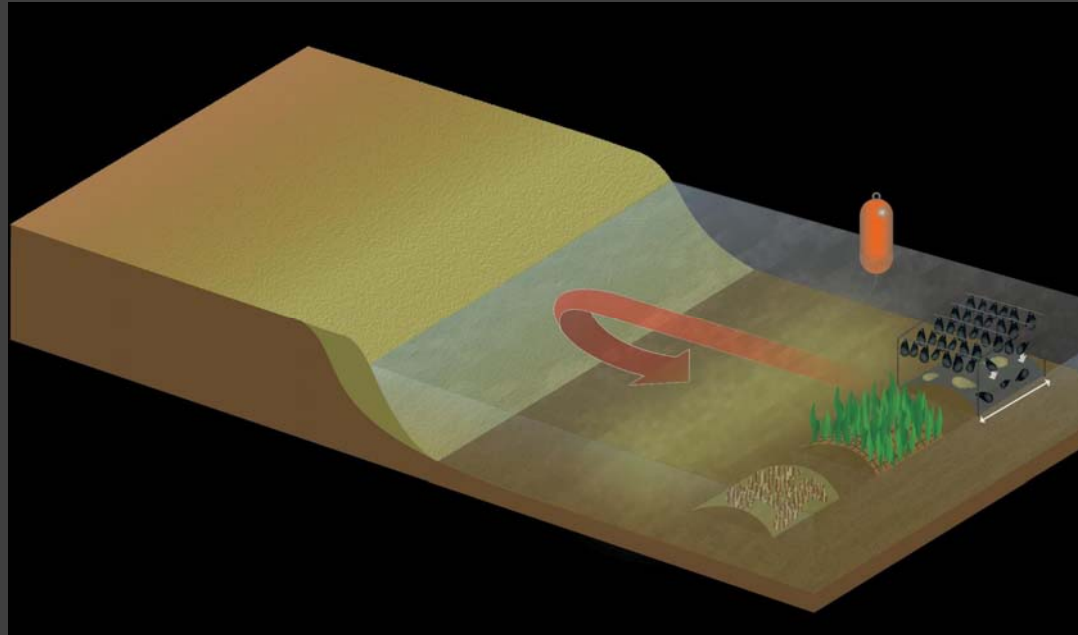
SIOEN

DJN
Jan De Nul
GROUP



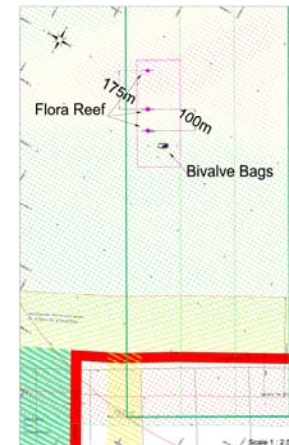
DEME
Dredging, Environmental
& Marine Engineering





Generic goals:

1. The organism **survives** the dynamic conditions of the foreshore and maintains its ecological functions - environmental survivability status.
2. The reef, built as a specific biogenic **structure**, is stable and creates ecological added value within the local coastal ecosystem - ecological added value (ecosystem services).
3. The natural **reef** develops in such a way that local sedimentation and natural stabilisation of the foreshore occurs - technical valorisation



The Prins Hendrik Zanddijk in the Netherlands



Ecoshape (The Netherlands)

Building with Nature



Multifunctional coastal protection
Singapore



Mud Motor Koehoal salt marsh
development



Salt marsh development Marconi
Delfzijl



Sand Motor Delfland Coast



Building with Nature Indonesia

US Army Corps of Engineers

Engineering with Nature



Mangrove trunk-prop root system in Key West, FL



Isle Island / U.S. Army Corps of Engineers



Designing in the Atchafalaya River / U.S. Army Corps of Engineers



Plants stabilize dyke on placement area



Stone Harbor, New Jersey

Photo by New Jersey Division Fish and Wildlife



Soft if we can, Hard if we must .

(Peter van Besien, MDK)

BNPPF Port Co.innovation Happy Hour



- HH1: Wout Mampaey – Beerbag
- HH2: Steve Snauwaert, Brouwerij Halve Maene
- HH3: Joris Brams, Konings nv



The noble stranger present in
almost every refrigerator.

Joris Brams
CEO

A photograph of Wilfried Remans, a man with short brown hair, smiling and wearing a dark blue blazer over a light blue button-down shirt. He is standing in front of a city skyline. A prominent, tall, ornate church spire with a golden finial is visible in the background. The sky is clear and blue. A semi-transparent blue banner is overlaid on the lower part of the image, containing the text.

Wilfried Remans

Director CSR & Public Affairs at BNP Paribas Fortis

Happy Hour 4



Theme: technological risk (ICT disruptions, infrastructure failure, cybersecurity)

When: May 25th

Want to **cooperate:** <mailto:christa.sys@uantwerpen.be>

READ

Impact of sea-level rise and extreme events on infrastructure development in global trade and logistics supply chain Nezamuddin Nora, Sys Christa, Vanelslender Thierry, Roumboutso Athena, Konuah Franklin, Christodoulou Aris, Demirel Hande, Yaseen Lama, Petrucci Anna Laura? 2020, 19 p.
Full text (open access): <https://repository.uantwerpen.be/docstore/d:irua:2320>