



DEC

Environmental Contractor



FASIVER

Remediation and revalorisation of a brownfield site

Responsabilities for the clean-up company

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DEME

Dredging, Environmental
& Marine Engineering



DEME GENERAL PRESENTATION



DEME

Dredging, Environmental
& Marine Engineering

5 Axes of Activity creating a string of strengths



DREDGING

HYDRAULIC ENGINEERING

ENVIRONMENTAL TECHNIQUES

BUILDING MATERIALS

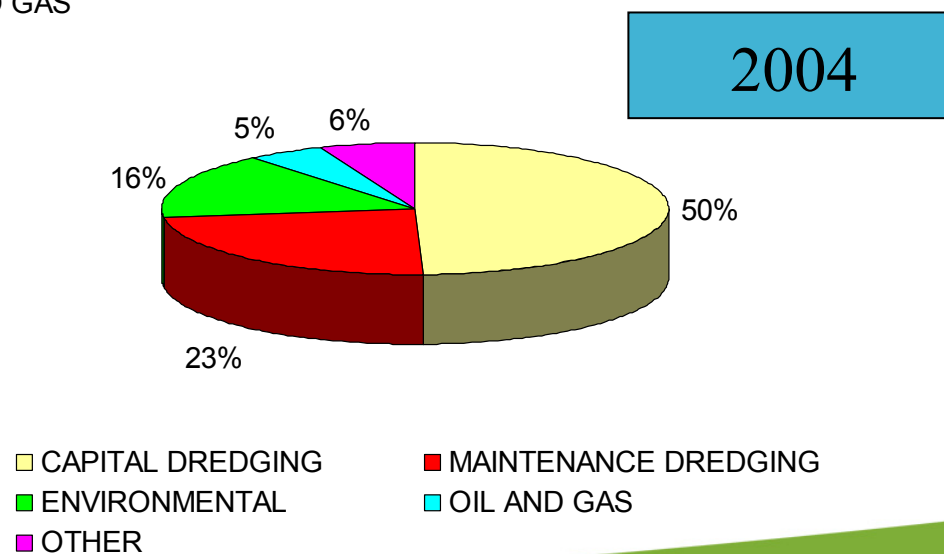
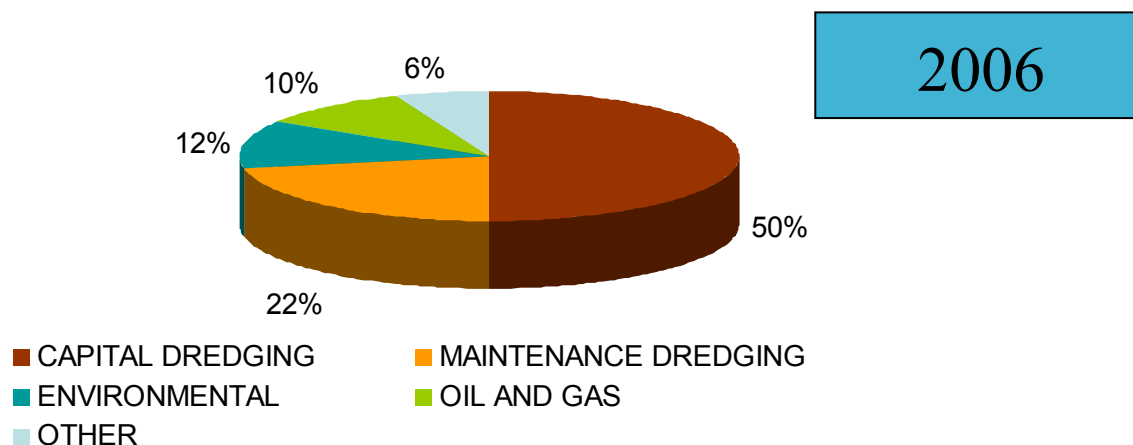
**PROJECT DEVELOPMENT
& CONCESSIONS**



