building with nature
capatilising on nature's water system potential
prof. Huib de Vriend
EcoShape
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www.ecoshape.nl

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BUILDING WITH NATURE

to develop / realise / operate / maintain water-related infrastructure

while

(1) making good use of the forces of nature

(2) embedding the structure in nature / nature in the structure

(3) creating new opportunities for nature

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market perspective

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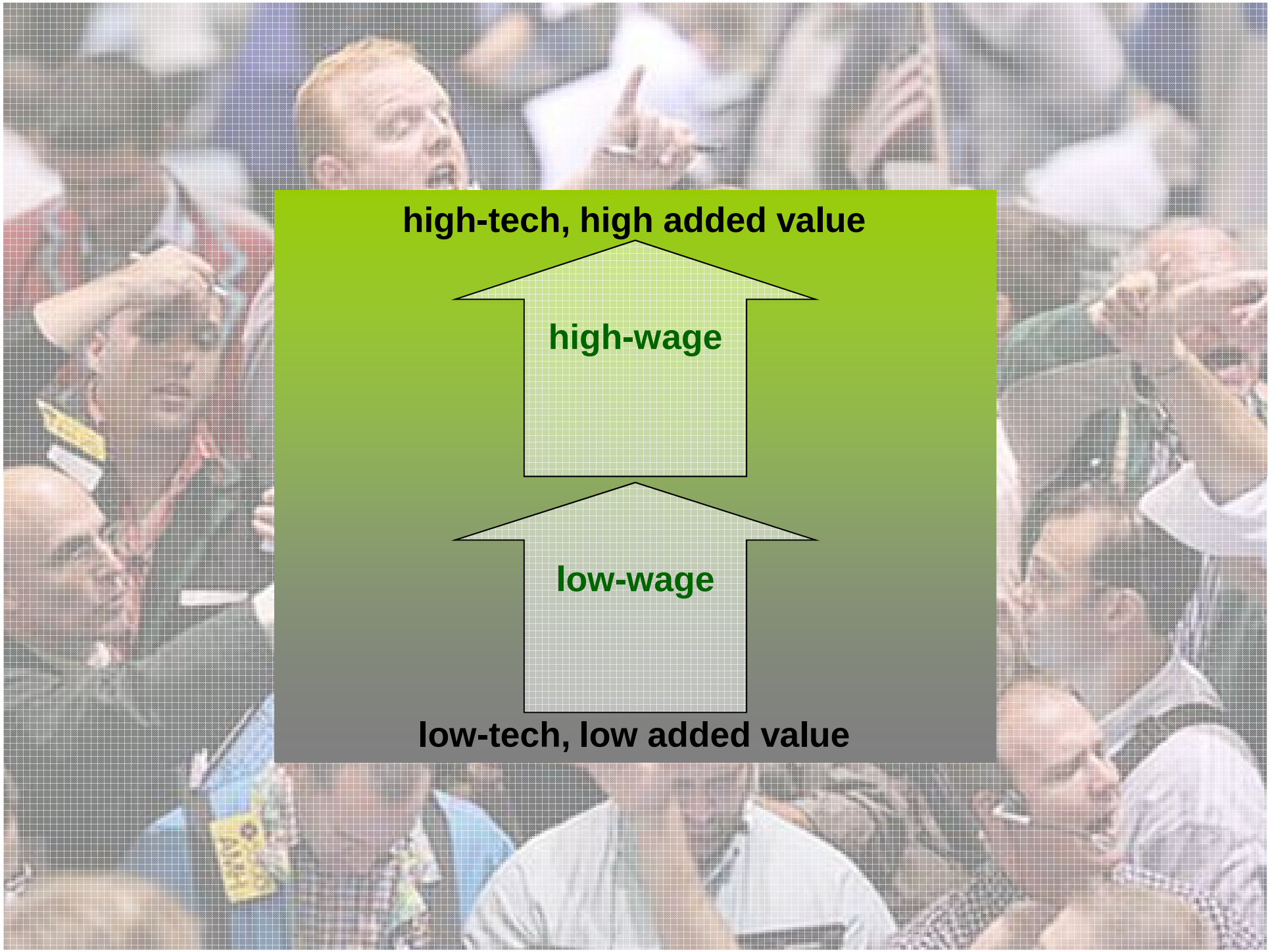
high-tech, high added value
high-wage
low-wage
low-tech, low added value

