



Rijksoverheid



**International  
Green Deal**

## **International Green Deal North Sea Resources Roundabout**

**Robine van Dooren  
Project Lead**

**RVO.nl**



## **NSRR: the video**

- <https://www.youtube.com/watch?v=Tb7Poc2CcOM>



## NSRR based on Dutch Green Deal approach

- Bottom up approach: private initiative, government in role of facilitator (network, barriers, market)
- Goal: to boost sustainable innovations
- Scaling up: inspiring others; improving framework conditions; creating new networks

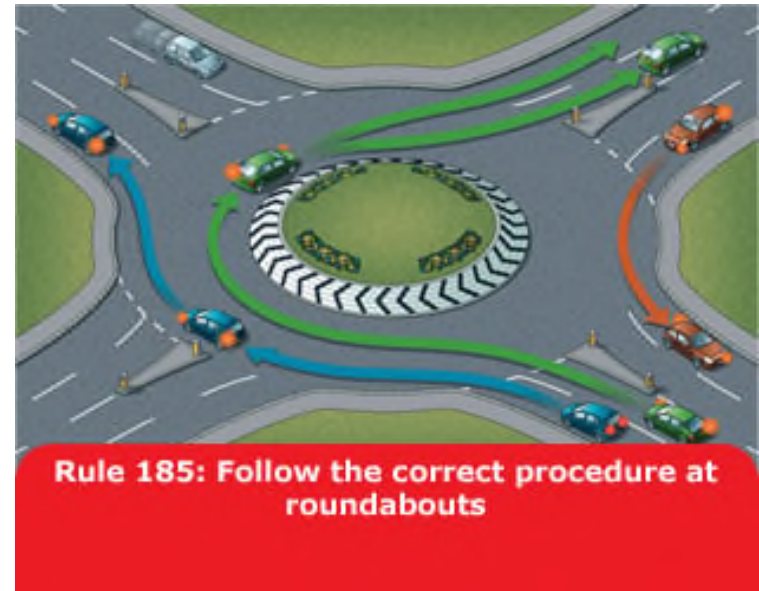


NB, No money & no guarantee of success



# NSRR : the 1<sup>st</sup> International Green Deal

- Aims to create opportunities for Green Growth in North Sea countries by facilitating sustainable trade, transportation and uptake of secondary resources
- Geographical focus area: countries in North Sea region that consider themselves frontrunners in field of circular economy
- Not waiting for consensus between 28 EU member states, but start and aim to inspire





# NSRR: what is it all about?

## Annexes: cases of secondary resource streams

- Maximum number of cases to be included: 10
- Currently up and running: (1) Non-ferro metals from bottom ashes, (2) Compost, (3) PVC recycling and (4) Struvite

## Issues

- Waste/EoW, waste shipment, REACH (quality, contaminants)

## Common search

- Optimal use of possibilities within current (EU) legislative framework

## Outcome

- Harmonisation between participating countries + trade contracts



## **NSRR: next steps**

### **Making it grow!**

- Addition of new participants, new countries and/or regions
- Information sharing & looking for scalable solutions
- Addition of new cases, e.g. WEEE, tyres, construction materials, textiles?
- Suggestions and applicants are welcome!



## How does it work? - Application (1/2)

### Apply as additional case in NSRR

- Contact us (Robine van Dooren, project lead)
- Through contacts with participating ministry
- Application of annex IGD NSRR after preparatory work

### Criteria checklist

- Focused on international trade secondary raw materials
- Realistic (economic viable) and with a clear target
- Committed companies on both ends of the supply chain
- Generate spin off / solutions applicable to others
- Results in the short term (~2 years)
- Clear role for the government (including Inspectorates)
- Private initiator has to take the lead (secretariat)





## How does it work? – Realization (2/2)

- **Initiating companies** take care of secretariat working group:
  - problem analysis
  - time table
  - proposal for solutions
- **Government support** per case:
  - policy advisors/experts on content
  - inspection
- **NSRR secretariat:**
  - dissemination of results, lessons learned
  - organization of stakeholder events







**Thank you for your attention!**

Dr. Robine van Dooren

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# Slides for hand out





## Exploring 'Global' Green Deals

- International interest EC, UNEP, France, UK, Germany, Belgium and Nordic countries
- Pragmatic start:  
'small and beautiful' with 'coalition of willing'
- Find suitable innovative initiatives
- Examine possibility of eliminating barriers
- Translate voluntary public-private agreements into the international domain
- Aim: 1<sup>st</sup> share of Global Green Deals delivered first half of 2016



**Global Green Deals  
From Trash to Treasure**



## **Green Deal**

### **Ship generated waste**

#### **Initiative**

- Optimize delivery of and promote separate delivery of plastic ship-generated waste

#### **Initiators**

- Port authorities, shipowners, -suppliers, port reception facilities, enforcement authority, NGO's, Government

#### **Input by field parties**

- minimize packaging waste from supplies
- further improve risk based enforcement
- facilitate and stimulate separate delivery of plastics. Recycling of clean plastics

#### **Input by central government**

- aim to harmonize procedures in EU ports, monitoring, linking parties and initiatives

# Green Deal Transparency Natural Capital

## Initiative

- Improving information on impact and dependencies on natural capital for businesses and their operations.

## Initiators

- IUCN-NL, MVO-Nederland, True Price and 13 Dutch companies

## Input by stakeholders

- Active participation in working groups exchange of experiences, tools and best practices. Develop concrete initiatives to start with natural capital accounting.

## Input by central government

- Participation in working groups and overall coordination of the activities together with IUCN, True Price and MVO-NL.







## **Green Deal Productive landscape**

### **Initiative**

- Sustainable management of nature and agricultural landscape

### **Initiators**

- Staatsbosbeheer, LTO Nederland

### **Input by field parties**

- New ways of collaborating for more efficient and better-quality nature and landscape management; four practical situations focusing on the use of land, revenue models, and organisational methods

### **Input by central government**

- Resolving legal and regulatory bottlenecks, disseminating knowledge and supporting the process



# Green Deal Clean Beaches

## Initiative

- Stimulation of the energetic society to collaborate in cleaning up beaches in combination with influencing waste handling behaviour of visitors

## Initiators

- Local energetic people, beach restaurants, coastal municipalities, NGO's, companies, interest groups, Government

## Input by field parties

- Beach cleaning activities and monitoring
- Pilots to influence waste handling behaviour of beach visitors
- Address cigarette butts as source of litter

## Input by central government

- Facilitation and linking off parties and initiatives
- Sharing waste handling knowledge and stimulation of exchanging knowledge between parties





# Green Deal Sustainable Waste to Energy ash reuse

## Initiative

- Converting contaminated reusable material into a viable building component

## Initiators

- Waste-energy plants, central government

## Input by field parties

- Half of bottom ash processed by 2017, and 100% by 2020, with 75% of non-ferrous metals being recovered by 2017

## Input by central government

- Investigation into adjusting leaching norms; involvement in examining ways of using bottom ash in infrastructure projects







## Green Deal Fishing for a clean sea

### Initiative

- Closing the waste chain in the fishing sector for household waste, ship-generated waste and fishing for litter waste.

