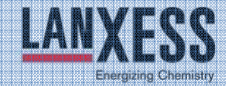


# ECLUSE

a channel for green energy

08/09/2015

Jan-Kees de Voogd, Business Developer  
Indaver nv



Potential consumers of  
green heat

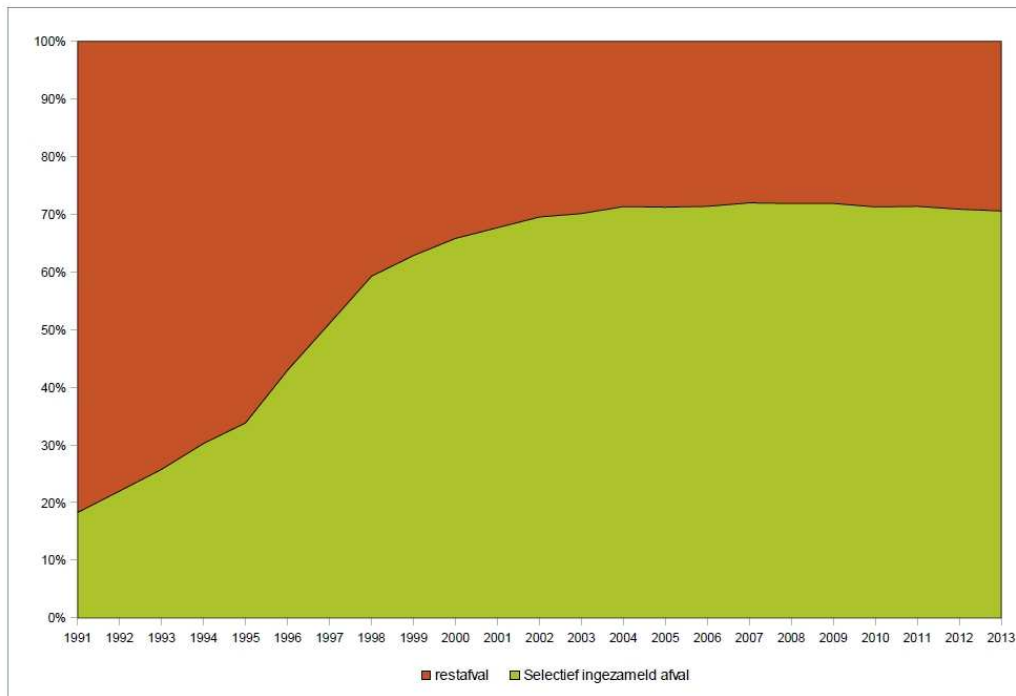


# Content

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1. Evolution Municipal Solid Waste in Flanders
2. Indaver WtE installations in port of Antwerp
3. Existing situation at the consumers
4. Concept and structure
5. Added value

# Municipal Solid Waste management in Flanders



Figuur 7: Evolutie van het procentueel aandeel selectieve inzameling van huishoudelijke afvalstoffen over de periode 1991-2013 t.o.v. de totale hoeveelheid huishoudelijke afvalstoffen

Source: OVAM, 2014

## Selective collection:

- increased strongly in the '90s
- Reached 70% in the early '00s
- Stable since then

## Landfilling:

- levies + ban on landfilling of combustible waste
- Further increase of the levies as from 1 July 2015

## Total MSW treatment 500 kg/pp/y:

- landfilling: 0,5%
- Recycling+composting: 70%
- WtE: 29%  
< 150 kg/pp/y

# Indaver WtE installations in Doel

- 3 Grate incinerators : household and comparable industrial waste
- 3 fluidised bed incinerators (Sleco NV, a JV with Suez): waste water treatment sludge and industrial waste
- 1,000,000 ton/yr
- 25,000 ton recovery ferrous and non-ferrous scrap metal
- 250 MWth recovery of energy => electricity production  
**0,8% of Belgian electricity demand or 182,000 households**
- **Energy is 50% renewable**



## Existing situation at the consumers

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- Chemical industry: Energy intensive and very stable consumption
- Port of Antwerp is home to the largest chemical clusters in Europe
- Applications for steam:
  - Distillation
  - Evaporation / Drying
  - Cleaning
  - Chemical reaction (eg. Hydrolysis)
- Steam production:
  - Energy source: Natural gas
  - Installations: Steam boilers and CHP
- ECLUSE will provide steam for 6 chemical companies and replace approximately 10 steam boilers