DEME

Dredging, Environmental
& Marine Engineering

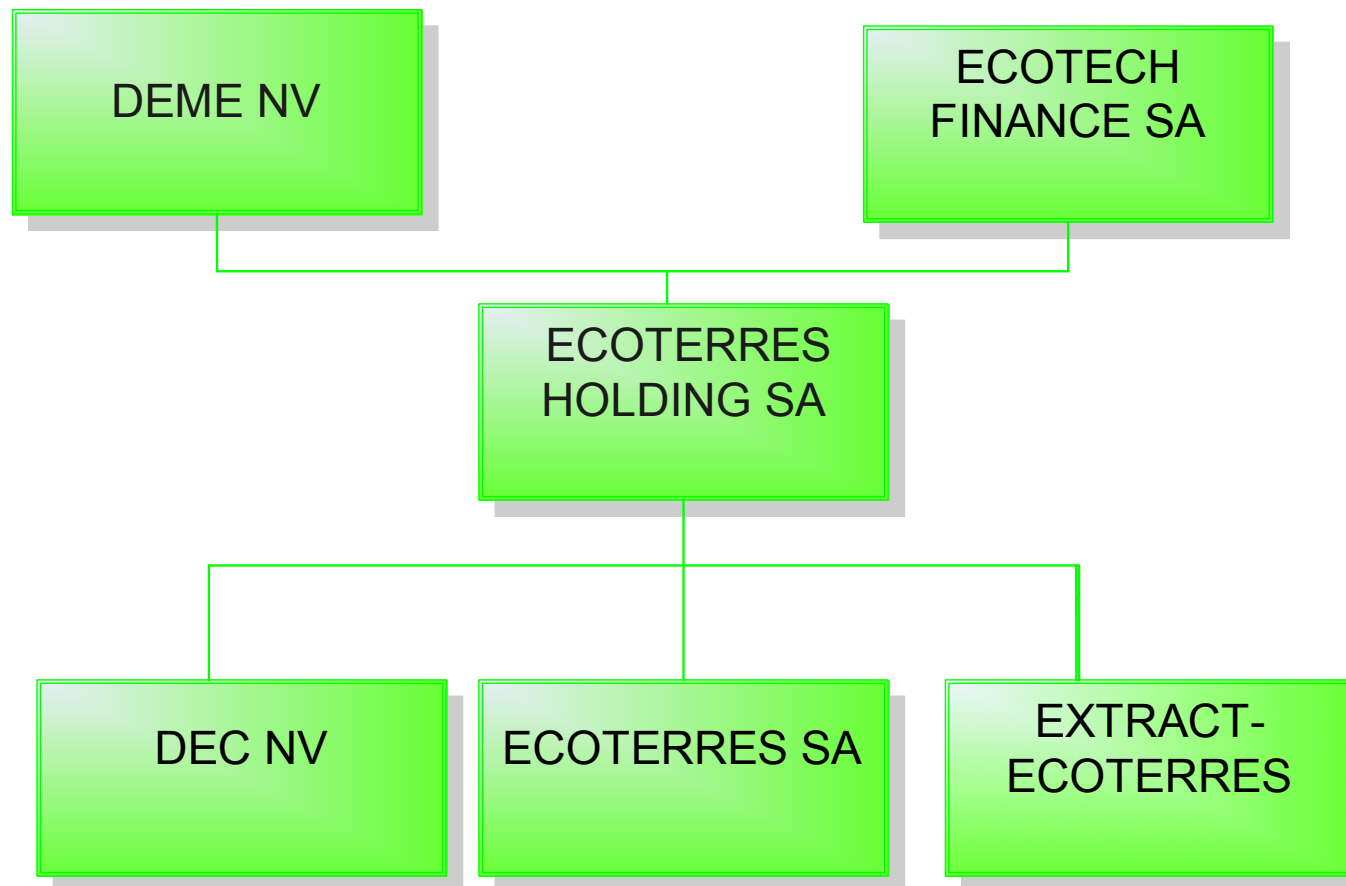
DEME Group turnover according to activities