### Initiators

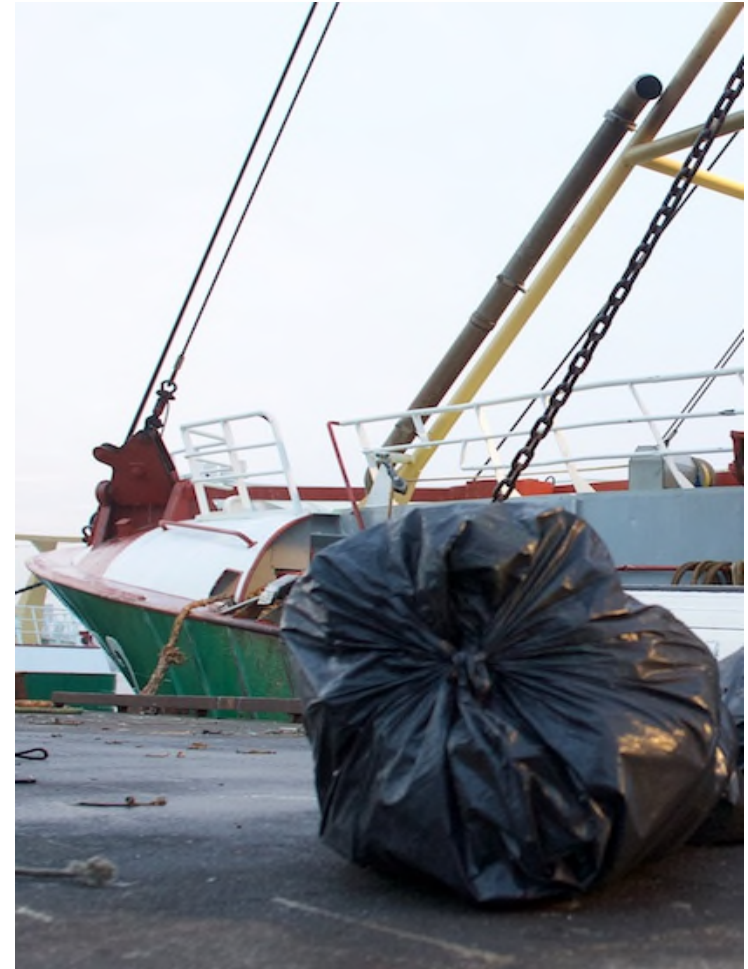
- Fishers, fishing ports, waste management company, NGO, Government

### Input by field parties

- Raise awareness and improve education concerning marine litter in fishing sector
- Improve waste facilities on board of fishing ships and in ports.
- Stimulate participation in fishing for litter project
- Identify alternative for dolly rope

### Input by central government

- Facilitates cooperation, monitoring, linking parties and initiatives, international cooperation and implementation of OSPAR Regional Action Plan on Marine Litter



# From waste policy to a circular economy in Flanders

## Flanders Materials Program

Euroday 2016

Lieze Cloots

Public Waste Agency of Flanders - OVAM

TOGETHER WE  
MAKE TOMORROW  
MORE BEAUTIFUL

OVAM



# Flanders in the '80-ies



public demand for waste legislation, as landfilling becomes a backyard problem in the compact Flemish region.

▶ **Legally binding instruments:**

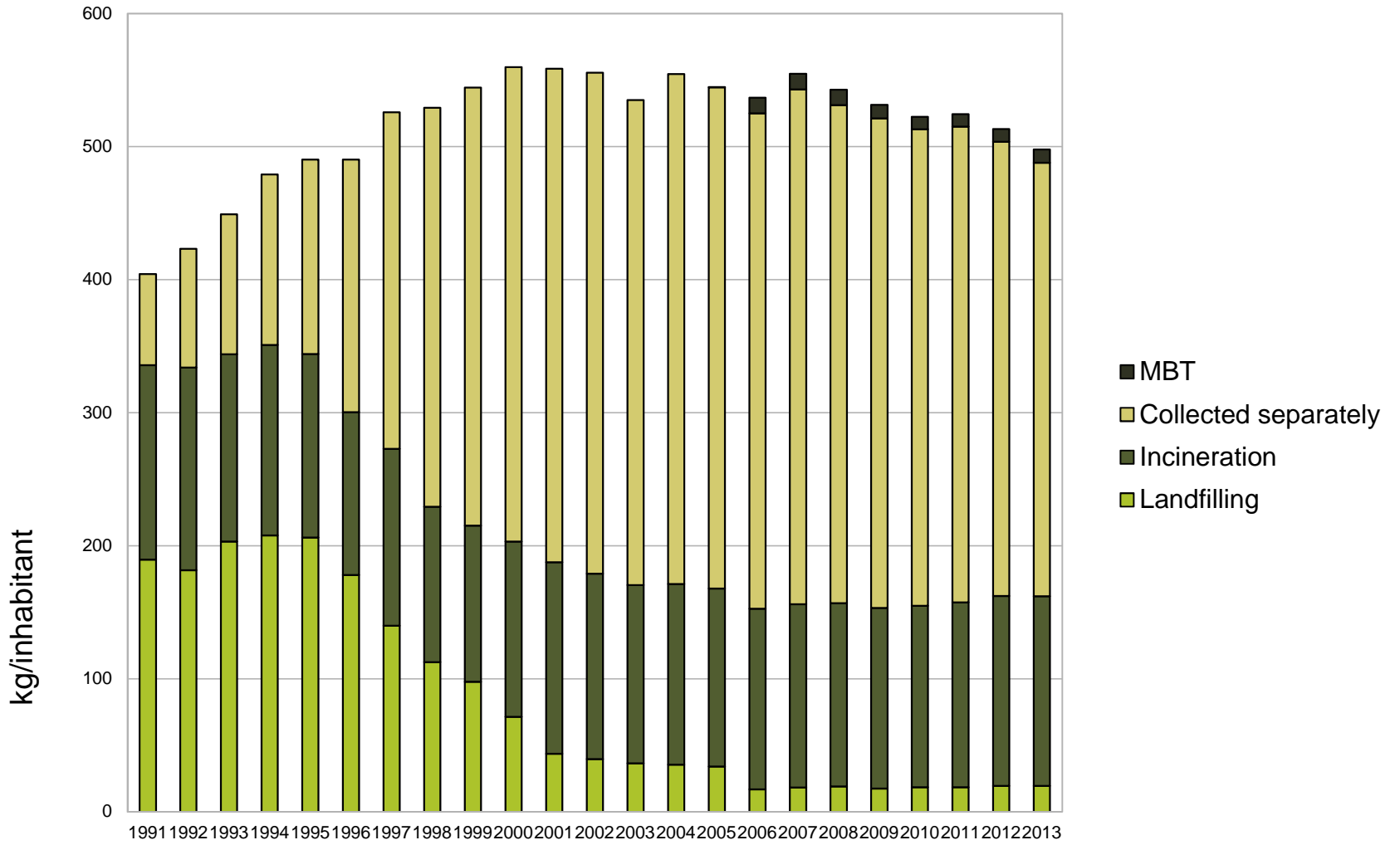
- Ban on landfill and incineration
- Mandatory separate collection
- Extended Producer Responsibility