high-tech
traditional
competitive
domain

high added value
pre-competitive
innovation
domain

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market

⇒ opportunities

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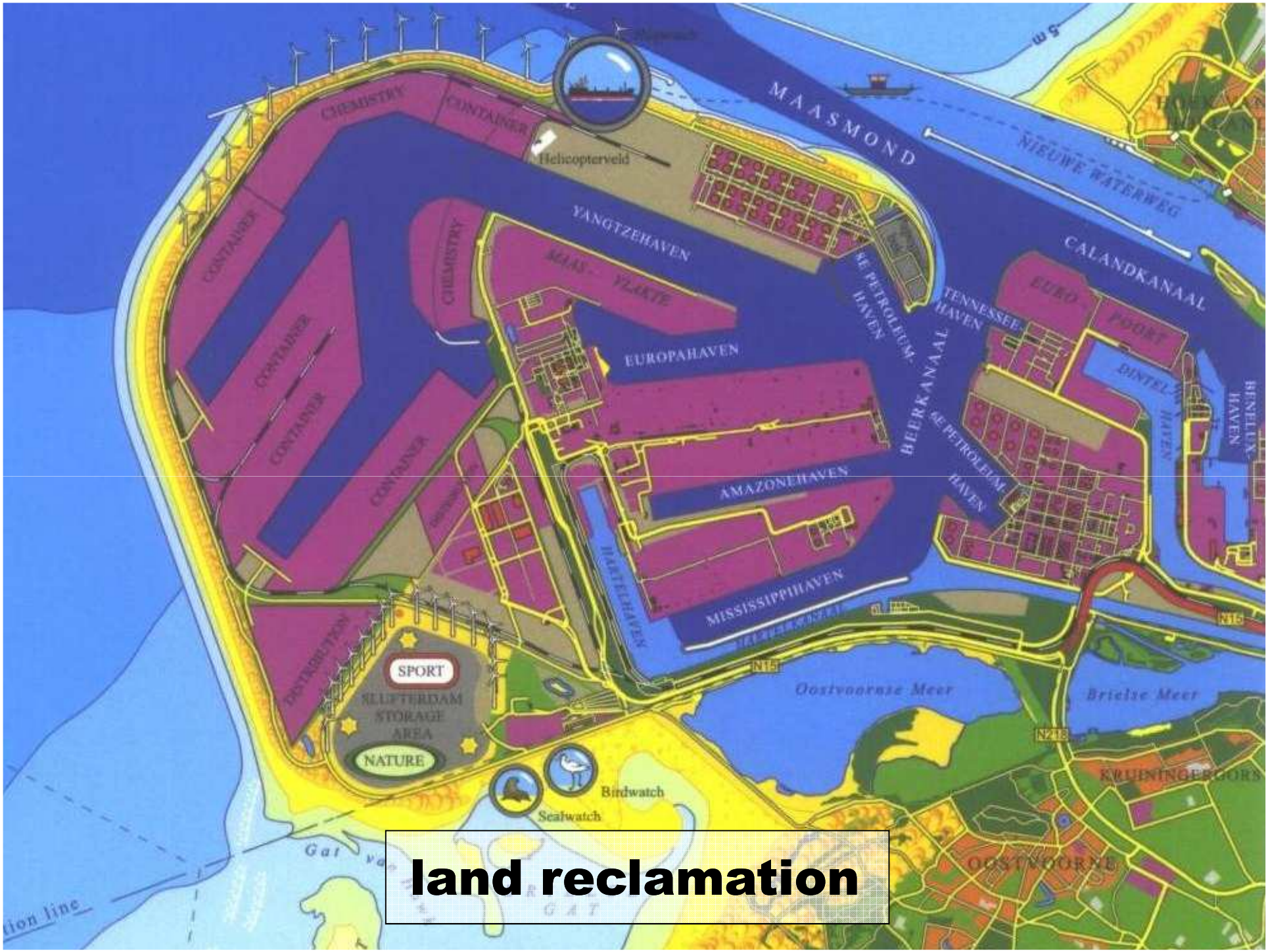
MAASMOND
NIEUWE WATERWEG
CALANDKANAAL
YANGTZEHAVEN
EUROPAHAVEN
AMAZONEHAVEN
MISSISSIPPIHAVEN
BEERKANAAL
TENNESSEEHAVEN
DINTELHAVEN
BENELUXHAVEN
CHEMISTRY
CONTAINER
Helicopterveld
SPORT
NATURE
Birdwatch
Seafwatch
Oostvoornse Meer
Brielse Meer
N15
N218
OOSTVOORNE
land reclamation