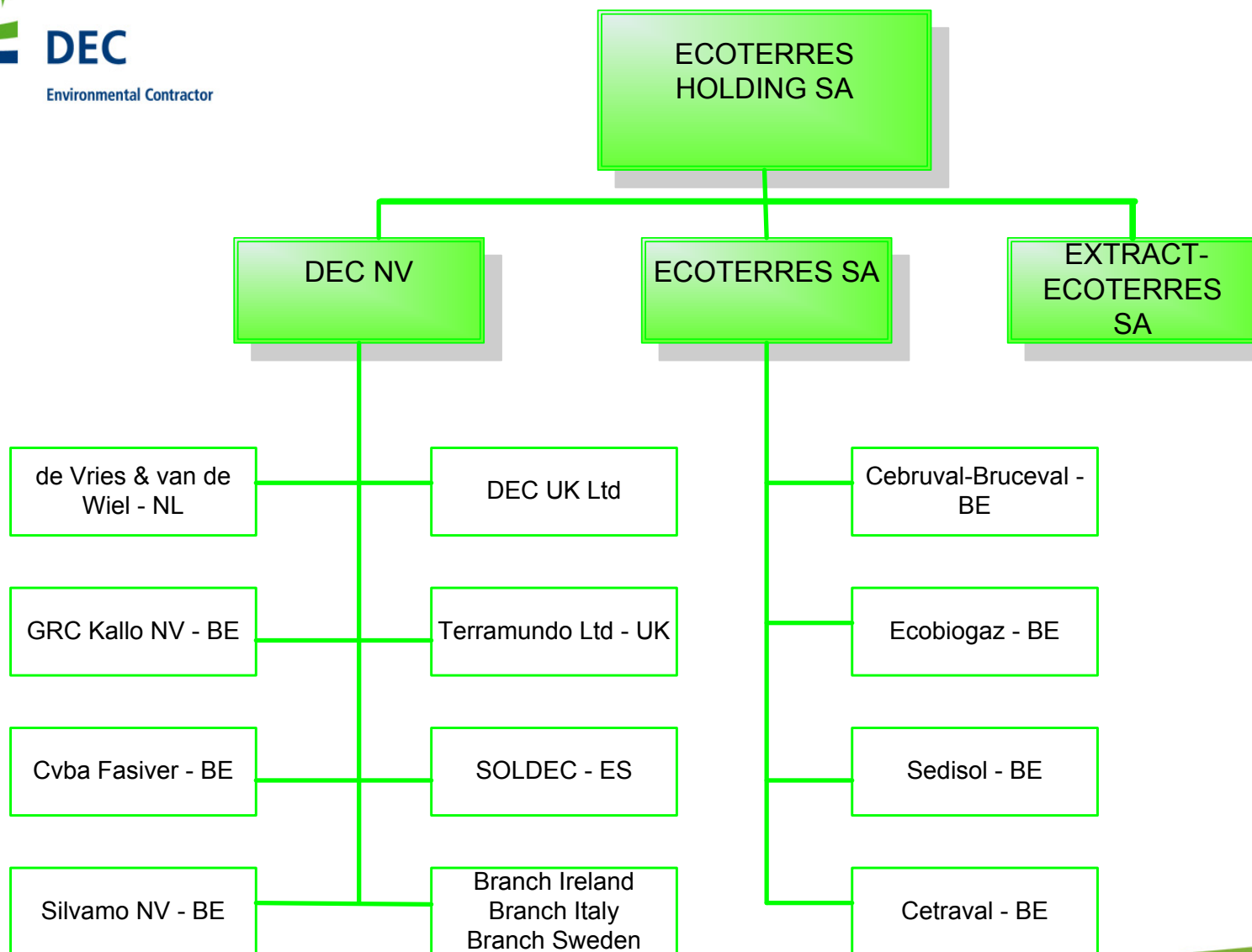
ECOTERRES Holding SA

Turnkey solutions for global
environmental needs

Structure



Structure



ECOTERRES HOLDING

- Actual turnover 2005 : € 119,9 mio
- Actual turnover 2006 : € 142,8 mio
- Actual turnover 2007 : € 124,7 mio
- Staff : > 400