▶ **Economic instruments:**

- Fees on landfill and incineration
- Pay As You Throw
- Investment in waste parks, reuse centres

▶ **Awareness raising & communication**

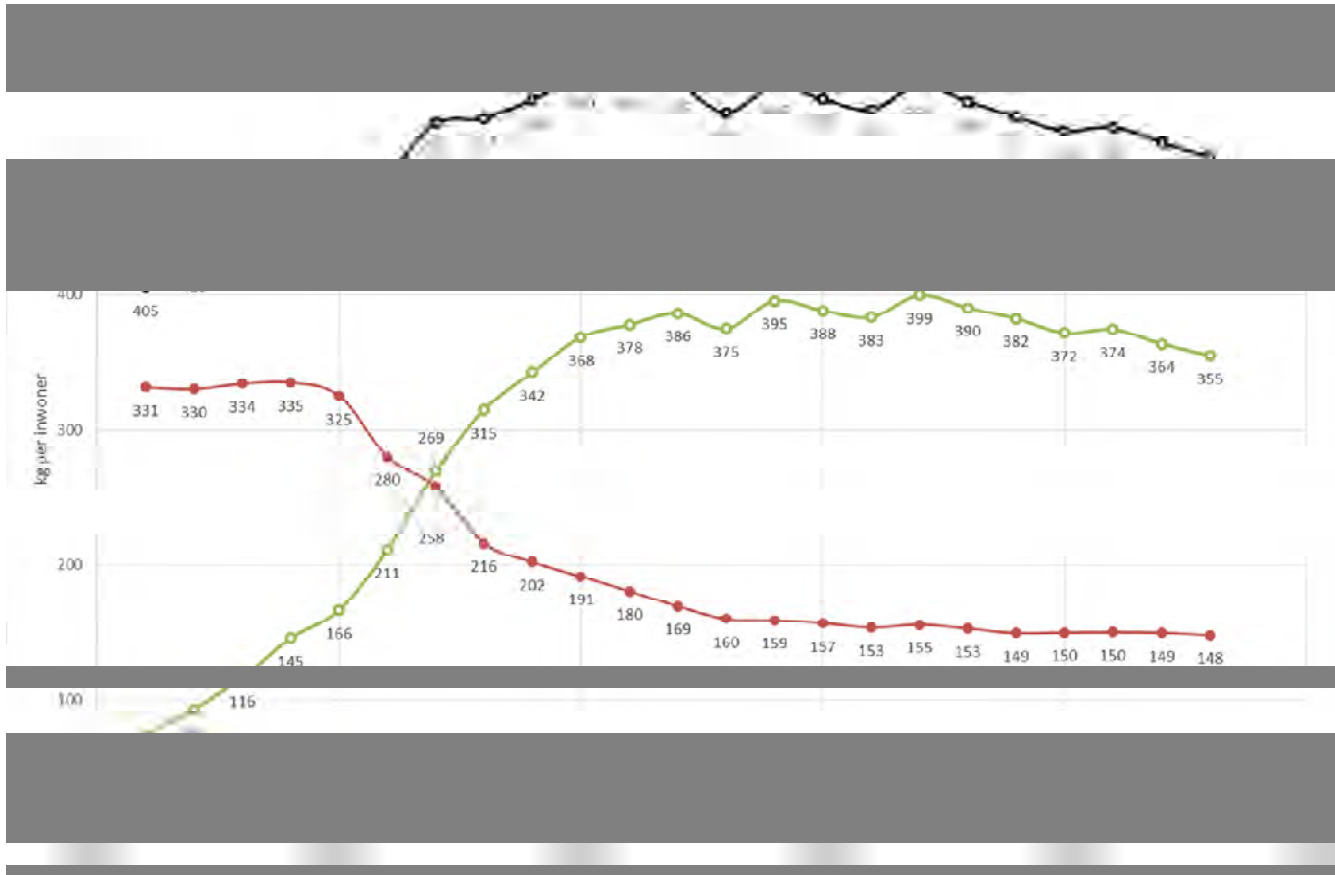
MIX  
of  
INSTRUMENTS  
=  
CRUCIAL



# Flanders toprecycling region: economic benefits

- The waste management and recycling sector has grown by more than **5% per year** in recent decades.
- The waste management and recycling sector employs **12.000 people** in Flanders. This is 0,5% of Flemish employment.
- Every direct job creates **1,3 indirect jobs** elsewhere in the economy.

