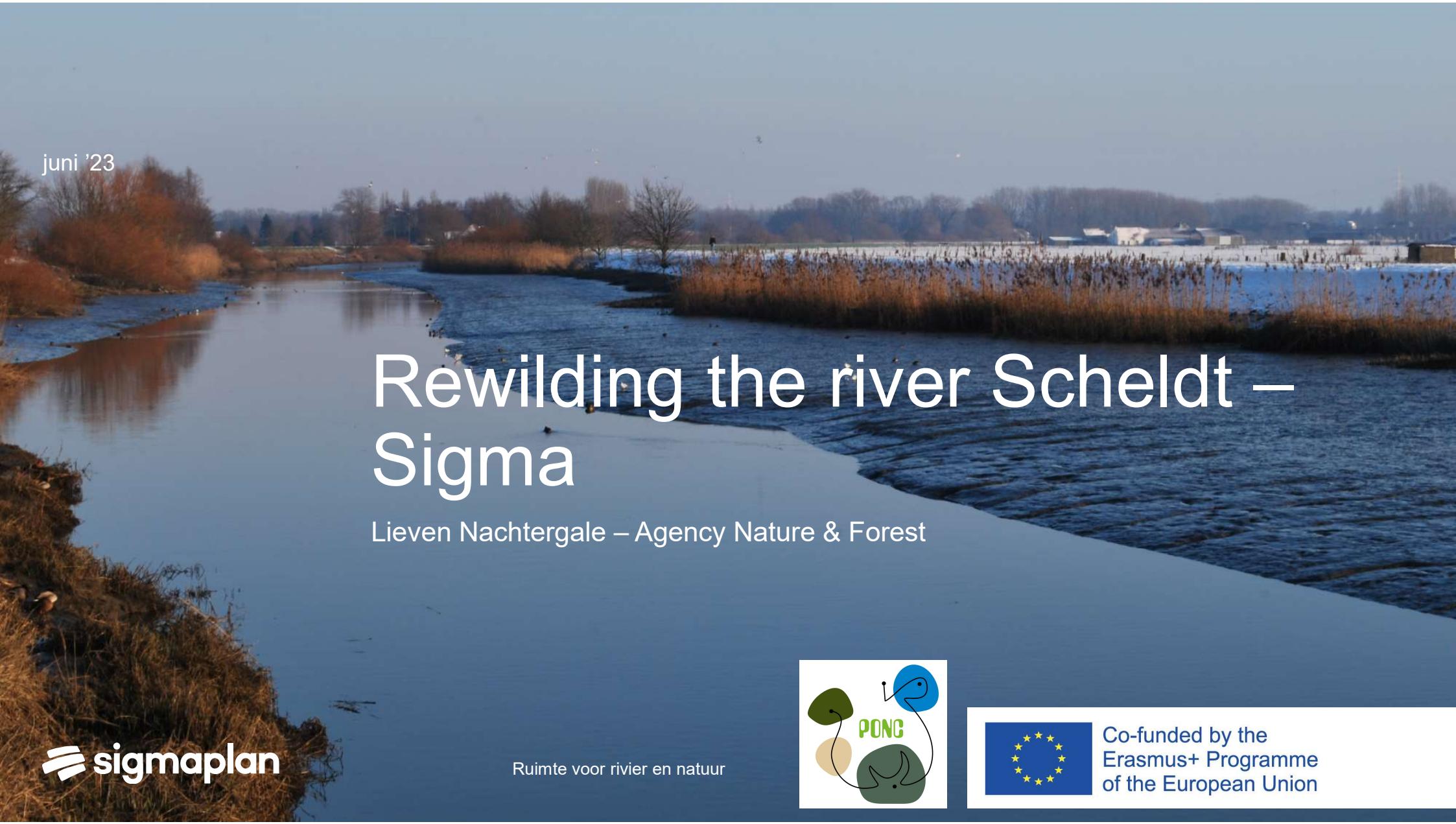


juni ’23

Rewilding the river Scheldt – Sigma

Lieven Nachtergale – Agency Nature & Forest

sigmaplan

Ruimte voor rivier en natuur

PONC

Co-funded by the Erasmus+ Programme of the European Union

Rewilding the river Scheldt