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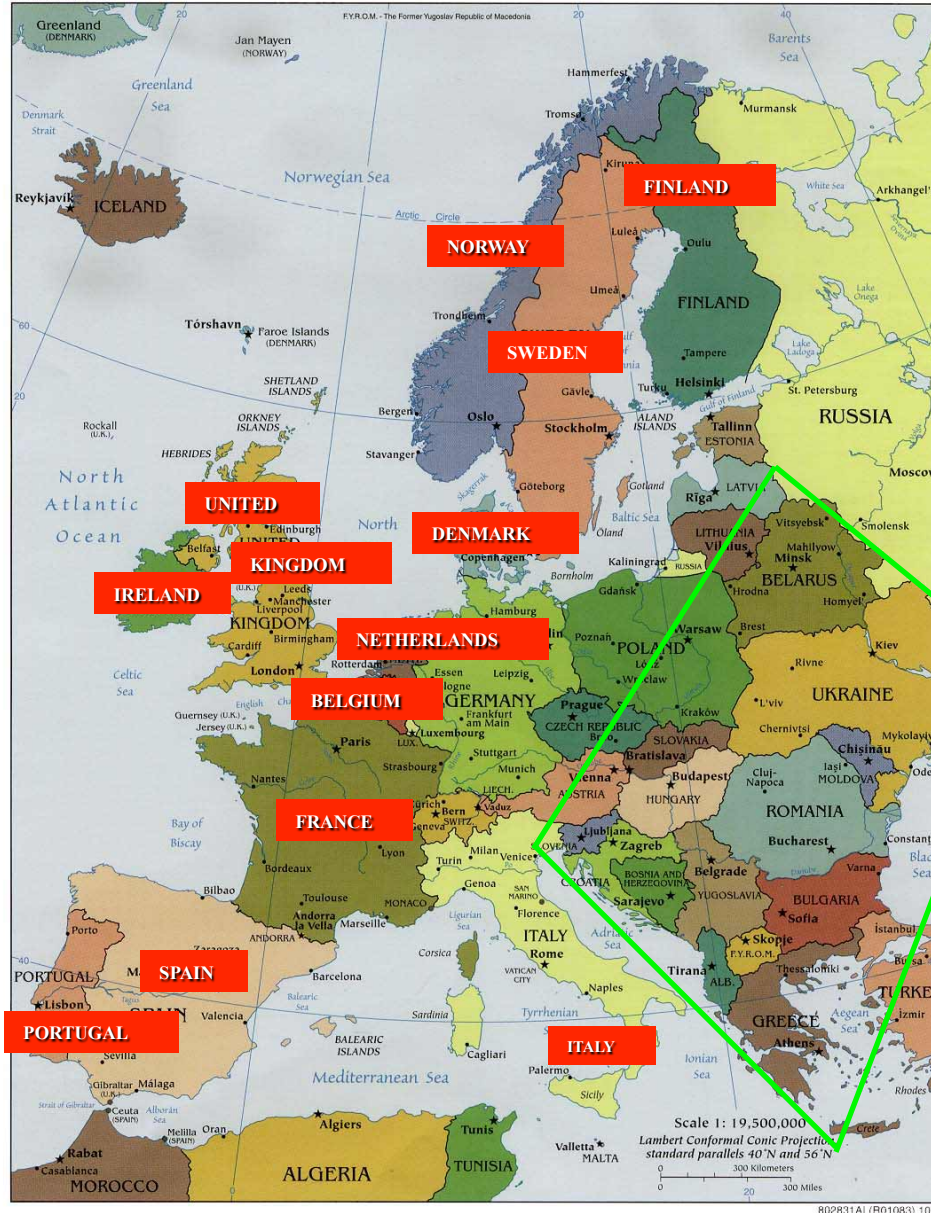
- Actual turnover 2005 : € 59,60 mio
- Actual turnover 2006 : € 77,00 mio
- Actual turnover 2007 : € 62,00 mio
- Staff : 195



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EUROPE



DEME
homemarkets

e.g.

❖ Australia

❖ Brazil

to be
further
developed

**DEC -
subsidiaries**

Knowhow of DEC NV



- ❖ Remediation techniques : In-situ and ex-situ treatment contaminated soil
- ❖ Isolation techniques
- ❖ Treatment and recycling of sediments
- ❖ Valorization of contaminated sites = Brownfield development
- ❖ Hydraulic works
- ❖ Environmental dredging

Fasiver

**Remediation and revalorisation of the
site 'Eilandje' at Zwijnaarde (Ghent),
Belgium**

Fasiver Project

- ❖ Remediation of historical ‘black-point’
- ❖ Disposal and treatment capacity for dredged sediments for the next 10 years
- ❖ Creation of an industrial area

Fasiver Project : location





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Fasiver Project : location



Fasiver Project : location



❖ Redevelopment brownfield Ghent-Flanders

➤ Decontamination

- ✓ Black-point priority 1
- ✓ Historical contamination

➤ Treatment and recycling of sludges

- ✓ Urgent need maintenance rivers
- ✓ Unique disposal site (permit)