flood and inundation protection

shore maintenance

shore maintenance
Taco

sand mining

traffic and transportation

water resources management

habitat restoration

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HIGH ADDED VALUE

where to be gained?

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CLIENT'S PROBLEMS

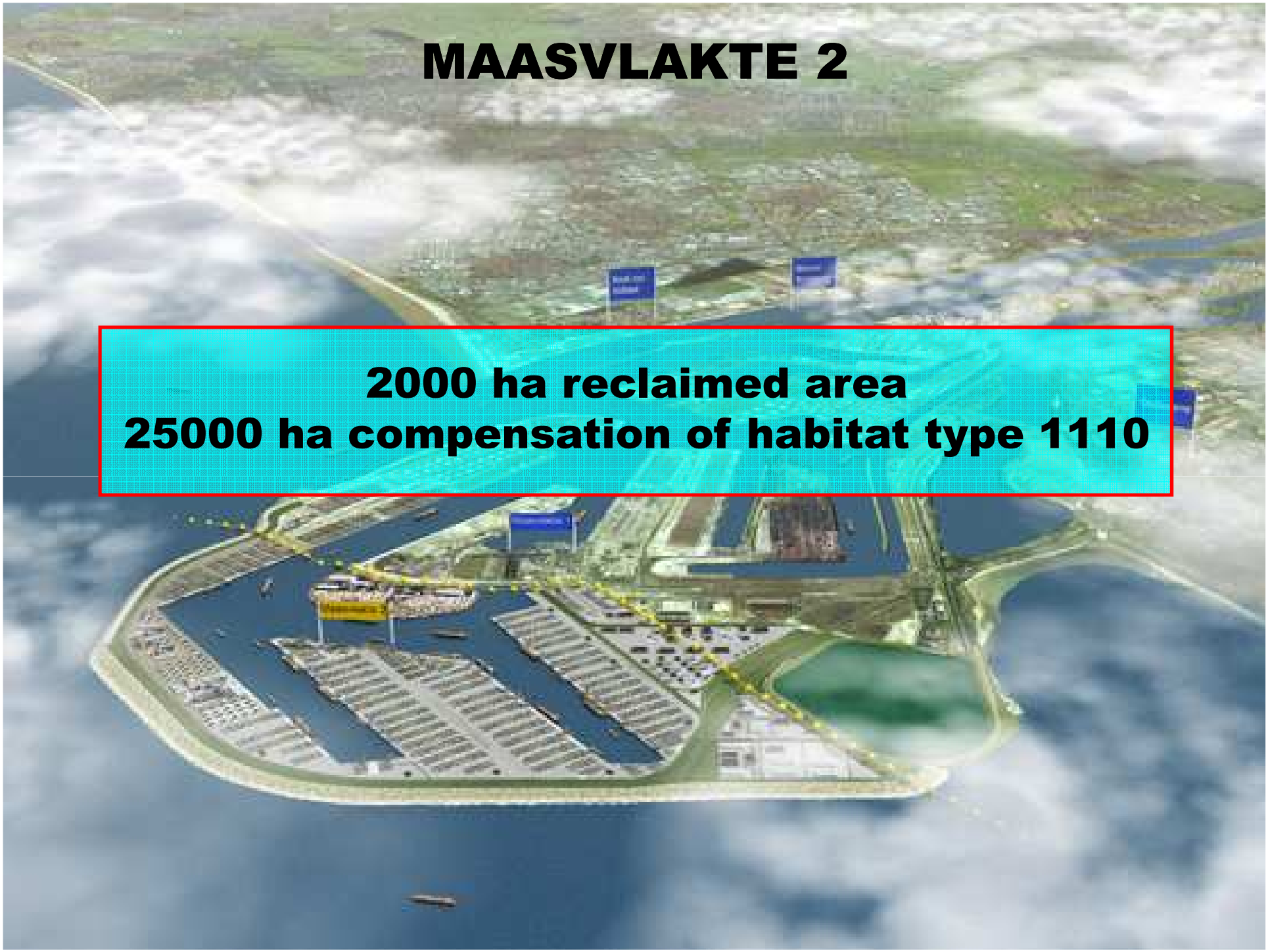
- complex legislation
- lengthy procedures
- environmental impact
- unrealistic environmental norms
- assertive stakeholders
- pressure on space
- cost/benefit arguments