1.0 short meet and greet

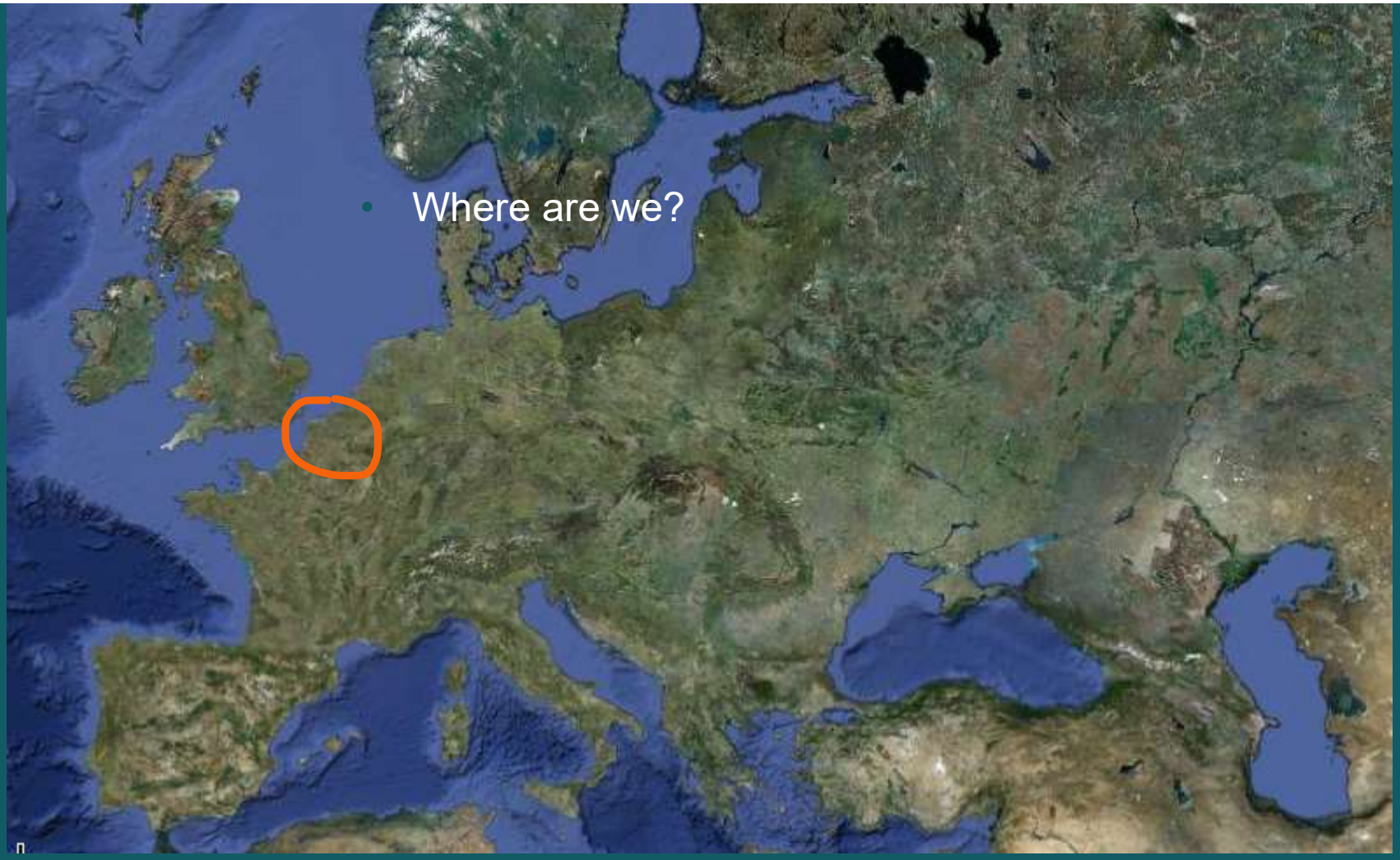
2.0 ecological problems

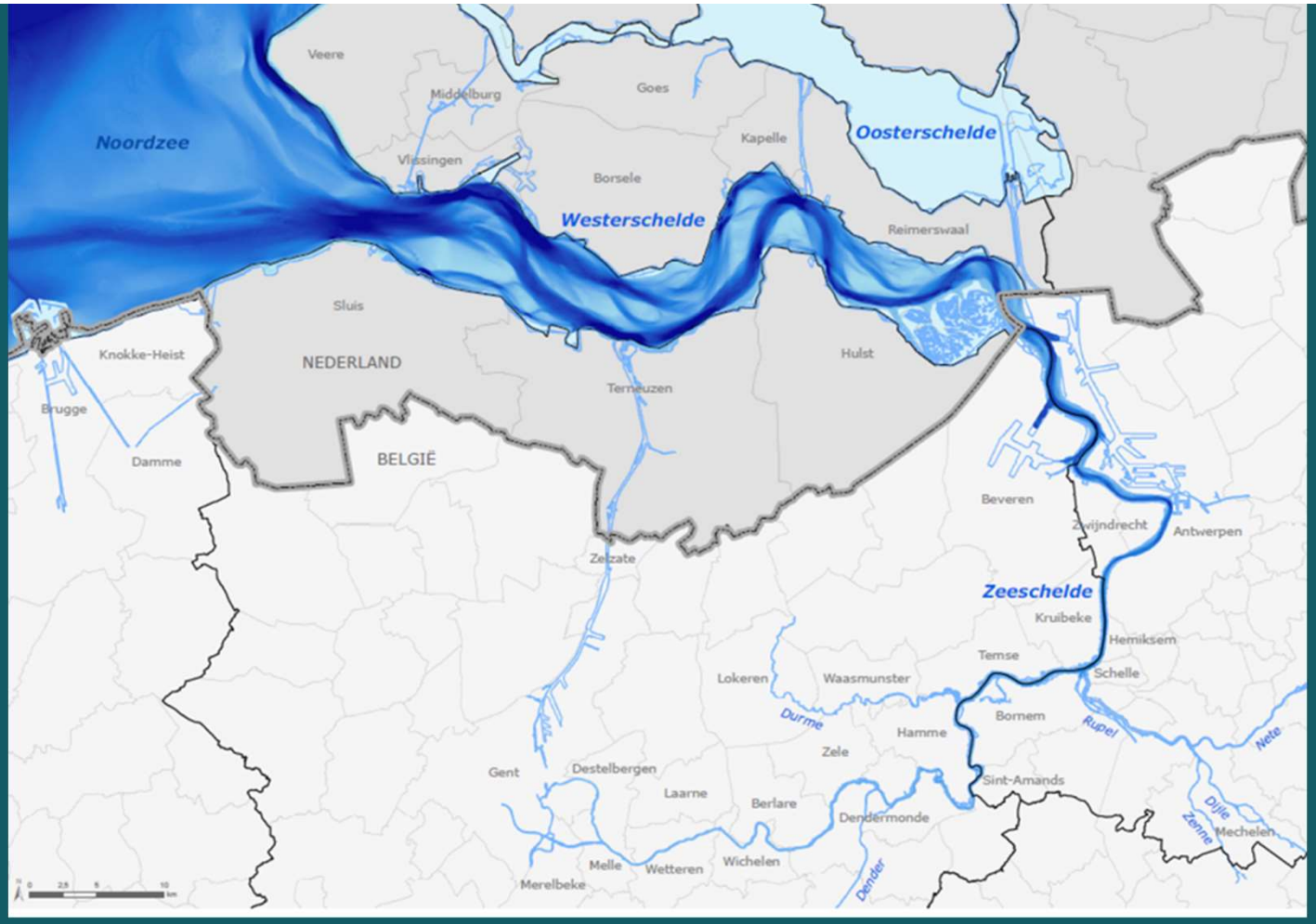
3.0 social demands

4.0 Sigmaplan

5.0 techniques - nature based solutions

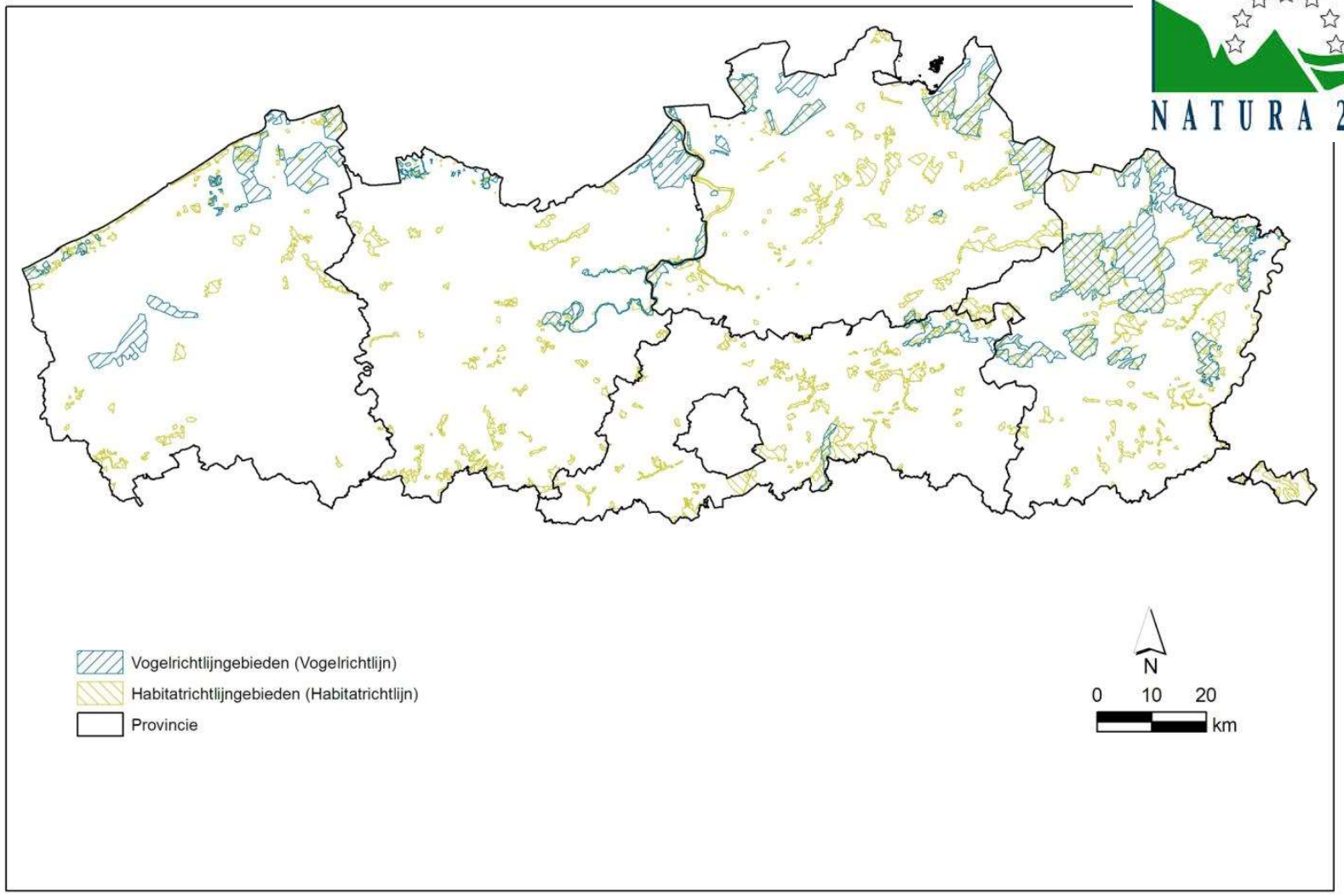
- Where are we?