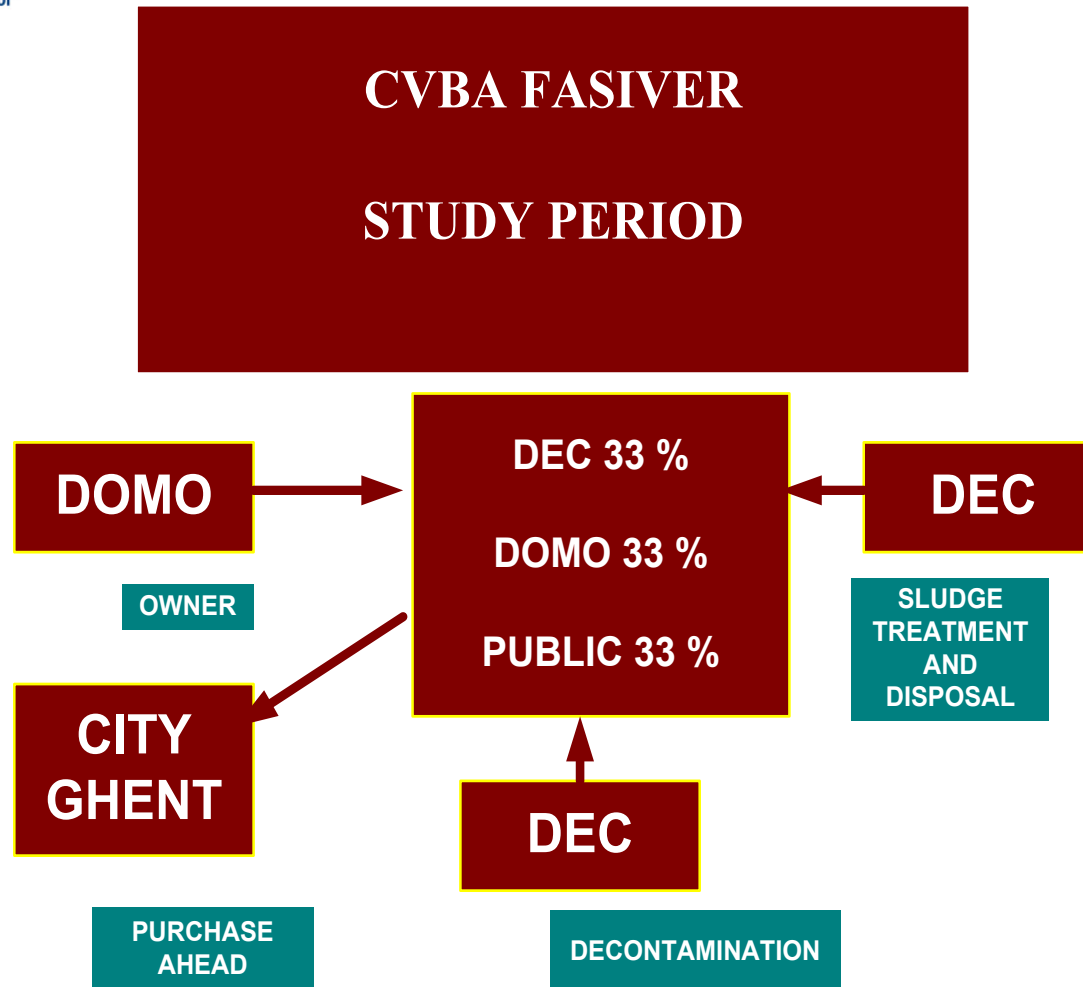
❖ Redevelopment brownfield Ghent-Flanders

➤ Industrial zone

- ✓ Urgent need industrial areas
- ✓ Unique strategic location

➤ Ecological surplus value

- ✓ Decontamination historical black point
- ✓ Creation of a new green area
- ✓ Realisation industrial zone without using new open areas



❖ Study period 1997 – 2000

❖ Public Partner

- City Ghent
- Province of East Flanders
- Flemish Environmental Holding

Activities

- review regional planning
- permits : construction
environmental
- decontamination studies
- landscape study