# Limits to separate collection and recycling policy





Lineaire productie:  
te veel losse schakels

Een circulaire economie  
versterkt Vlaanderen

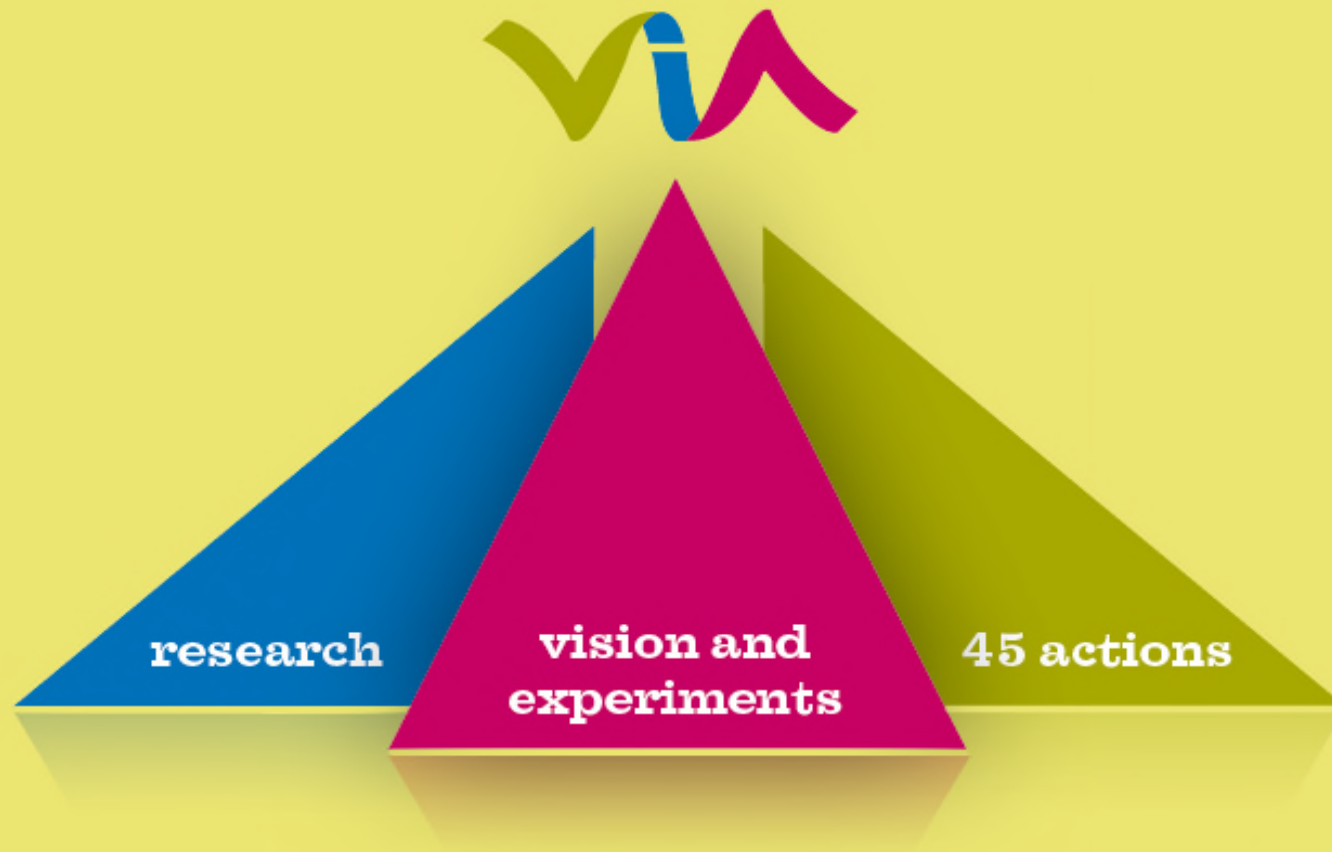


Het sluiten van materiaalkringlopen leidt tot milieu-,  
maatschappelijke én economische winst.

2 à 3% GDP  
(3,4 billion euro) saved  
in material cost by 2020

27. 000 jobs  
In Flanders





# The **three pillars** of the **Flanders'** **Materials Programme**

In the Flanders' Materials Programme we combine ambitious long-term vision development, policy-relevant research, and concrete actions. This is done respectively in Plan C, the Policy Research Centre Sustainable Materials Management (SuMMa) and Agenda 2020; three pillars that reinforce each other.



**Joining forces  
through the Flanders'  
Materials Programme**

How does the Flanders

Materials Programme work?

# 1+1=3

Cooperation between entrepreneurs, researchers, policy makers and civil society in the Flanders Materials Programme helps to accelerate the transition towards a circular economy.

Chemistry & plastics

Bio-economy

Construction

Metals

Sustainable design

Vision

Action

Research

Cooperation

Regulations

New materials technology



Investment



# Strategic projects of 2015-2016

Transforming Flanders into a recycling hub for Europe through our seaport



New jobs in the circular economy



Innovative building concepts for energy- and material-conscious construction



Strengthening the metal recycling industry in Flanders



Potential for a circular economy at several spatial scales (case region Genk)



Business model innovation



# 2016:

- ▶ **Flanders Materials Program wins “The Circulares” an international award for the best and the most inspiring project for a circular economy.**
  
- ▶ **New long-term strategy of Flemish Government 2050: transition to circular economy 2.0**



