

Interreg 
EUROPEAN UNION

**2 Seas Mers Zeeën
SARCC**

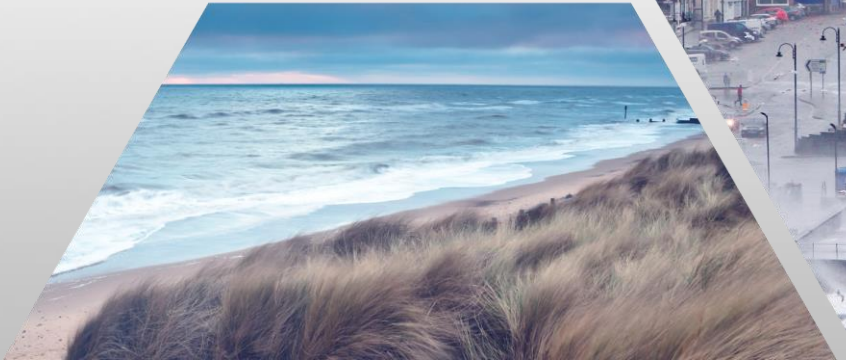
European Regional Development Fund

Ecosystem services

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Ecosystem

An aerial photograph of a coastal wetland ecosystem. The foreground is dominated by a large, shallow body of water with a light blue-green hue, showing intricate patterns of sandbars and channels. The water extends towards the horizon, where it meets a flat, green landscape of fields and marshes under a clear blue sky. The overall scene illustrates a complex and dynamic natural environment.

... a dynamic complex which includes all the living things in a particular area – **plants, animals and organisms**, including people – interacting with each other and with elements of the nonliving environments (weather, Earth, sun, soil, climate, atmosphere).



From a
pond...



...to an
entire
ocean
basin.



But also
nature-
based
solutions.

Provisioning

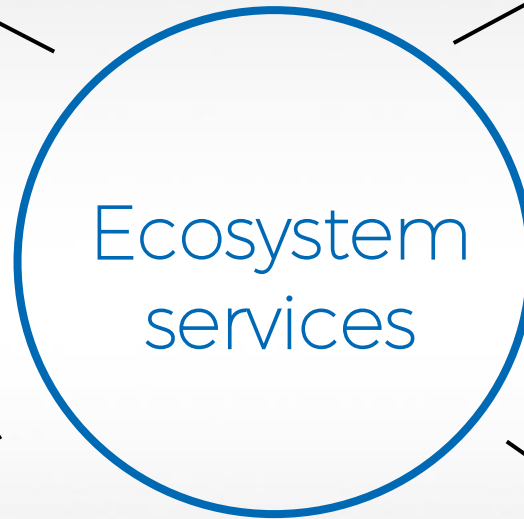


The products obtained from ecosystems (fish, wood, clean water)

Regulating



This includes the services which regulate the ecological balance (storage of carbon, purify water, control flooding, control of disease)

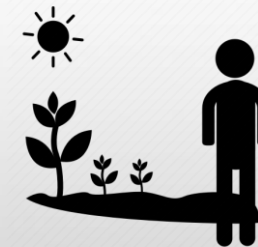


Cultural



Non-material benefits (recreation, education)