❖ Private Partner

- DOMO – owner
- DEC – contractor

❖ Exploitation period 2001 – 2010

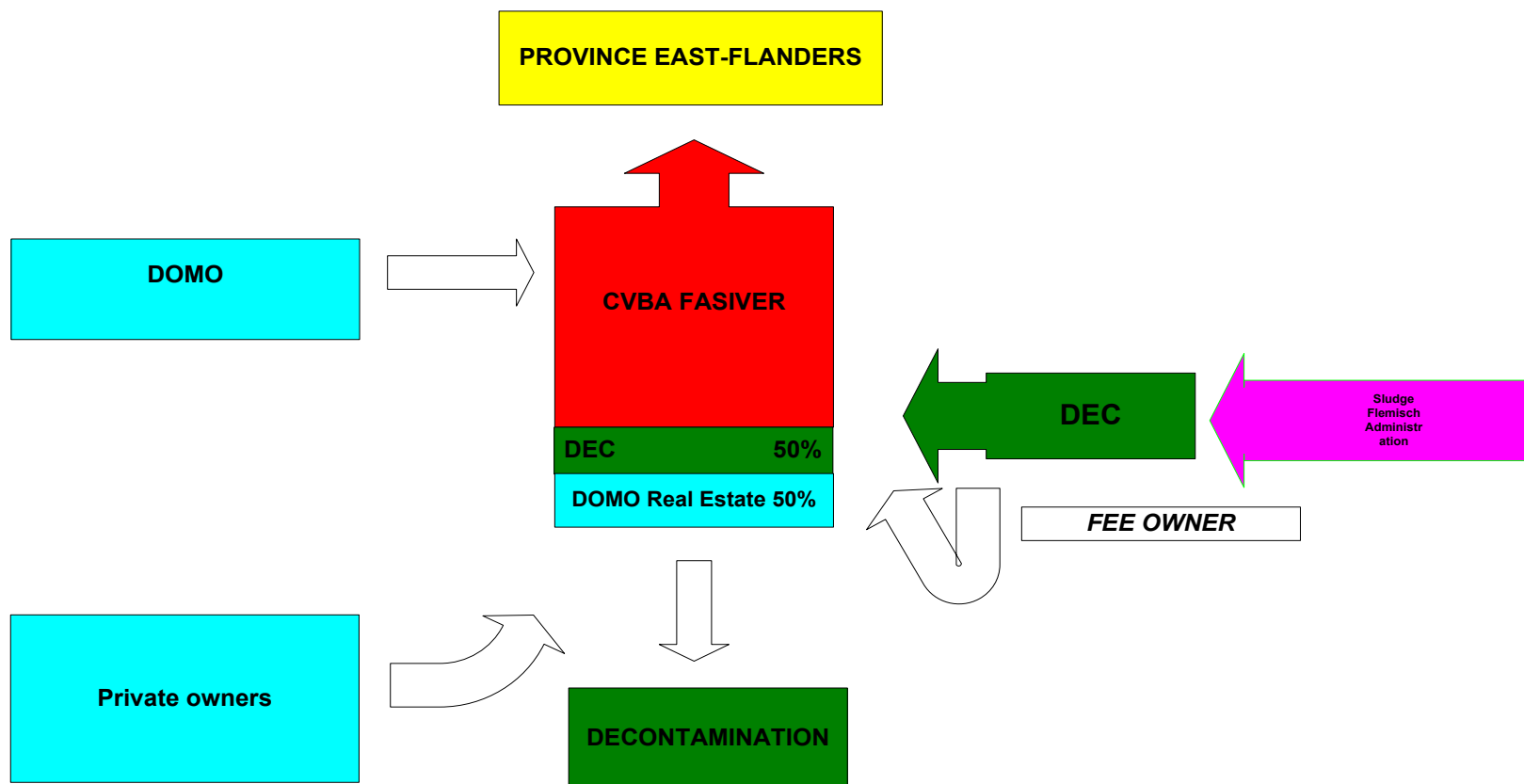
(put-option public partner)

❖ Private partner

➤ Transfer Ownership

	DOMO-OWNER	DEC-CONTRACTOR
Study Period	100	0
Start Exploitation	50	50
End	0	100

CVBA Fasiver



Activities 2001 - 2010

❖ Phase 1

2001 – 2004

- Decontamination : 5 basins stabilisation and immobilisation
- Sludge treatment : 450,000 TDS

❖ Phase 2

2005 – 2007

- Decontamination : isolation cement-bentonite wall
- Sludge treatment : 450,000 TDS