# FLANDERS' MATERIALS PROGRAMME

## A NEW PHASE (2017-...)



FROM THREE PILLARS TO  
**ONE TEAM**



FROM A SINGLE MINISTER TO  
**SHARED ACCOUNTABILITY**



FROM FOCUS ON MATERIALS TO  
**MULTIPLE TOPICS**



FROM SECTOR-SPECIFIC TO  
**CROSS-CUTTING**





**Flanders**  
State of the Art

**Lieze.clouts@ovam.be**

**Government of Flanders  
Public Waste Agency  
of Flanders**

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2800 Mechelen, Belgium**

**T: 015 284 284**

**F: 015 203 275**

**[www.ovam.be](http://www.ovam.be)**

**[info@ovam.be](mailto:info@ovam.be)**



TOGETHER WE  
MAKE TOMORROW  
MORE BEAUTIFUL

**OVAM**



**Vereniging Afvalbedrijven**

Partner in de circulaire economie

# **Innovation Projects:** *WtE in the circulair economy*

22 november 2016





**>100 years of experience in Waste to Energy**









# City of Amsterdam - powered by AEB







afval is  
warmte











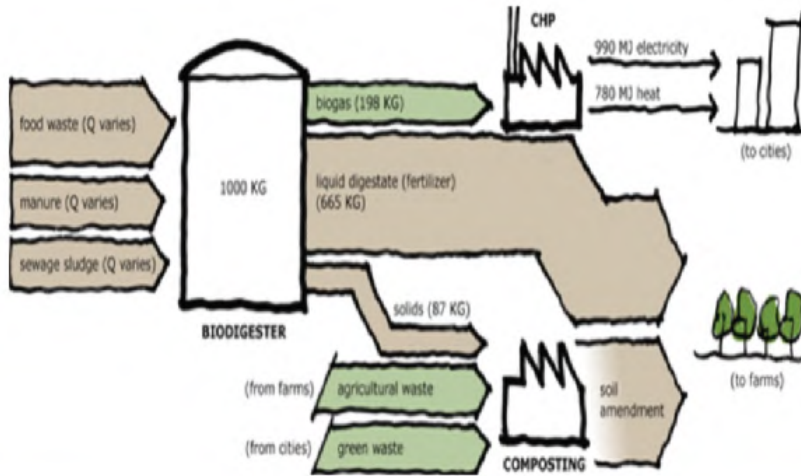


# CO2 a valuable resource?

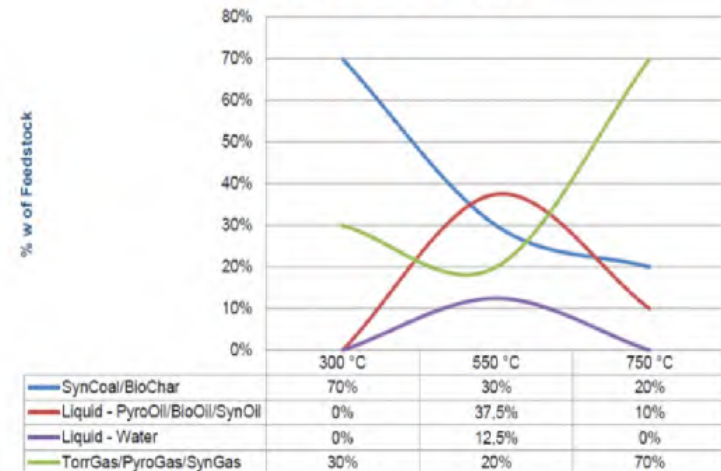




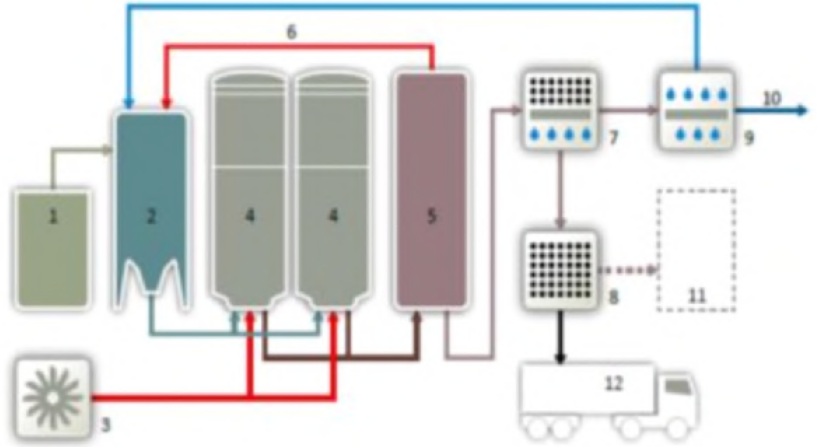
# Waste biomass to energy



INDICATIVE MFPP Yields



# More sustainable energy







Kennisinstellingen

**TNO** innova**l** for life

**AAMS**  
AMSTERDAM INSTITUTE FOR  
ADVANCED METROPOLITAN SOLUTIONS

**WAGENINGEN UR**  
For quality of life

KATHOLIEKE UNIVERSITEIT  
**LEUVEN**

**TU Delft**

Universiteit Twente  
de ondernemende universiteit



Regionale spelers en netwerken

amsterdam  
economic  
board

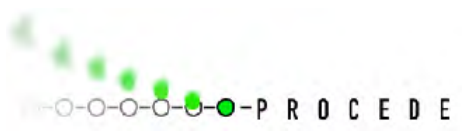
Port of Amsterdam  
port of partnerships

**water**net

Green Metropolis

**CLEAN CAPITAL**

**FORLISE**











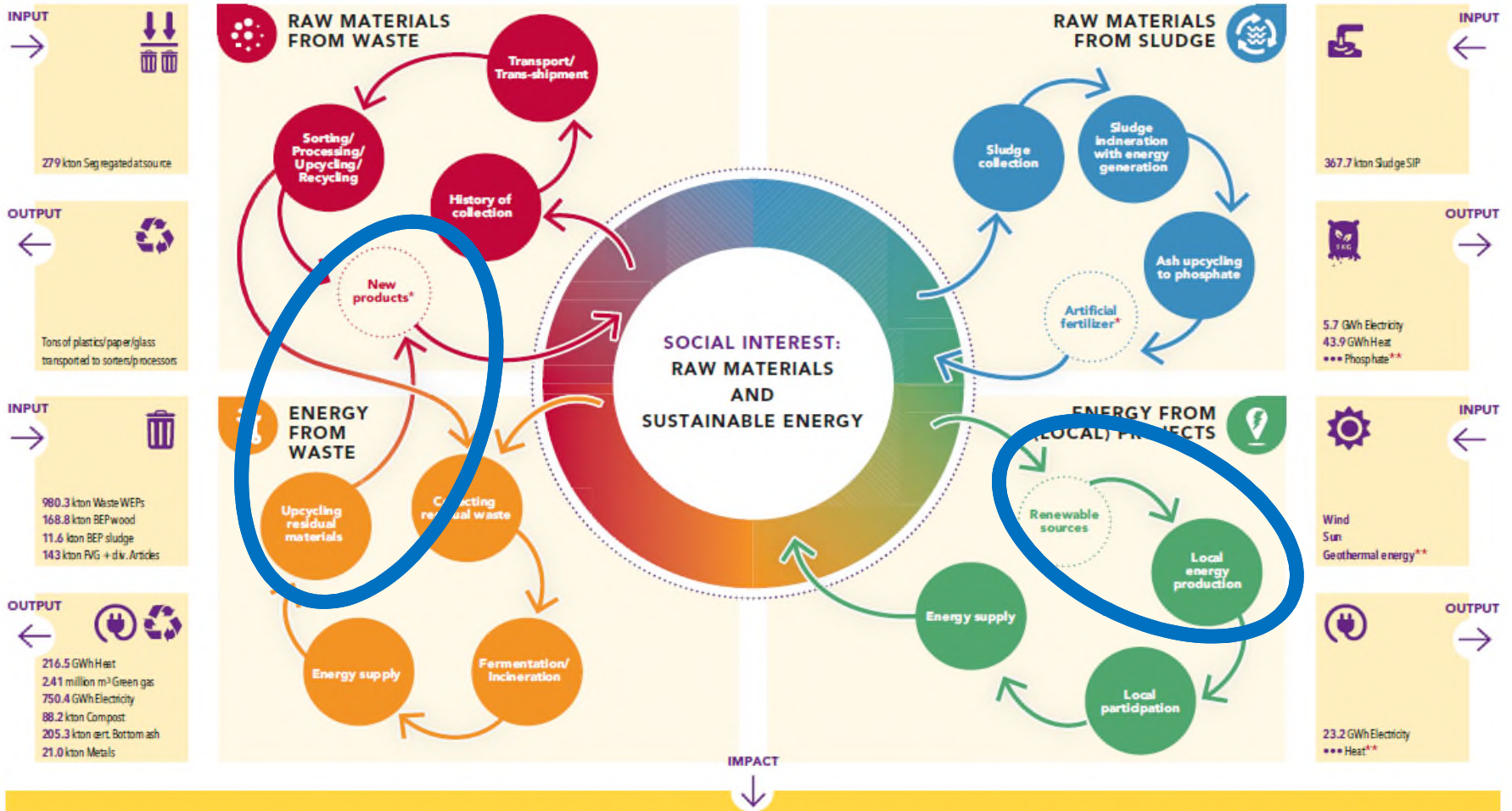
[www.hvcgroep.nl](http://www.hvcgroep.nl)