Noordzee
Veere
Middelburg
Goes
Oosterschelde
Kapelle
Vlissingen
Borsele
Westerschelde
Reimerswaal
Sluis
Knokke-Heist
NEDERLAND
Hulst
Terneuzen
Brugge
Damme
BELGIË
Beveren
Zwijndrecht
Antwerpen
Zeezate
Zeeschelde
Kruibeke
Hemiksem
Temse
Schelle
Lokeren
Waasmunster
Durme
Bornem
Rupel
Hamme
Nete
Zele
Gent
Destelbergen
Sint-Amands
Laarne
Berlare
Dendermonde
Dijle
Zenne
Mechelen
Melle
Wetteren
Wichelen
Merelbeke
Dender

- tidal river
- gradient salt – brackish – fresh water
- habitats: mud flats, wetlands (grasslands, marshes, alluvial forests), rivers and creeks

NATURA 2000


Vogelrichtlijngebieden (Vogelrichtlijn)
Habitatrichtlijngebieden (Habitatrichtlijn)
Provincie
N
0 10 20
km

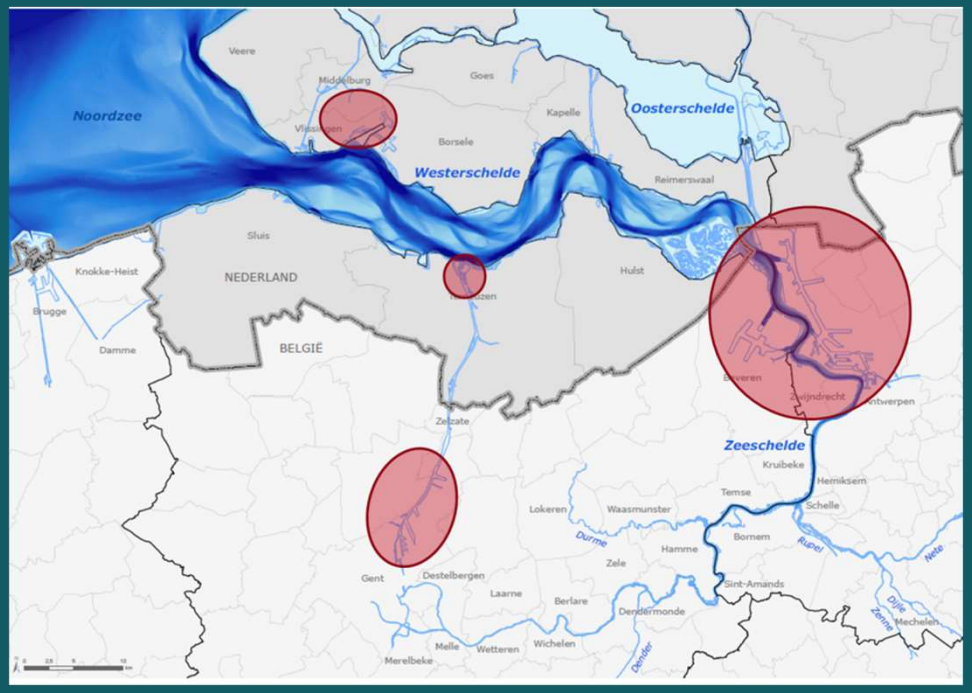
ecological problems

- physical
  - high/low extremities in water coming from upstream
  - increasingly rapid floods, rising of tidal amplitude, assymetric tides
  - temperature rising
  - turbidity rising

ecological problems

- chemical
  - changes in salinity
  - poor water quality (O2, N, P, Si)
  - toxic substances
  - poor quality and quantity of sedimentation zones
- habitats
  - loss of habitats, no connectivity, degradation of habitats
- fauna and flora
  - few viable populations of typical species
  - invasive exotic species

ecological problems – social demands & climate change



- port development - deepening of the fairway
- embankments
- urbanisation
- intensification of agriculture
- tourism / recreation
- safety
- > **insufficient resilience of the river system (2004)**