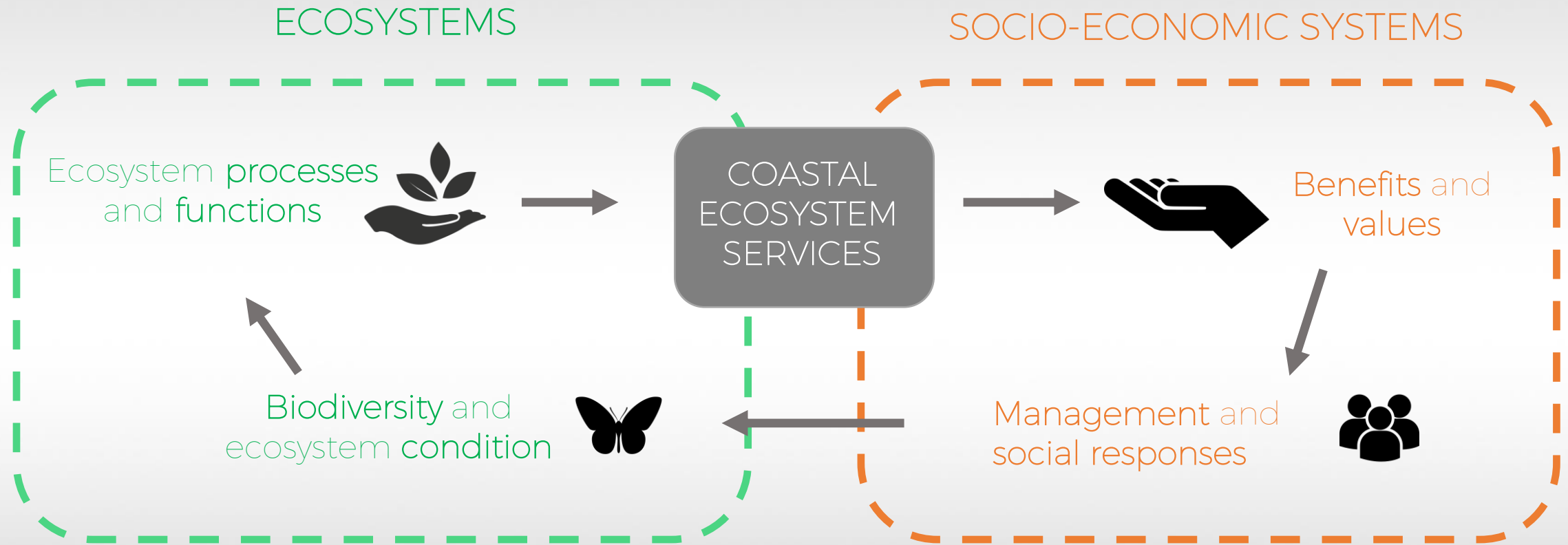
Supporting



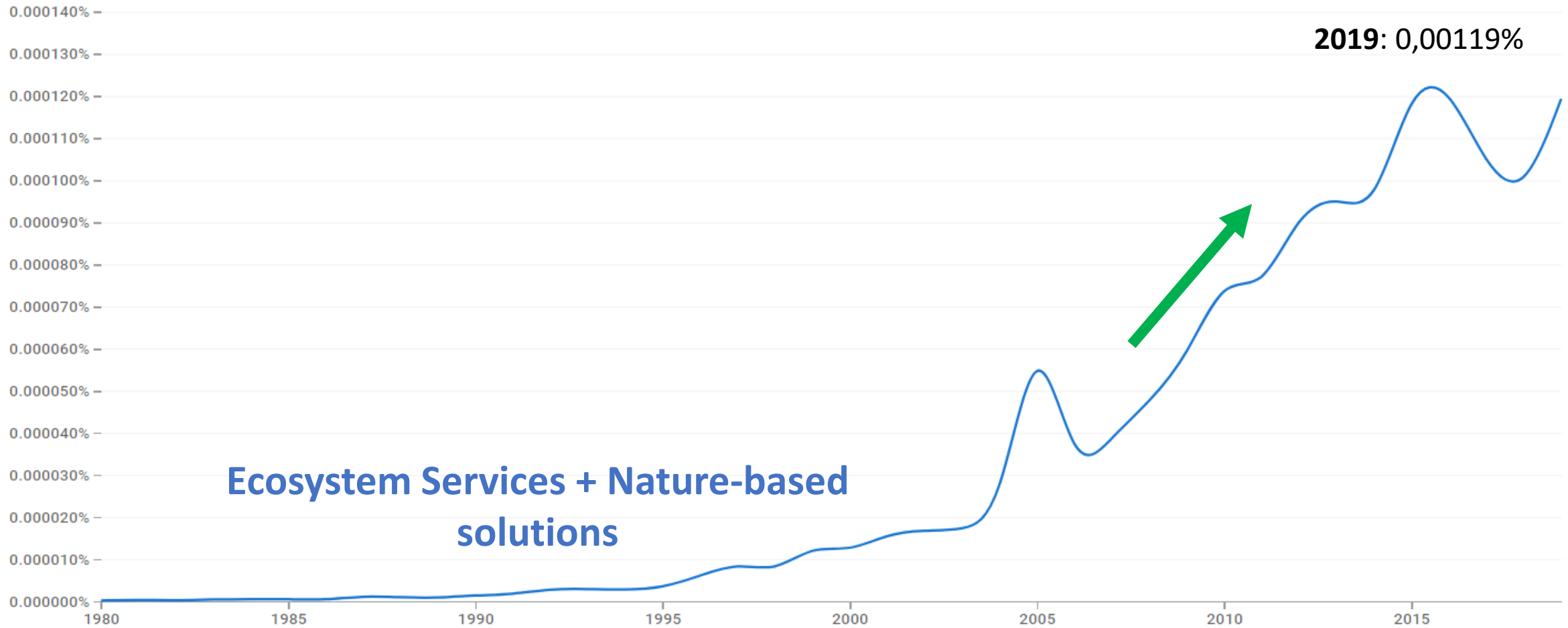
The services that are necessary for the production of all other ecosystem services. (biodiversity, photosynthesis, soil formation)



Everything together



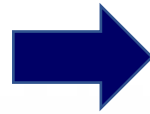
Trend



Source: Google viewer

Problem statement

- ESS are **undervalued**: they provide benefits to external persons who are not directly paying for these.
- **Mismanagement** of ecosystems leads to non-sustainable services.