**Innovation: work in progress**



# HVC, active in: Resource Recovery & Renewable Energy

TOGETHER WE WILL EXTRACT WHAT THERE IS TO EXTRACT

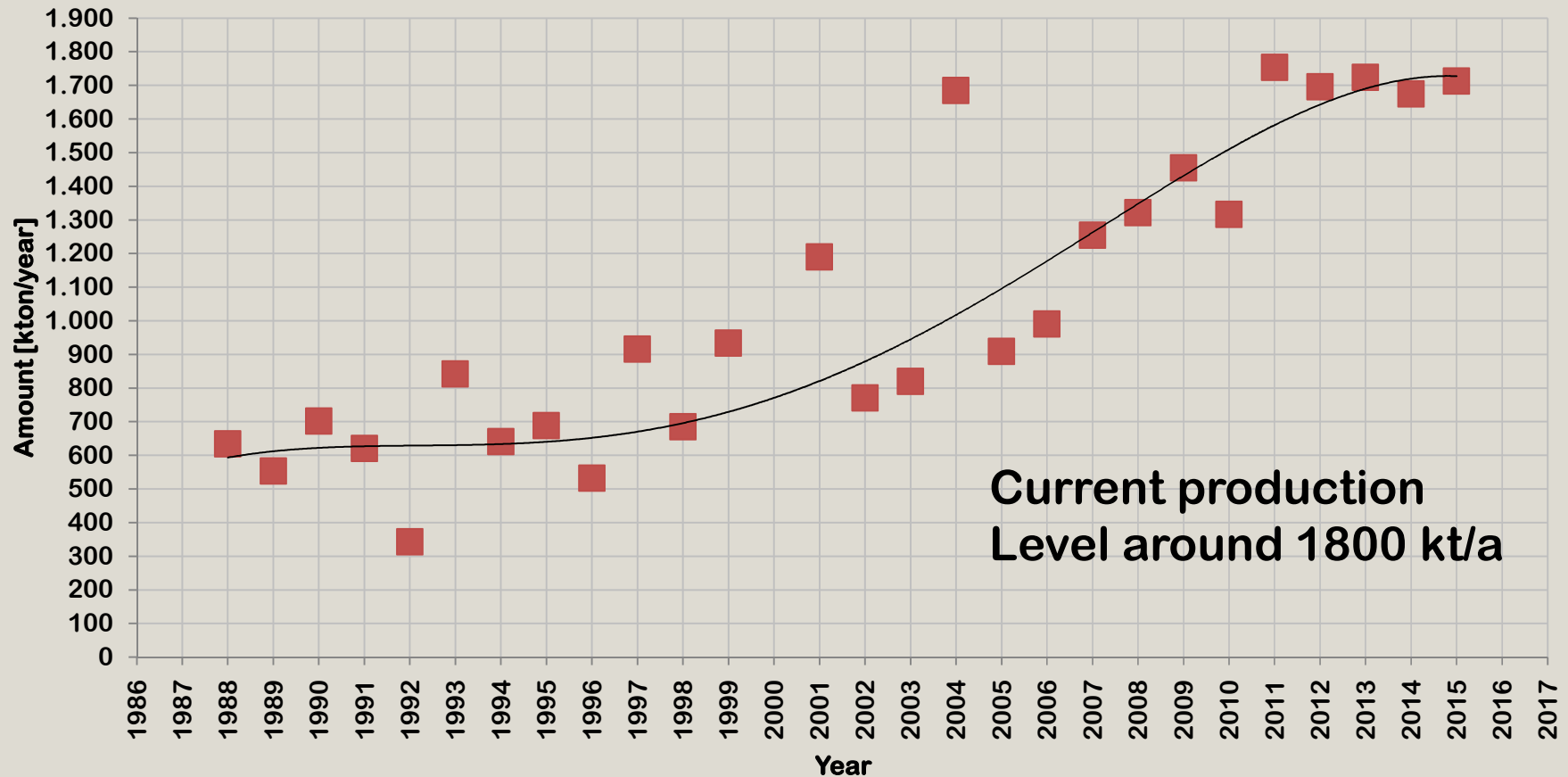


GIVE SHAPE TO CIRCULAR ECONOMY | TOWARDS SUSTAINABLE ENERGY PROVISION | SUSTAINABLE DEVELOPMENT TOGETHER WITH RESIDENTS



## Dutch Market IBA, nearly 100% application

Applied (Dutch) IBA in the Netherlands [kton/yr]





## Traditional application using IBC





# Green Deal IBA

Wish





# Resource Recovery

## Washing and fractionating of IBA



**Granulate**  
**3 - 20 mm**



**Sand**  
**63µm - 3 mm**



# Resource Recovery

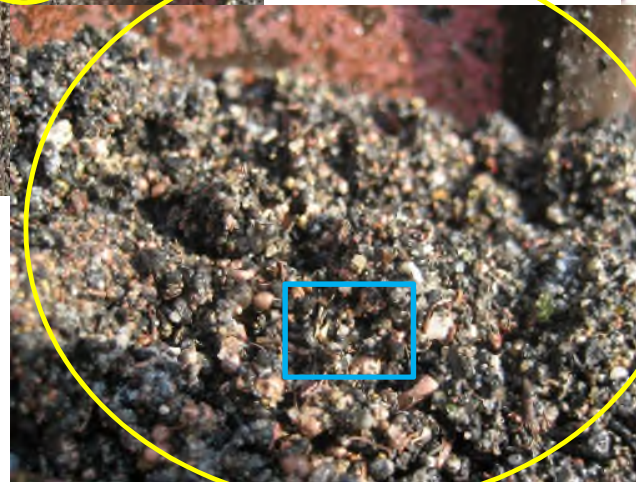
**Upward potential of IBA**





# Resource Recovery

## Heavy NF metal recycling by HVC (wASH)





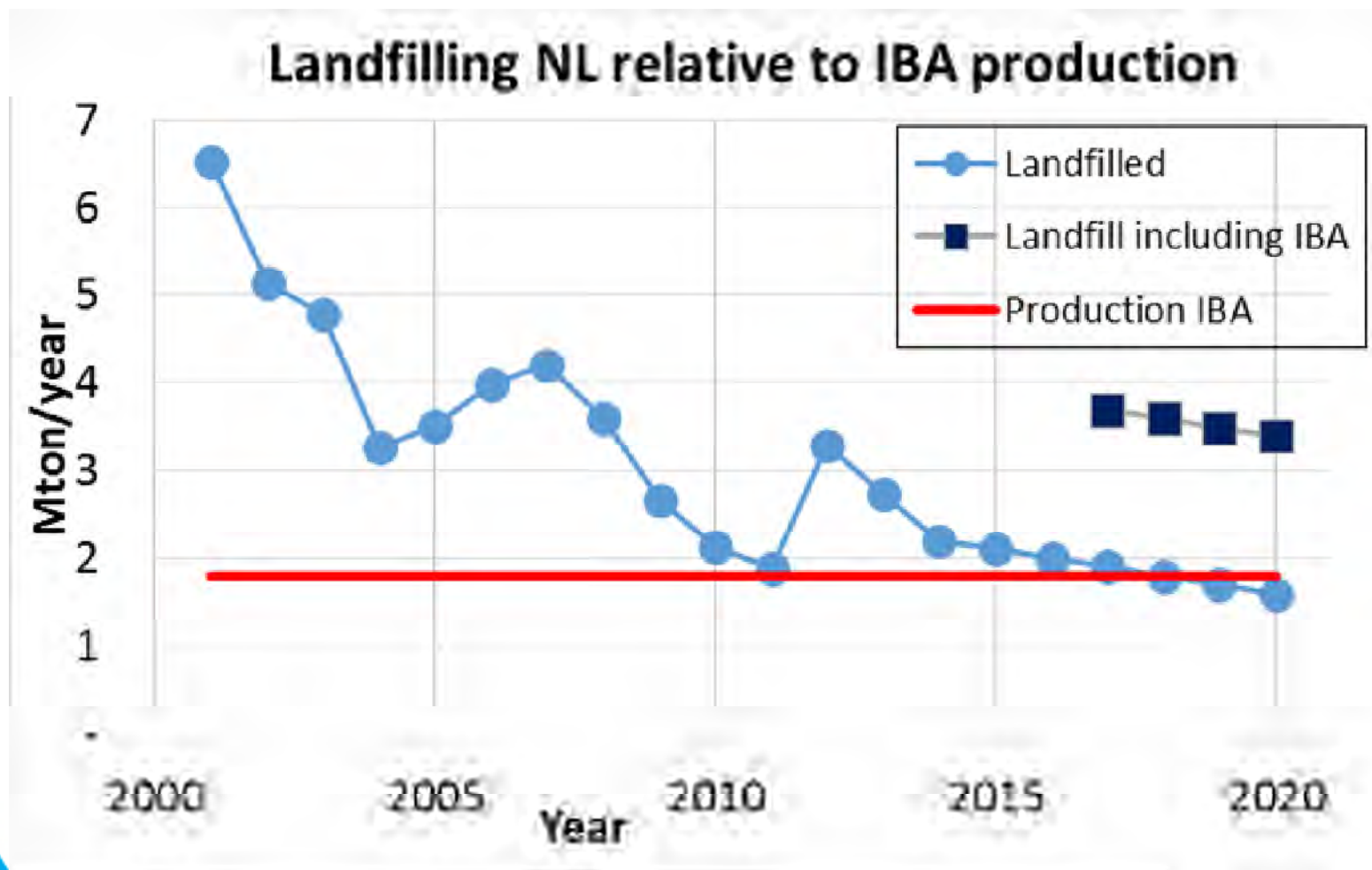
# HP14 and MSWI Bottom Ash (IBA)