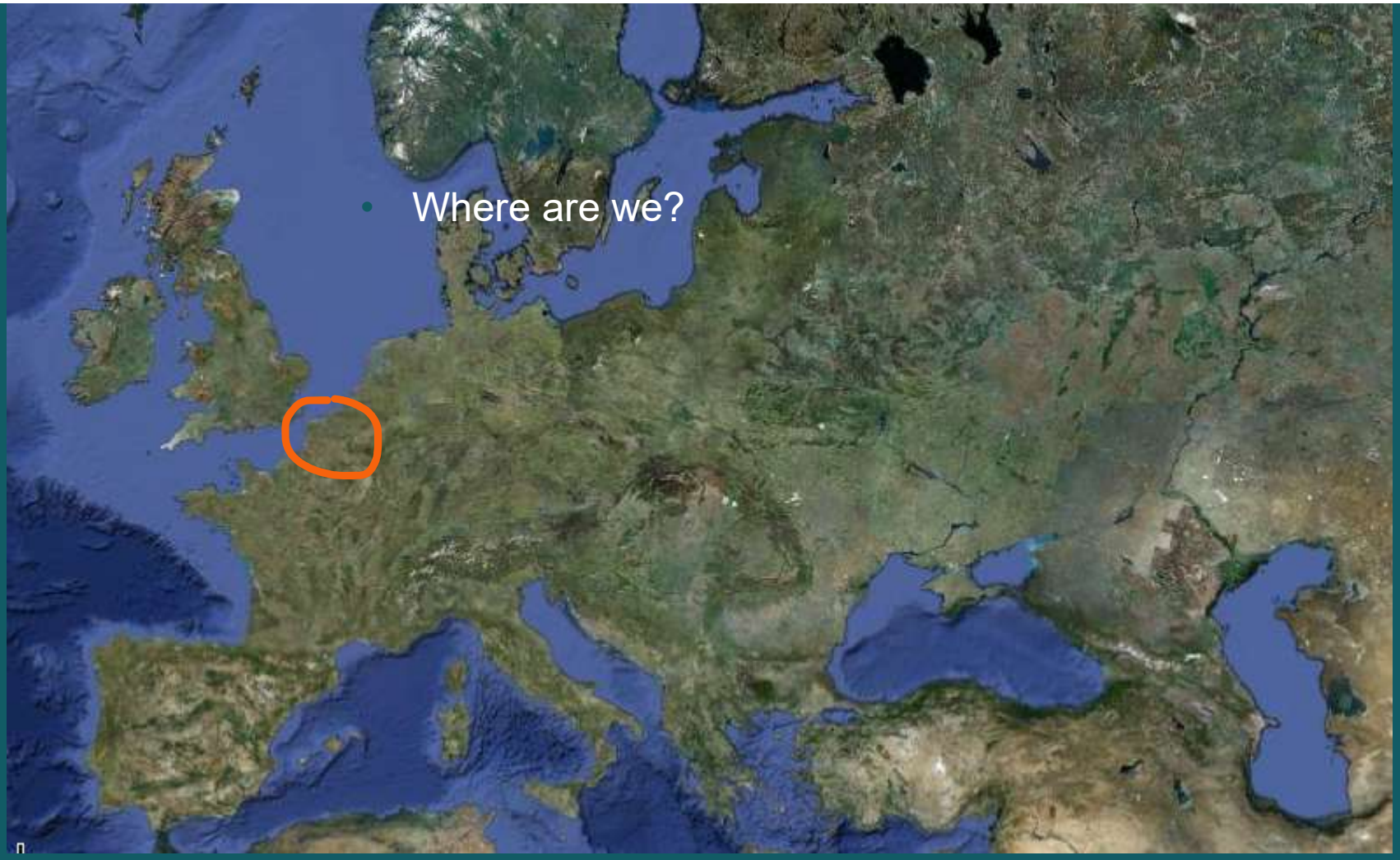
integrated solutions > Sigmaplan (2005)

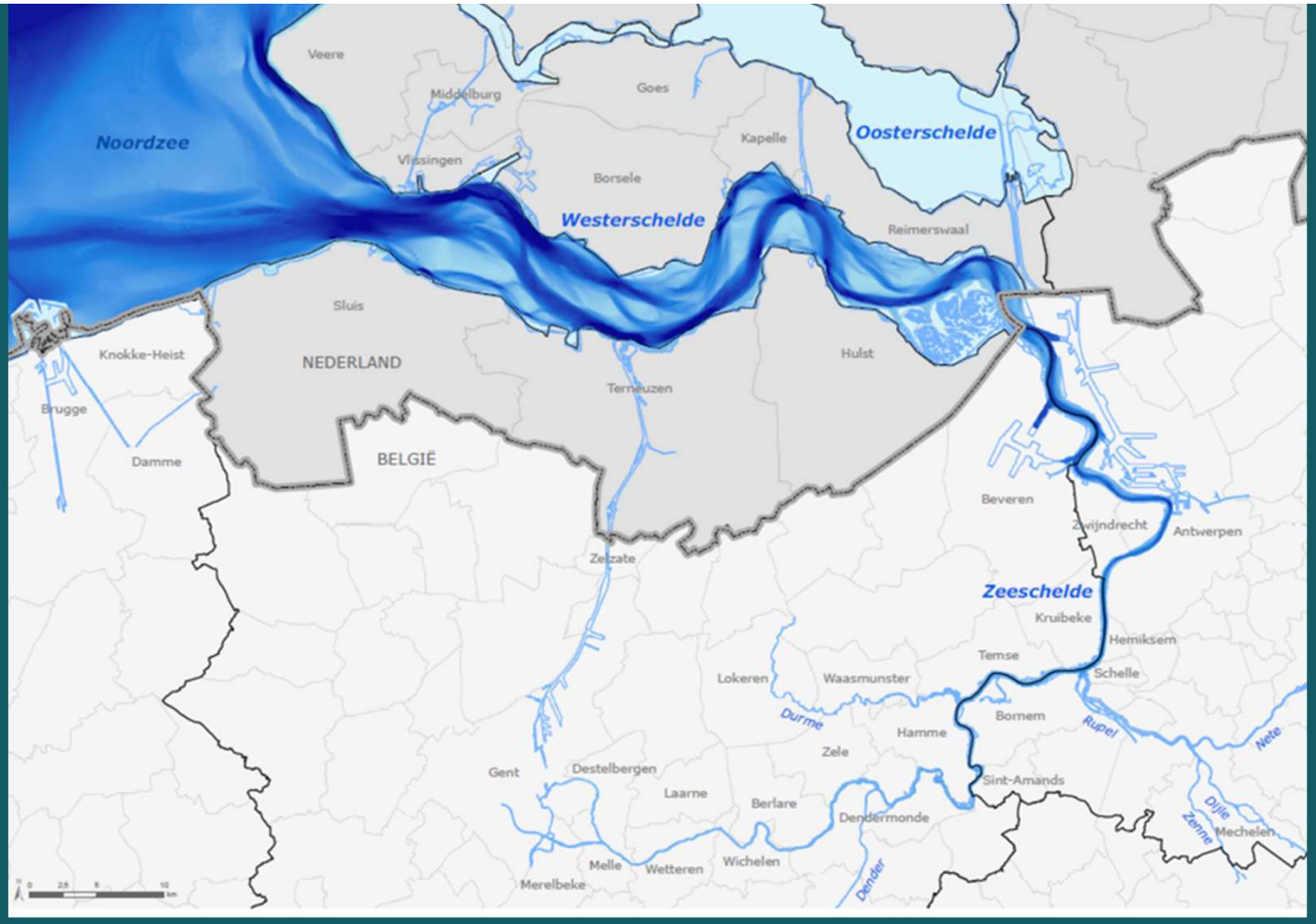
flood protection

deepening en widening of the
shipping lane to the Port of Antwerp

restoration ecosystem functioning
+ a good state according Natura 2000
Water Framework Directive
Long Term vision of the Schelde estuary

- Where are we?