ENVIRONMENTAL LEGISLATION

- conservation-oriented
  - ⇒ red list (species to be conserved)
  - ⇒ room for autonomous change?
- + loss of habitat may be compensated
  - ⇒ disproportionate requirements?
- - rigid interpretation by local government
  - ⇒ severe derived regulations
  - ⇒ rigid permit policy
  - ⇒ strict enforcement

BUT: difficult to change, long procedure
⇒ try to live with it / make use of it

MAASVLAKTE 2



2000 ha reclaimed area
25000 ha compensation of habitat type 1110

ENVIRONMENTAL NORMS

e.g.:
how much turbidity
during how long a time
can the ecosystem take?

don’t just copy the Øresund,
know your system
and
derive specific norms

PROCEDURES & STAKEHOLDERS

- **excessive number of permits required**
  - ⇒ high preparation costs
  - ⇒ susceptible to bureaucracy
- **stakeholders**
  (well-organised, well-advised, well-informed)
  - ⇒ able to obstruct and delay
  - ⇒ make clever use of legislation
    (e.g. precautionary principle)

(1) know how the natural system functions and responds to human interventions

(2) involve key stakeholders from the early development stages onwards

how will MV2 affect
mud and larvae transport
to the Wadden Sea?
State Council:
'insufficiently
investigated'
2 extra years
of study
⇒ cannot be
assessed
?