❖ Phase 3

2008 – 2010

- Decontamination : groundwater remediation
- Sludge treatment : 450,000 TDS

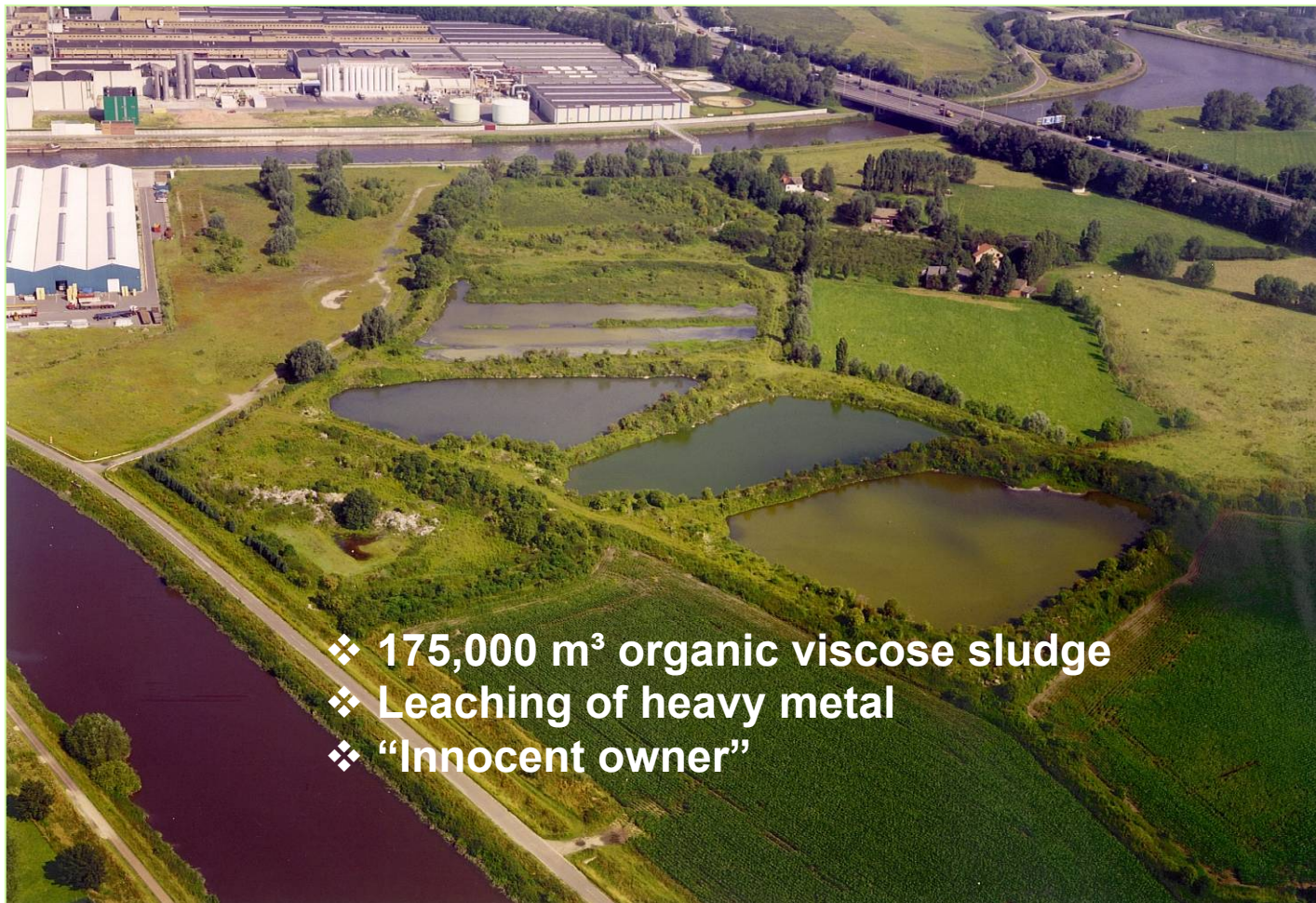


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Basis of remediation

❖ Formulation of the problem



- ❖ 175,000 m³ organic viscose sludge
- ❖ Leaching of heavy metal
- ❖ “Innocent owner”



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Basis of remediation

✦ Proposed solution



Basis of remediation

❖ Proposed solution

1.

- ❖ In-situ treatment and isolation of the sludge basins
 - Stabilisation and immobilisation by mixing the sludge with steel slag and 'cement'
 - Semi-mobile mixing unit
 - Hydraulic excavator with long reach
 - No rotating parts
- 2. Cement-bentonite wall 30 m below ground level
- 3. HDPE - membrane of 2,5 mm thick
- 4. Extraction of groundwater in "hot-spots" around the sludge basins

Sludge Recycling Centre

- 16 ha lagooning surface
- 'monodisposal site' for 1,300,000 m³ dredged sediments



Sludge Recycling Centre

- Quay wall
 - ✓ Maximum supply by waterway



Sludge Recycling Centre

- ❖ Installation of lagooning fields and monodisposal site
 - Construction of drainage fields and monodisposal site