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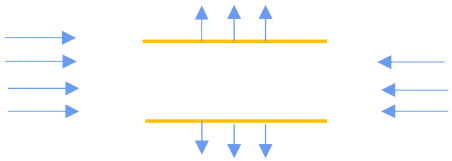
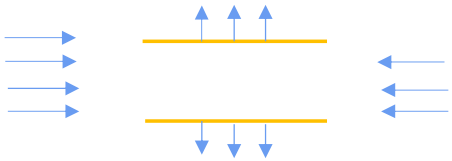
Melle
Wetteren
Wichelen
Merelbeke
Dender

Het Sigmaplan

- sea  upstream

- sea upstream

Het Sigmaplan

- sea  upstream

- sea upstream

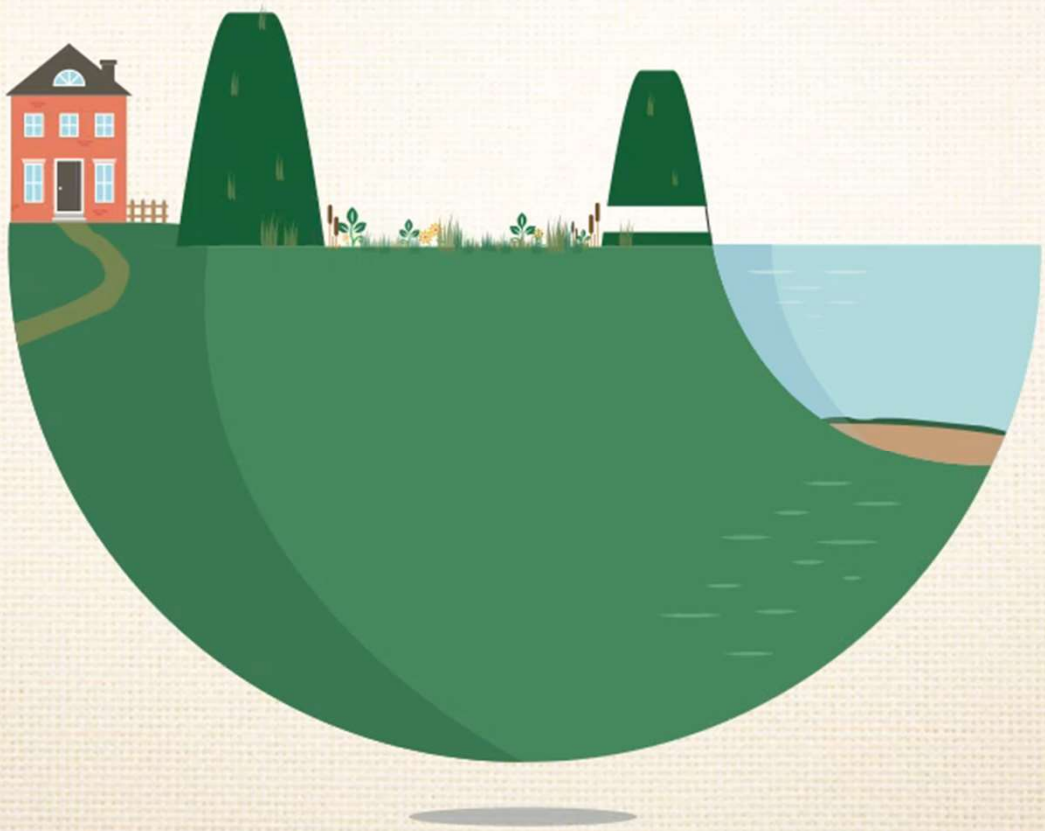
Solutions > Sigmaplan

- **restoration of resilience and ecosystem functioning = rewilding the river**
  - **+ 500 ha mudflats (mud) > food water birds and fish, counteracting tidal energy rise, water purification, extra habitats, oxigenation**
  - **+ 1,500 ha mudflats (vegetated) > Si, habitat, water purification, anti tidal energy, extra habitas, oxigenation**
  - **+ 900 ha marshland > extra habitats, water retention, water purification**
  - **+ 1,200 ha wetlands > extra habitats, water retention, water purification**
  - **+** restoration of **meanders**
  - **+** restoration of **connectivity**
  - **+** restoration of **fish migration**
  - **+** restoration **viable population of target species**

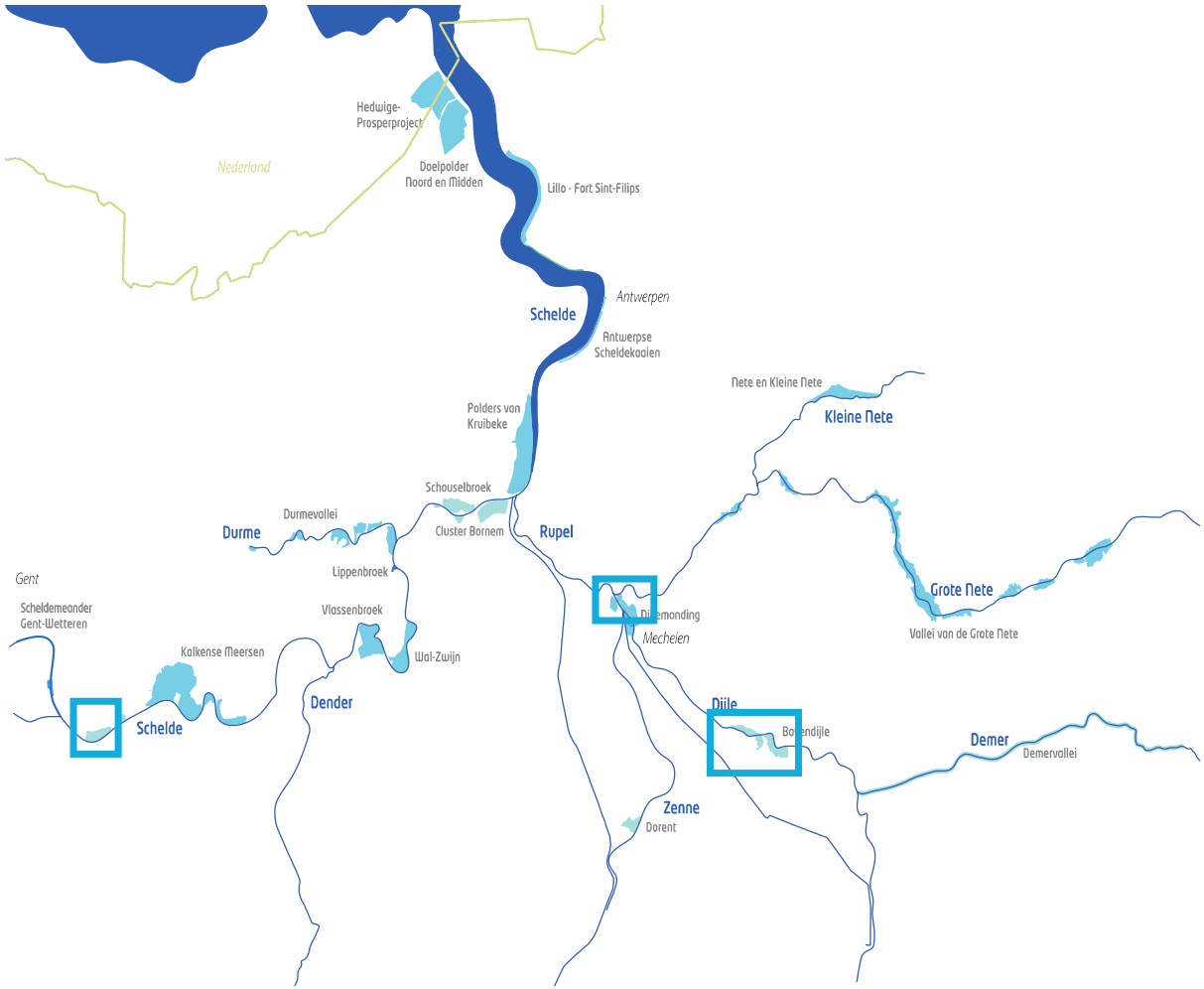
Solutions > techniques

- **Combining nature restoration techniques and flood control measures**
  - **'depoldering' = giving land back to the river**
  - **'controlled inundation zones with reduced tide'**
  - **restoration of meanders**
  - **sluices that allow passage of fish**
  - **...**
  - **central philosophy: nature based solution**