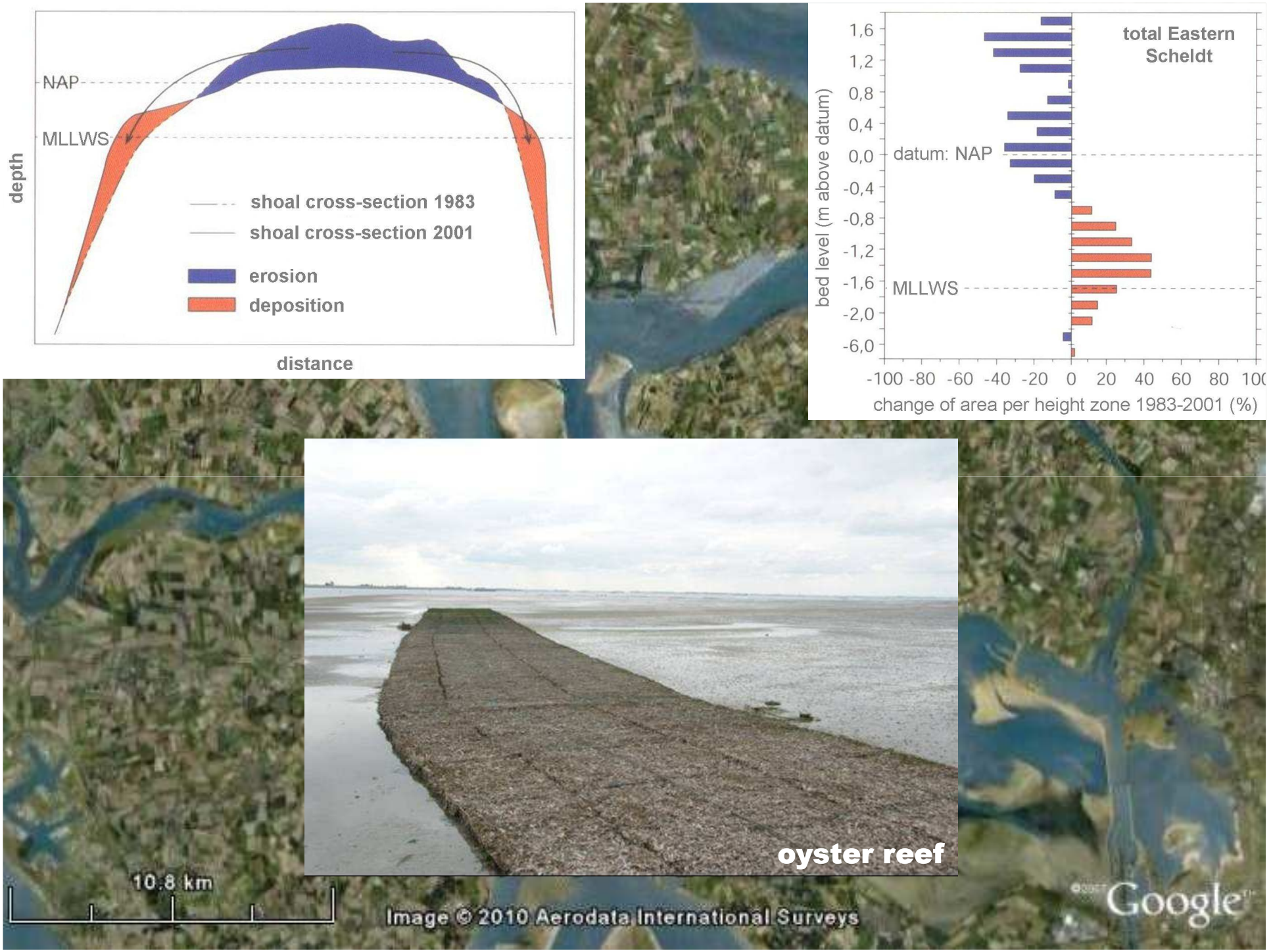
ENVIRONMENTAL IMPACT

- **foreseeable impacts**
  - ⇒ how to prevent or mitigate?
  - ⇒ how to speed up recovery?
- **unrealistically predicted impacts**
  - ⇒ how to avoid or expose?
- **unforeseen impacts**
  - ⇒ how to undo or mitigate?

(1) know the system you're working in & make use of it

(2) embed your structure in nature

(3) embed nature in your structure


NAP
MLLWS
depth
distance
shoal cross-section 1983
shoal cross-section 2001
erosion
deposition
total Eastern Scheldt
bed level (m above datum)
1,6
1,2
0,8
0,4
0,0
-0,4
-0,8
-1,2
-1,6
-2,0
-6,0
datum: NAP
MLLWS
-100 -80 -60 -40 -20 0 20 40 60 80 100
change of area per height zone 1983-2001 (%)
oyster reef
10.8 km
Image © 2010 Aerodata International Surveys
Google

COSTS AND BENEFITS

- **economical cost-benefit analysis**
  ⇒ **focused on economic profit**
- **societal cost-benefit analysis**
  ⇒ **focused on people's welfare and well-being**
- **environmental cost-benefit analysis**
  ⇒ **People, Profit, Planet in balance**

(1) evaluate bwn-projects with ECBA

(2) money as common denominator?

(3) ecosystem services broad enough to determine environmental value?

ECONOMICALLY
NOT FEASIBLE

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CONCLUSION

building with nature:

- has good market perspectives
- can provide for a high added value
- can create win-win situations

<u>if</u>:

- we know the (eco)system we work in
- we can point out the value we create
- we share our knowledge with stakeholders
- we get involved in early decision making

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