Method 1	H400	H410	H411	H412	H413	H420	Concentration Limit, %	Result worst case	Remark
no $\Sigma$						1	0,1		
$\Sigma$	1						25	8,2	No M factors, no cut-off
$\Sigma$		100	10	1			25	318,7	No M factors, no cut-off
$\Sigma$		1	1	1	1		25	7,0	No M factors, no cut-off
Method 2	H410	H411	H412	H413	H420	Concentration Limit, %			
no $\Sigma$					1	0,1		-	
no $\Sigma$	1					0.1/M		M=1	H400, H410: cut-off 0.1%
(1) $\Sigma$	M					25	8,2	M=1	H411, H412: cut-off value 1%
no $\Sigma$		1				0.1/M		M=1	
(2) $\Sigma$			1			1			
(3) $\Sigma$		10M	1			25		28,0	M=1
Method 3	H400	H410	H411	H412	H413	H420	Concentration Limit, %		
no $\Sigma$						1	0,1		
$\Sigma$		1					0,1	3,1	No M factors, no cut-off values
$\Sigma$			1				2,5	0,4	No M factors, no cut-off values
$\Sigma$				1			25	3,3	No M factors, no cut-off values
$\Sigma$					1		25	0,2	No M factors, no cut-off values
Method 4	H400	H410	H411	H412	H413	H420	Concentration Limit, %		
no $\Sigma$						1	0,1		
$\Sigma$		M					2,5	3,1	M=1
$\Sigma$			1				25	0,4	No cut-off values
M5: M 1 with cut-offs from M 2	H400	H410	H411	H412	H413	H420	Concentration Limit, %		
no $\Sigma$						1	0,1		No M factors
$\Sigma$	1						25	8,2	H400, H410: cut-off 0.1%
$\Sigma$		100	10	1			25	283,5	H411, H412: cut-off value 1%
$\Sigma$		1	1	1	1		25	6,0	

# Effect of HP14...



# Landfilling IBA due to HP14





**Ergo.....**

**Wish**

*The risks of materials  
relate to their bio availability  
rather than their composition.*

---

*Hopefully COM's position  
Doesn't stick to composition...*

**Confidential**

Revised classification of  
MSWI bottom ash

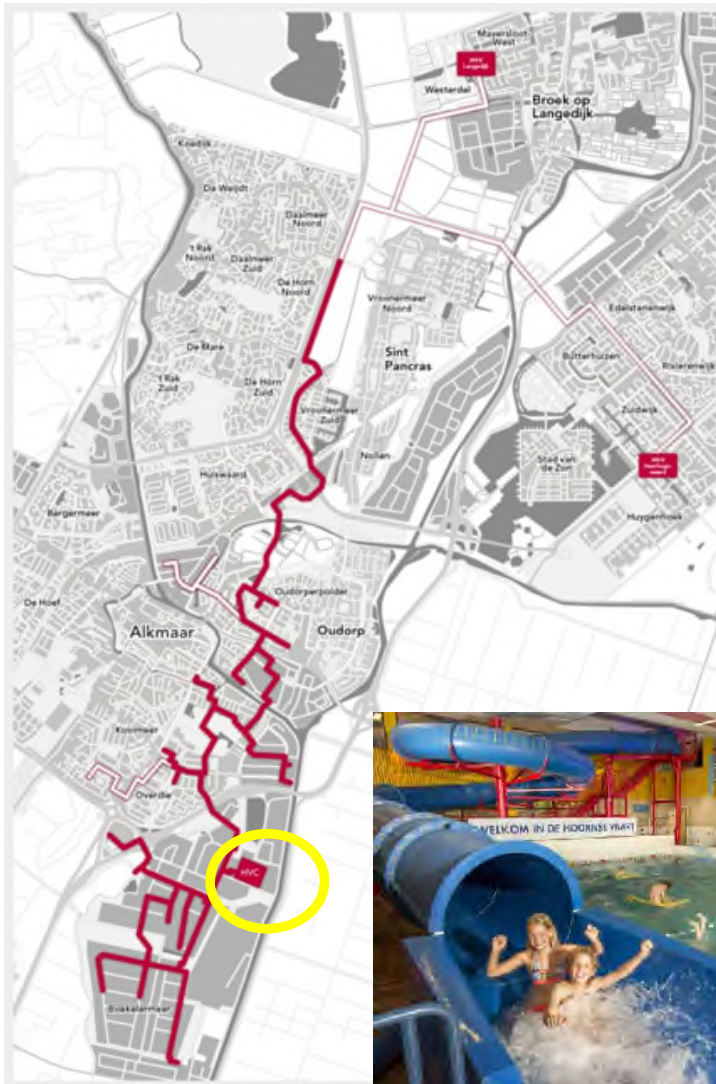
T. Klimko (ECN)  
A. van Zomeren (ECN)  
J.J. Dijkstra (ECN)  
O. Hjelmar (Danish Waste Solutions)  
J. Hyks (Danish Waste Solutions)