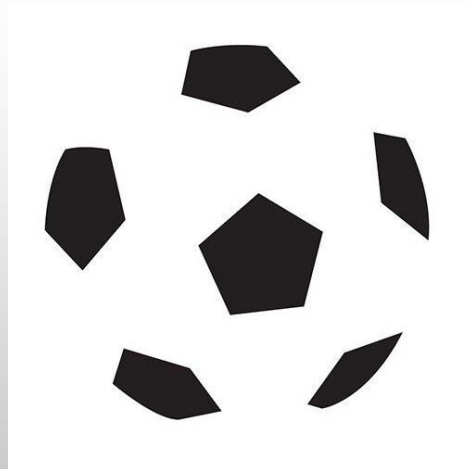
Solution

- Giving **a value**...
 - Understanding the added value of a project, it makes the benefits **'visible'**.
 - Manner **to communicate** between several stakeholders: it speaks the language economic developments
 - Increasing **long-term impact** by better deploying resources.
- ... is challenging



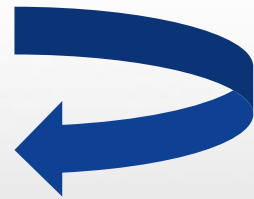
Ecosystem approach

- By a **holistic** research lens:
 1. Through the eyes of different stakeholders (policy, socio-cultural, economy).
 2. People are an important component for sustainable development (cf. landscape research)
 3. Interdisciplinary research needed.
 4. The study of the totality: All the different services are analyzed (if possible)



Ecosystem approach

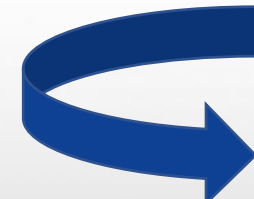
- Providing a value to benefits with proxies (approximation of the true value):
 1. Money: most common way of expressing value in our society
 2. Quantitative: e.g., reference to jobs, visitors, ...
 3. Qualitative: if the scientific basis for quantification and/or monetisation is not yet sufficiently robust
- Via scientific tools