controlled inundation zone



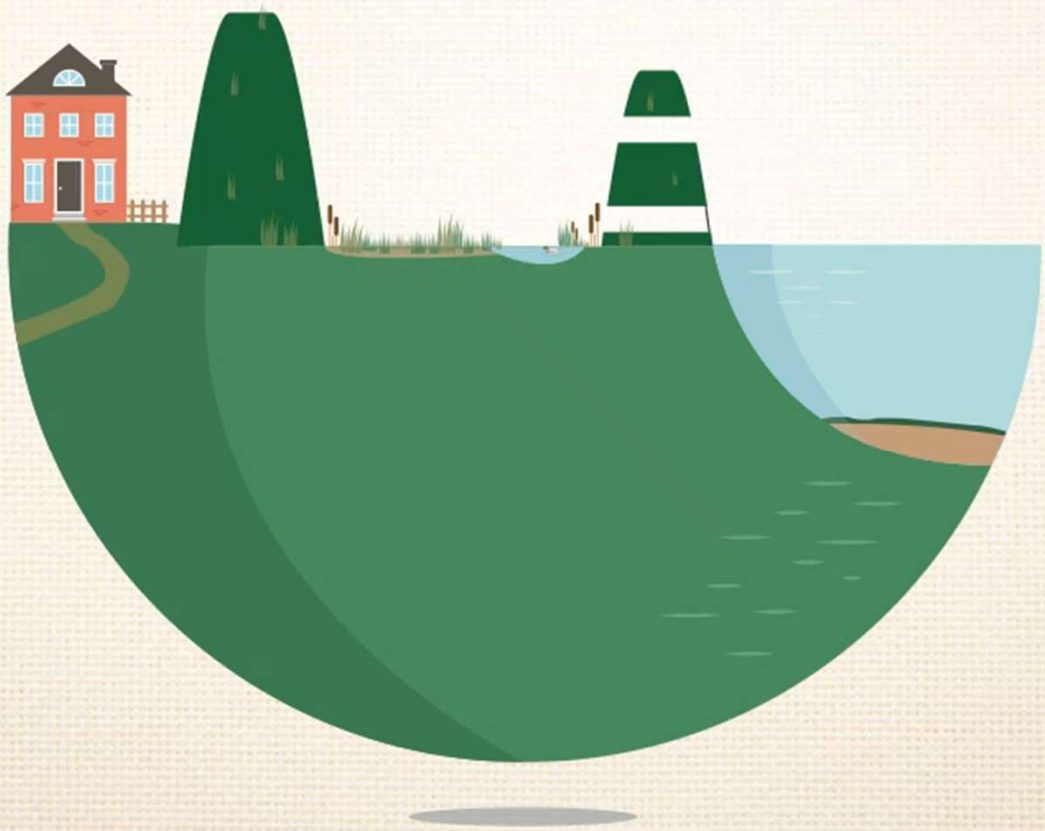
CIZ's purely safety



CIZ's -wetlands

CIZ’s Polders van Kruibeke

CIZ-RT: how does it work?



Before construction

Agentschap voor
Natuur en Bos

Low tide

Agentschap voor
Natuur en Bos

High tide

Agentschap voor
Natuur en Bos

Spring tide

Agentschap voor
Natuur en Bos

Storm tide (1 -2 /year)