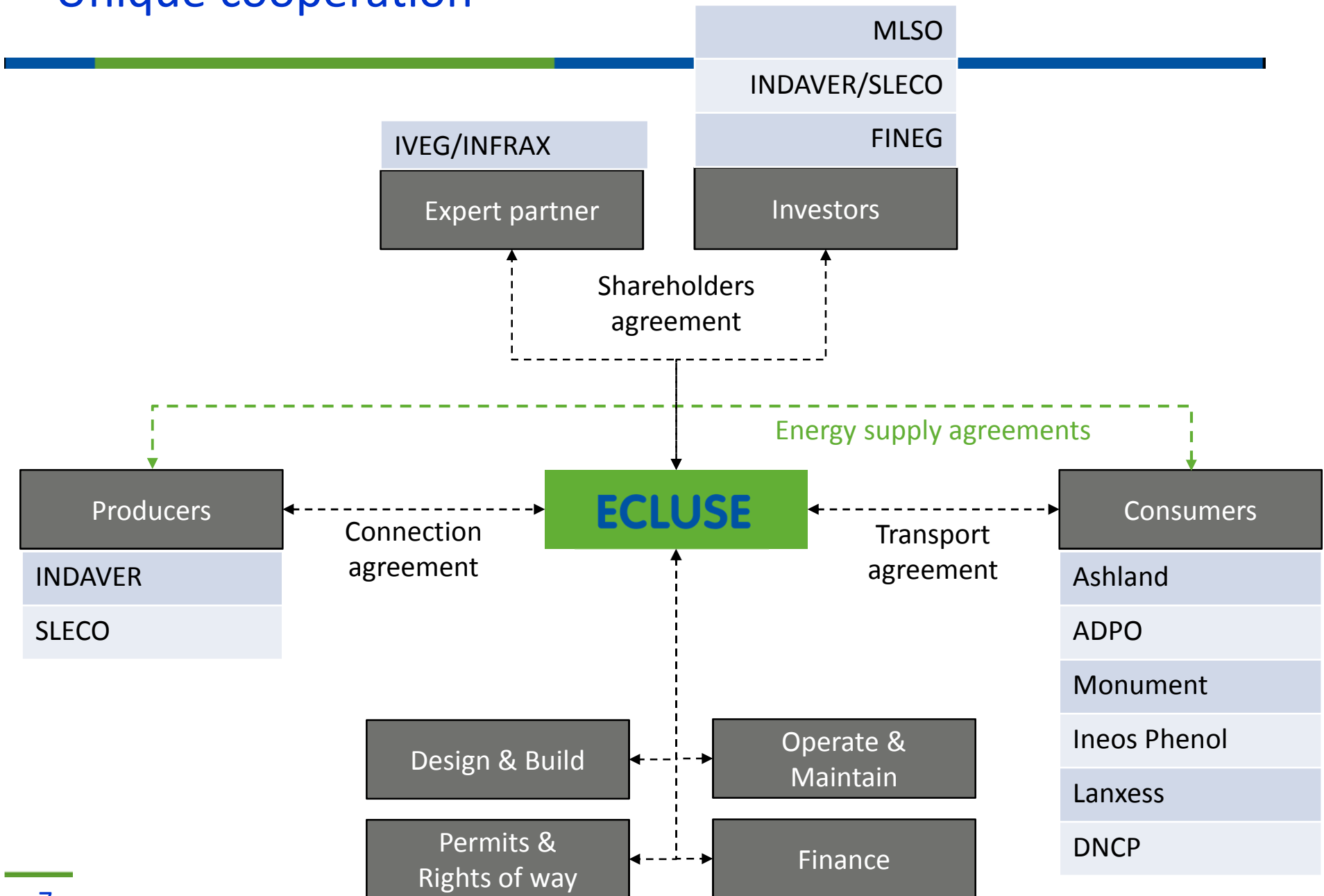
# Concept

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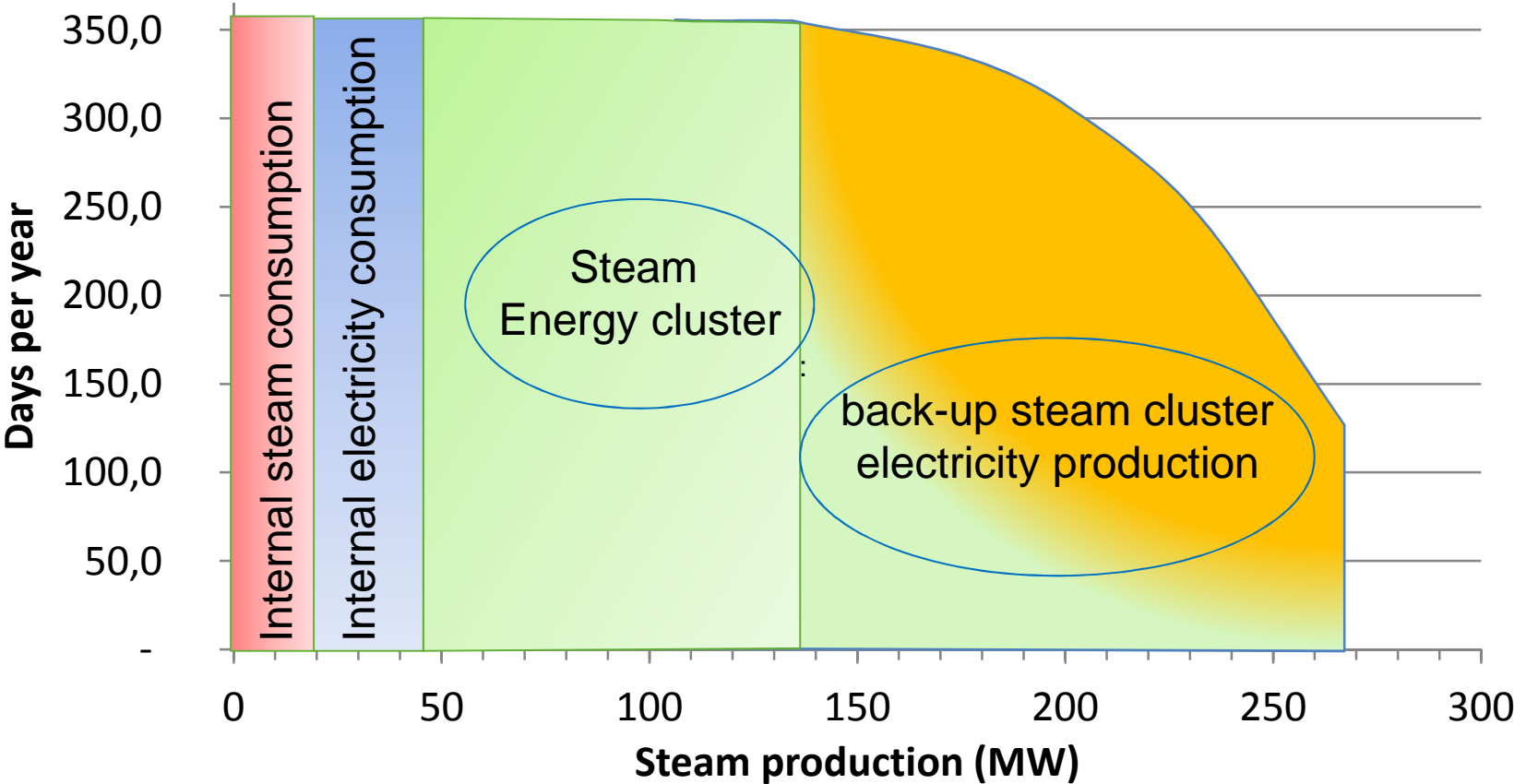
- Underlying reason: Improvement in Energy efficiency
- Distribution of superheated steam of 40 bar and 400°C
- Steam and condensate return duct: total length of 5 km
  - Capacity for 110 MWth
- 10 year off-take agreement with 6 steam consumers
- Network investment
  - 30 mln €
  - by network operator Ecluse
  - Depreciation over 20 year
  - Operational in Jan 2017



# Unique cooperation



# Future usage of steam production Sleco/Indaver



■ Graph only for illustration purposes



# Added value of the project

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1. Cheaper source of energy for 6 chemical companies
  - Strengthening of Antwerp chemical cluster
2. Increase EU self sufficiency (less imports of fossil fuels)
3. Environmental benefits:
  - Avoid 100,000 ton CO2 emission ( $\approx$  50 wind turbines 2,3MW)
  - 5% increase of green heat usage in Flanders
4. Unique project set-up:
  - Long term commitments producers/distributor/consumers
  - Operation of multi-producer/multi-consumer network

# ECLUSE

a channel for green energy



infrac FINEG

MAATSCHAPPIJ  
ISCHELDEOEVER



ASHLAND

LANXESS  
Energizing Chemistry



INEOS Phenol

Potential consumers of  
green heat