retrospective



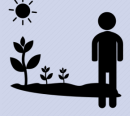






simultaneously

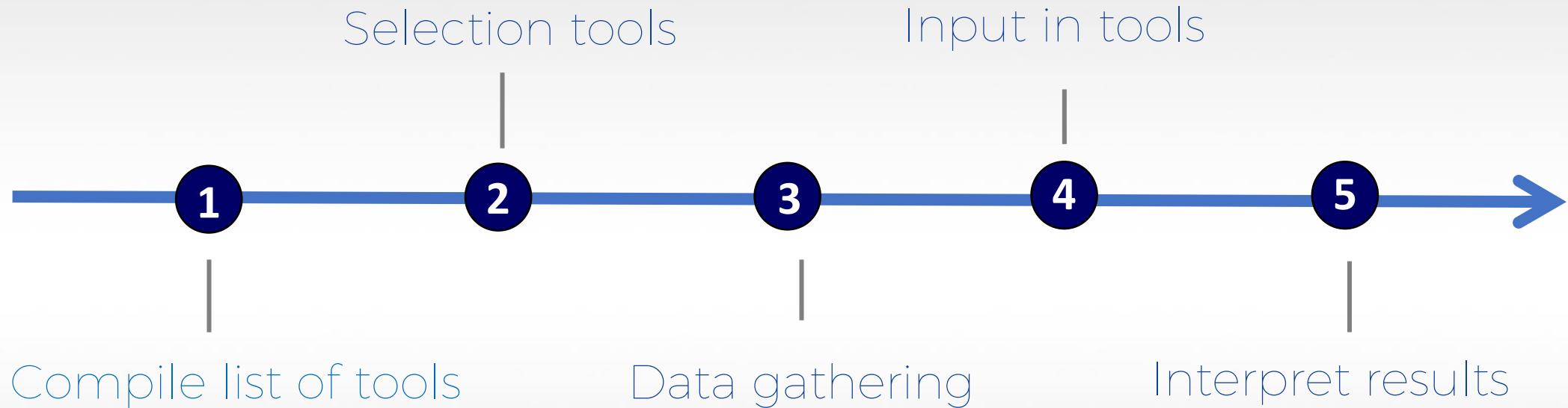


prospective



Benefit	What it covers	Ecosystem service category	How valued
Amenity	Attractiveness of an area induced by nbs. This improves the wellbeing (£ or euro)	Cultural 	Number/type of homes/commercial properties and number of people impacted by scheme, ...
Carbon sequestration	NBS components can lead to a reduction and/or sequestration of carbon (£ or euro)	Regulating 	CO2 storage by trees, carbon capture by dunes (via previously done Flemish research), ...
Biodiversity	Sites of ecological value, Willingness to pay for protection or enhancement of biodiversity (£ or euro)	Supporting 	Total area of green space, Area designated for nature and wildlife conservation, number of households near green infrastructure, ...
Willingness-to-pay	Willingness-to-pay for green infrastructure (£ or euro)	Cultural 	Number of local people using green infrastructure for recreational purposes, profile of types of activity enabled by the green infrastructure asset, ...
Reduced mortality	Estimates the reduction in mortality rates from take-up of moderate physical exercise through walking or cycling (£/year or euro/year)	Provisioning Regulating Cultural 	Km of existing and new bicycling and walking routes, number of residents and households per radius, ...
Land and property values	Estimates residential land and property uplift (£ or euro)	Provisioning Regulating Cultural 	Amount of properties, New green space in hectare of which high quality city park or local park, Average property price, ...
Avoided cost for sand cleaning	Estimates the avoided cost for sand cleaning coming from the nbs	Regulating 	Yearly costs for cleaning from different agencies, length of dunes, ...

SARCC methodology



- ✓ Aim: replicable method for other pilots and coastal regions
- ✓ Test cases: BE pilots SARCC



1. Compile list of tools



Toolkit for Ecosystem Service Site-Based Assessment



GI-Val

Ecosystem Valuation



Methods, Section 8

Benefit Transfer Method



susdrain

BEST

CICES

Towards a common classification of ecosystem services



life+mgn
making good natura

InVEST

integrated valuation of ecosystem services and tradeoffs



ODEMM

Options for Delivering Ecosystem-Based Marine Management

Integrated Management Strategy Evaluation (iMSE)



Hugin QGIS



EVRI

Environmental Valuation Reference Inventory

ECOPLAN quickscan



Mapping Ocean Wealth Explorer Mapping Ocean Ecosystem Services

2. Selection tools

- Free to use?
- Economical result?
- For coastal regions?
- Easy-to-use?
- How long needed to complete?
- Which ESS are calculated?
- Retrospective?
- ...



GI-Val



susdrain

BEST



3. Data gathering

- Data

- General data (e.g. ha, %green, tourism, new green space created, km cycling routes, number of households, etc.)
- Specific data per service

- How

- Interviews
- Input from pilot managers
- Dekstop research
- Field research
- Internships students



4. Input in tools + interpret results

Oostende

- Willingness-to-pay
 - tourists = 5,3 euro/year
 - residents = 1,67 euro/year
 - 58% of the surveyed people agrees green coasts are more attractive and are worth a visit.
- Land and property values: increase of 2.3 million euro.
- Amenity is expected to be increased by 6.88 million euro.
- The avoided cost for sand cleaning due to the planted marram grass results in a yearly avoided cost of 11.273 euro.

Middelkerke

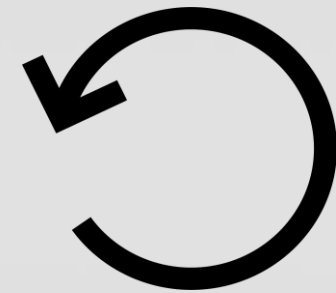
- Land and property values: increase of 9,5 million euro.
- reduced mortality: is 167.000 euro/year, resulting in a net present value
- Amenity is expected to increase by 17 million euro.
- Biodiversity is expected to be increased by 17.677 euro.
- The avoided cost for sand cleaning results in a yearly avoided cost of 38.461,77 euro.

Blankenberge

- Willingness-to-pay
 - tourists = 5,3 euro/year
 - residents = 1,67 euro/year
 - 58% of the surveyed people agrees green coasts are more attractive and are worth a visit
- Land and property values: similar with the other 2 Belgium pilots, with a total increase expected of 5.96 million euro.
- Carbon sequestration: In total 351 tonnes of carbon will be sequestered in the following 10 years, resulting in a monetary value of 24.800 euro.
- The biodiversity and ecology of the planted trees is expected to have a value of 1.668 euro.

Key messages

- Outcomes can be used to **inform decision processes**.
- **Holistic view**: to approach a wider audience.
- ESS concept is still a **developing area**.
- Services are **not static**.
- **Validation** via the monitoring and evaluation surveys:
 - **Capturing sand increases** <-> avoided cost for sand cleaning
 - **Economical quality increases** <-> land and property values



SPACE

TIME

SCALE

Thank you!



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