Agentschap voor
Natuur en Bos

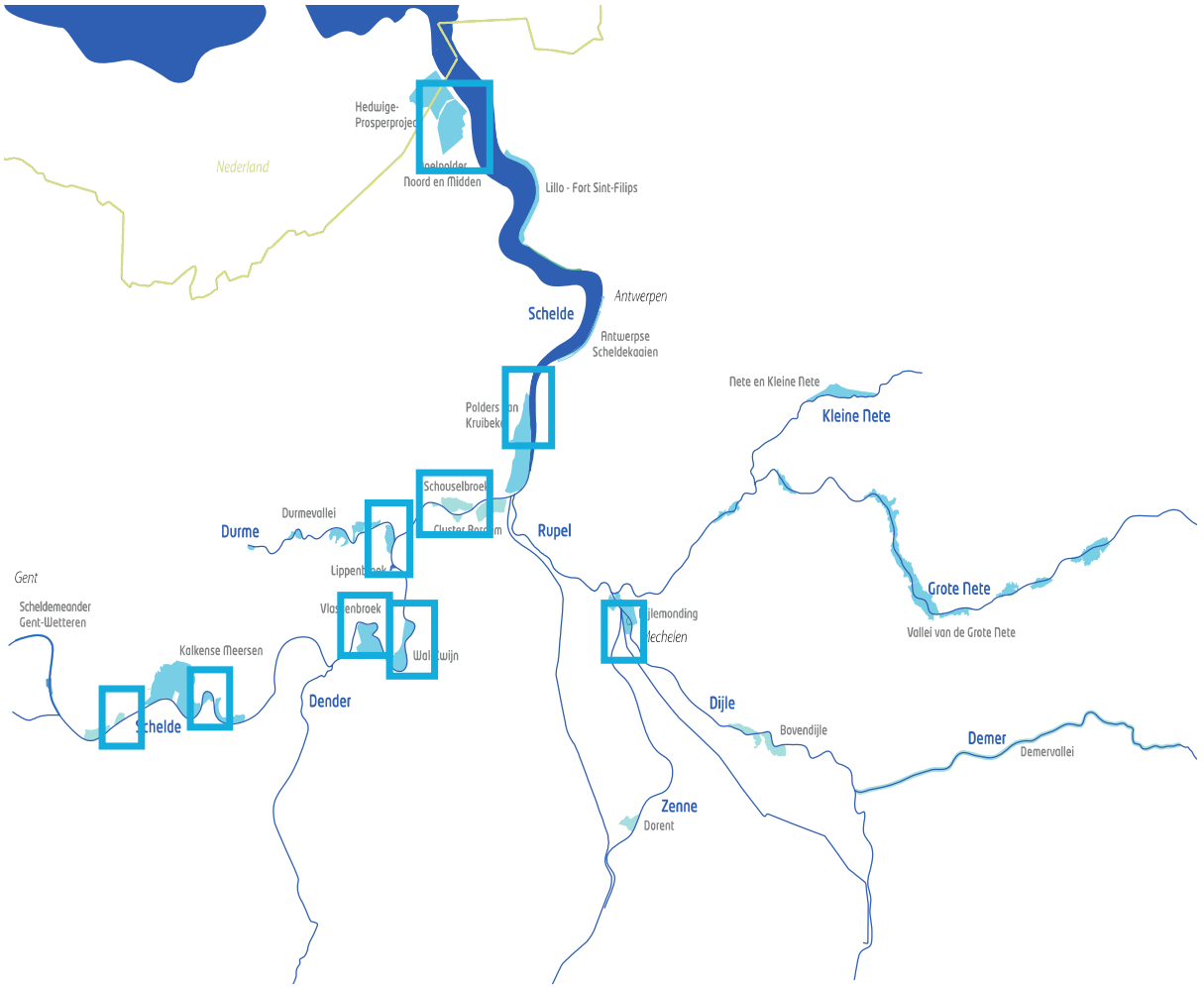
Extreme storm tide

Agentschap voor
Natuur en Bos

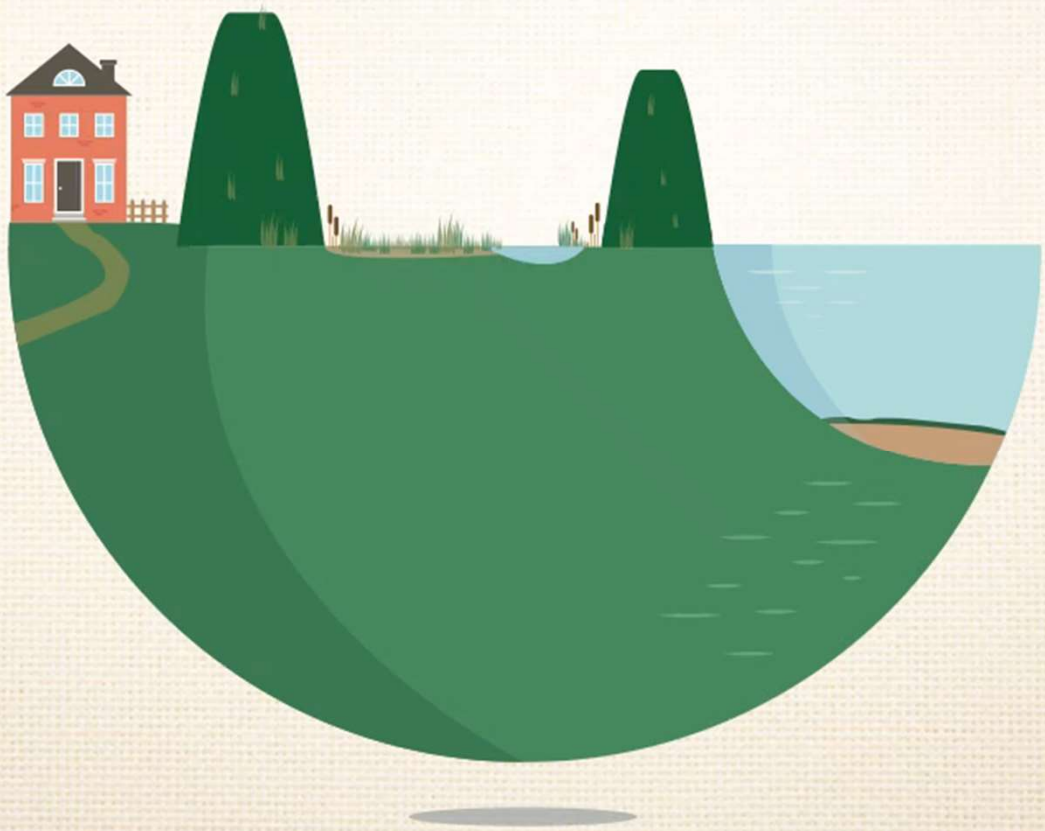
CIZ-RT Bergenmeersen
(Cluster Kalkense Meersen)