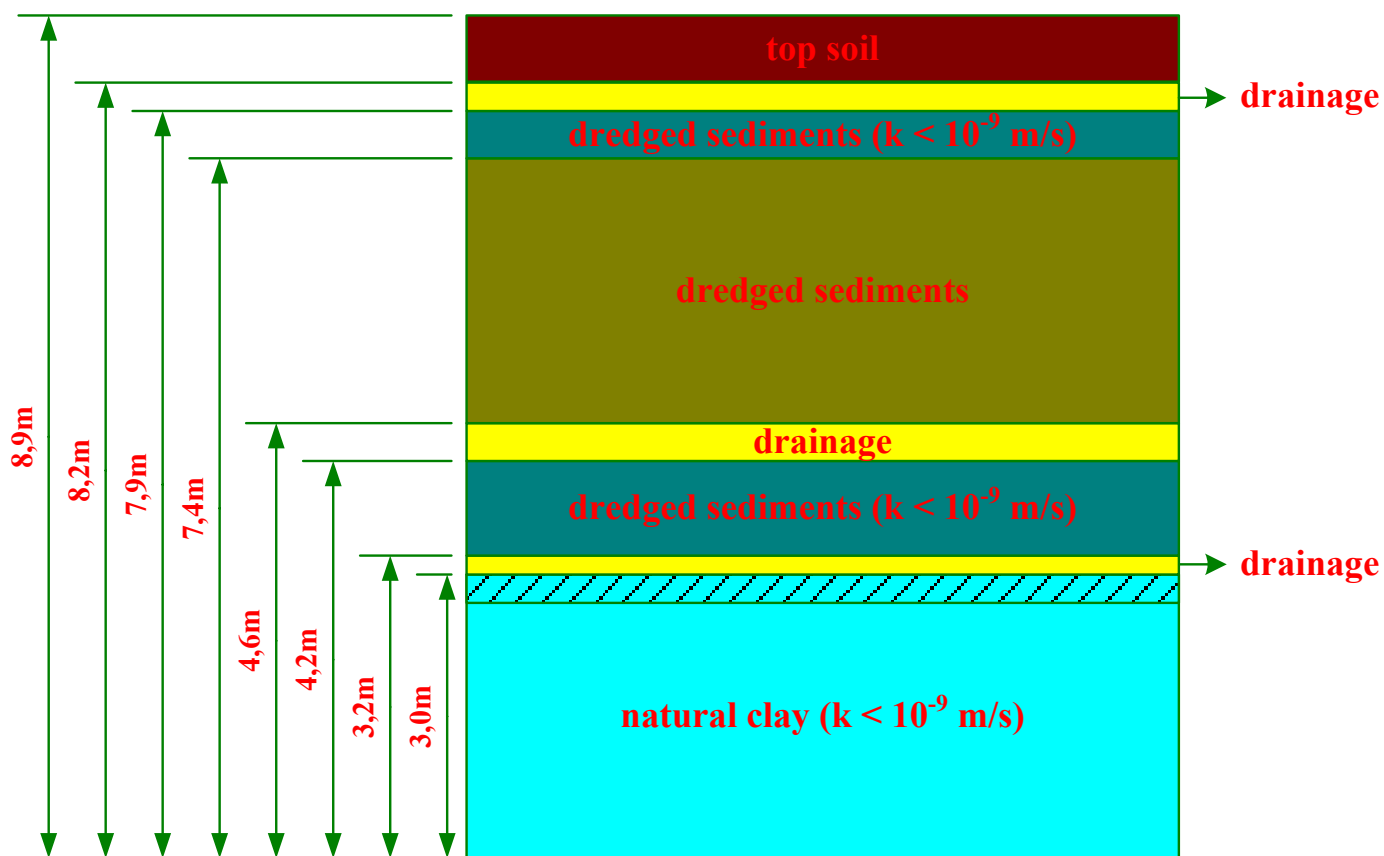
- ❖ Exploitation of lagooning fields
 - Classification of the sediments depending on the chemical and physical quality
 - Dewatering / Treatment
 - Dry matter content to 65 %
 - Water treatment



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Structure Disposal Site



- ❖ Making open and contaminated area ready for use
- ❖ Area for Small and Medium Enterprises and high technology based industry
- ❖ Strategic location – policy urgency - new industrial areas in the South of Ghent

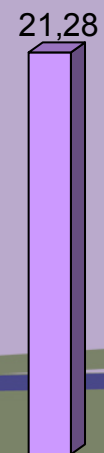
Ecological surplus value

- ❖ Remediation priority black-point
- ❖ Creation of new green areas
- ❖ Continuity of green circles along the Scheldt- and Leievalley
- ❖ Avoiding the use of new open areas



Companies
 Green
 Street & parking

Surface in ha.
 Total terrain surface 47,52 ha.



companies
 blackpoint
 street & parking
 green
 nature

Creating land for the future

13/11/19

33



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Ecological surplus value