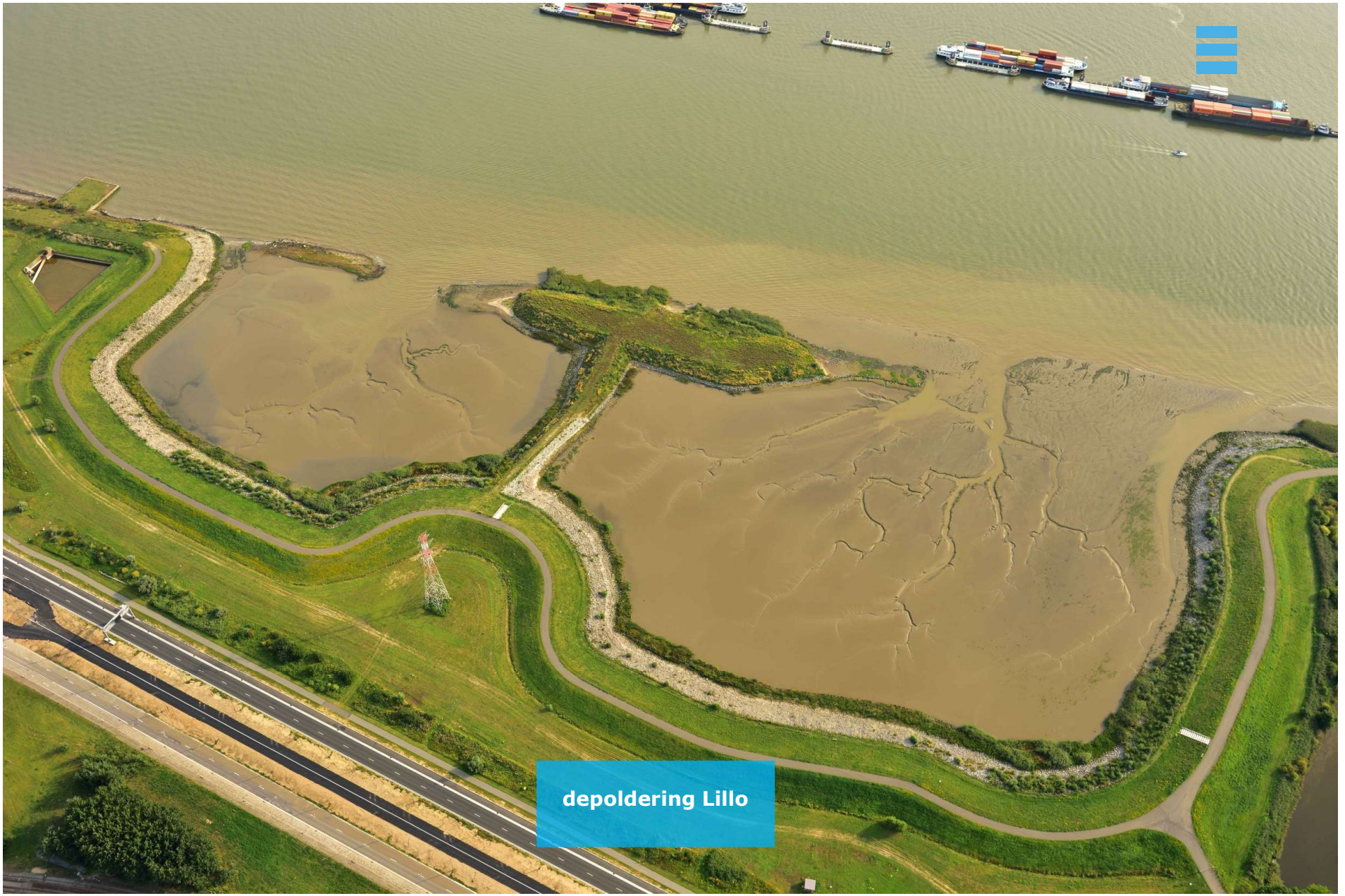
Bergenmeersen en Paardeweide

controlled inundation zones – reduced tide



depoldering



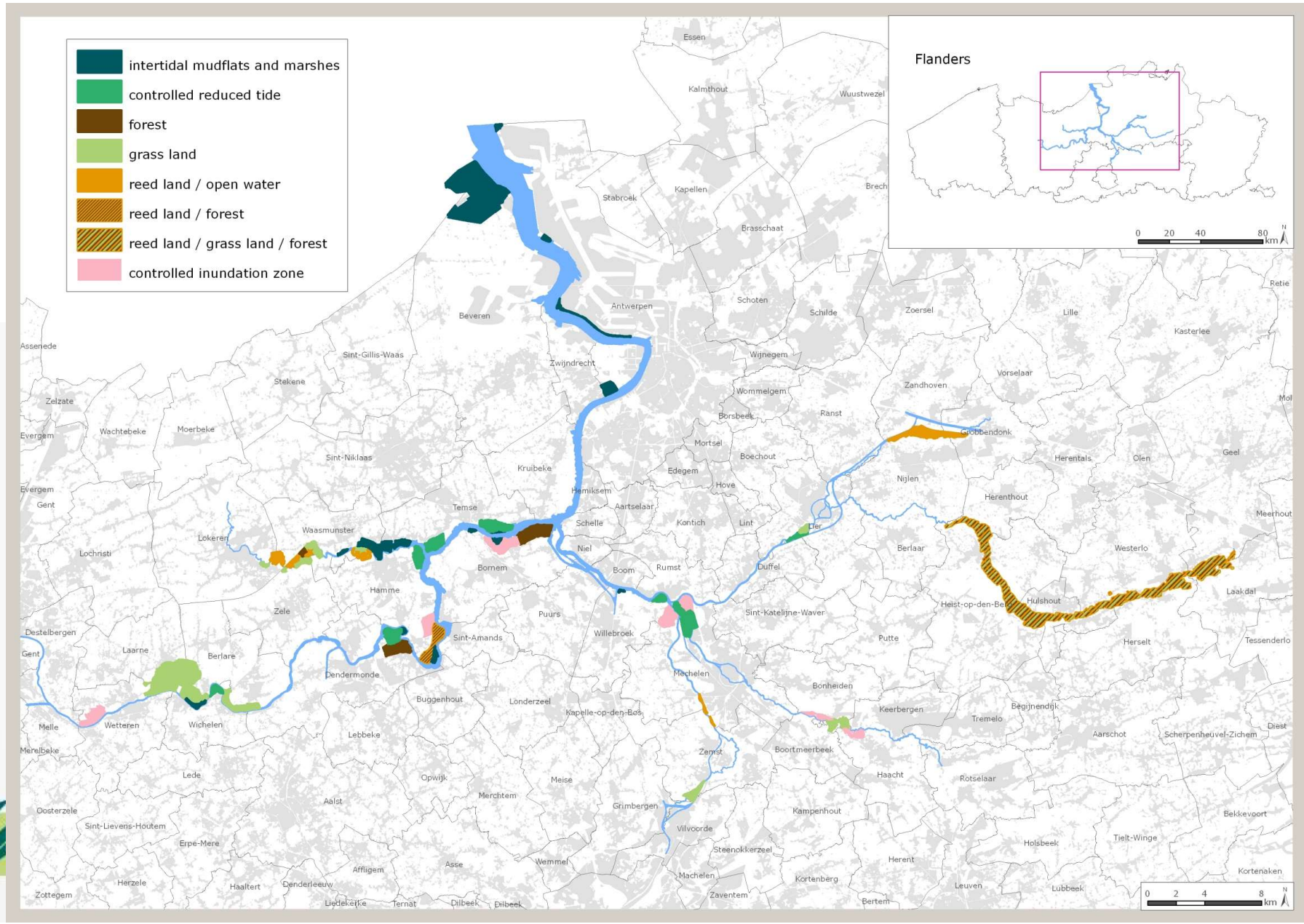

depoldering Lillo

depoldering

Restoration of meanders
(Demer - Aarschot)

2017 **2021**

working with helpers…


intertidal mudflats and marshes
controlled reduced tide
forest
grass land
reed land / open water
reed land / forest
reed land / grass land / forest
controlled inundation zone
Flanders
0 20 40 80 km
0 2 4 8 km
Essen
Kalmthout
Wuustwezel
Stabroek
Kapellen
Brasschaat
Schoten
Schilde
Zoersel
Retie
Lille
Kasterlee
Antwerpen
Beveren
Zwijndrecht
Wijnegem
Wommelgem
Ranst
Vorselaar
Zandhoven
Mol
Assenede
Sint-Gillis-Waas
Stekene
Zelzate
Evergem
Wachtebeke
Moerbeke
Sint-Niklaas
Kruibeke
Borsbeek
Mortsel
Boechout
Edegem
Hove
Grobbendonk
Herentals
Olen
Geel
Nijlen
Herenthout
Meerhout
Gent
Temse
Hemiksem
Aartselaar
Schelle
Kontich
Lint
Ier
Lokeren
Waasmunster
Lochristi
Niel
Boom
Rumst
Duffel
Berlaar
Westerlo
Laakdal
Bornem
Hamme
Zele
Puurs
Willebroek
Sint-Katelijne-Waver
Heist-op-den-Berg
Hulshout
Destelbergen
Laarne
Berlare
Sint-Amands
Putte
Herselt
Tessenderlo
Dendermonde
Mechelen
Buggenhout
Londerzeel
Bonheiden
Keerbergen
Begijnendijk
Tremelo
Aarschot
Scherpenheuvel-Zichem
Diest
Melle
Wetteren
Wichelen
Kapelle-op-den-Bos
Lebbeke
Merelbeke
Zemst
Boortmeerbeek
Haacht
Rotselaar
Lede
Opwijk
Meise
Merchtem
Aalst
Oosterzele
Grimbergen
Kampenhout
Bekkevoort
Sint-Lievens-Houtem
Vilvoorde
Tielt-Winge
Erpe-Mere
Steenokkerzeel
Holsbeek
Herent
Affligem
Asse
Wemmel
Machelen
Kortenaken
Herzele
Haaltert
Denderleeuw
Kortenberg
Leuven
Lubbeek
Zottegem
Liedekerke
Ternat
Dilbeek
Zaventem
Bertem

juni ’23

Rewilding the river Scheldt – Sigma

sigmaplan

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