September 2016  
ECN-X-16-125

# The alternative

*Let test results prevail  
rather than theoretical  
calculation*

# Renewable Energy





# Renewable Energy

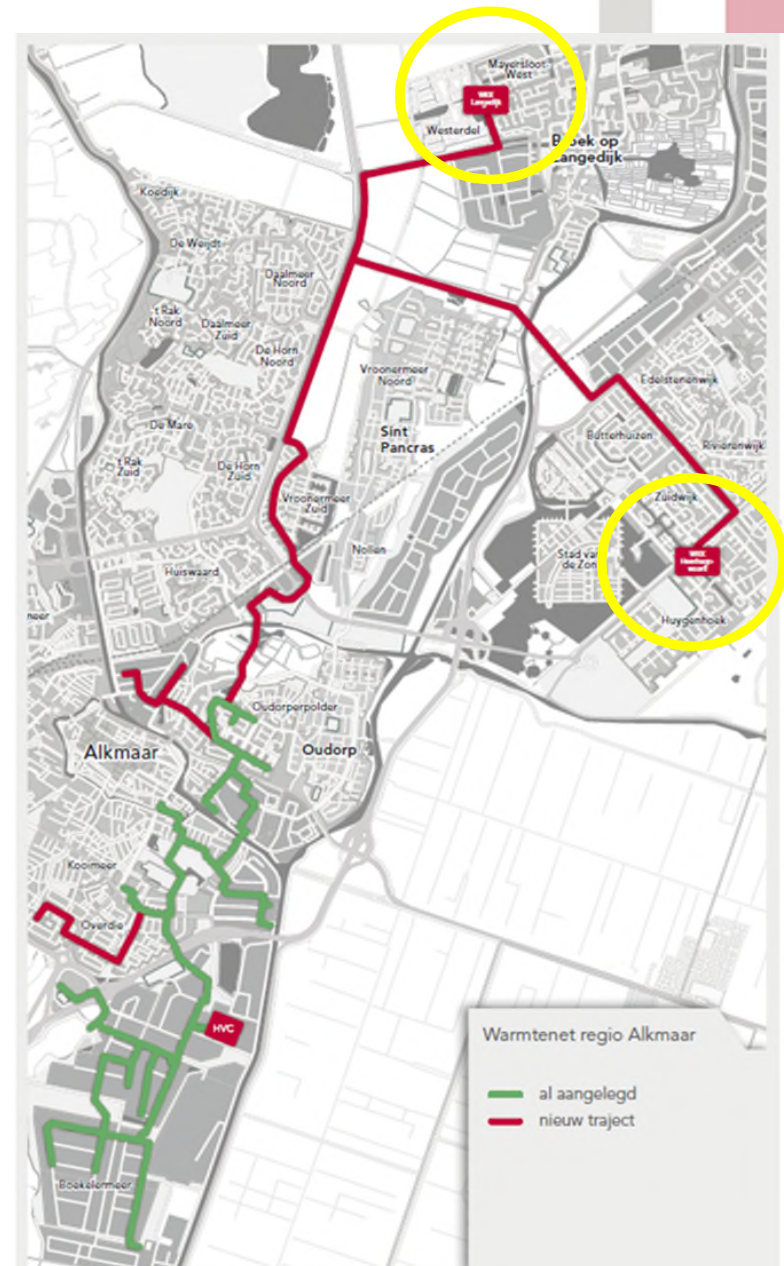
## District Heating

### Alkmaar

Connection to the CHP gas-fired district heating grid of Langedijk and Heerhugowaard.  
Investment of € 17 mln.

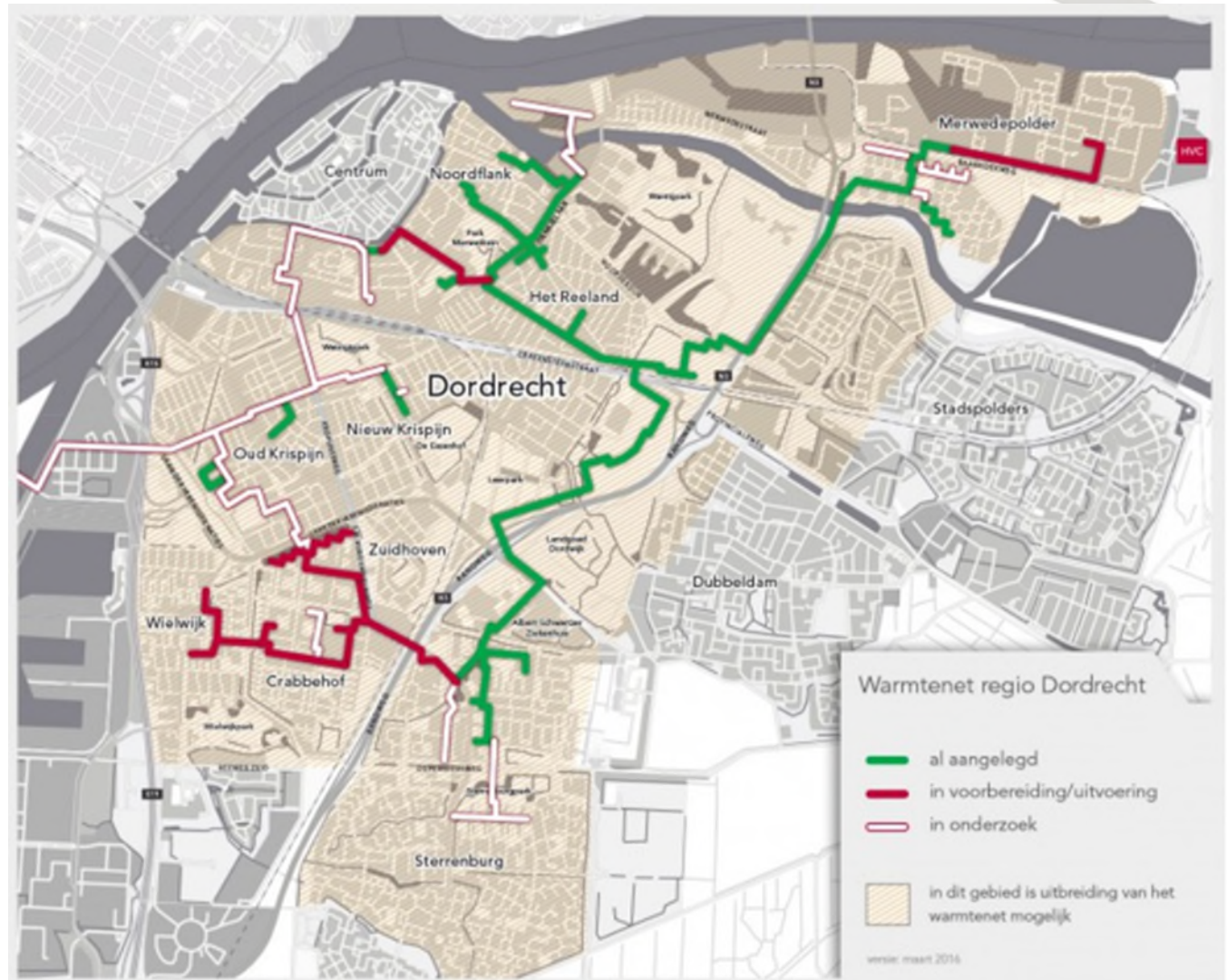
Other heat initiatives:

- 30 kton/yr cow's manure drying
- 100 kton/yr CO<sub>2</sub> capture



# Renewable Energy

## District Heating Dordrecht





# Renewable Energy

## Trias Westland: Geothermal heat for Greenhouses



### Heat demand for greenhouses Westland:

- Ca. 28PJ (Source: Westland Infra)
- Comparable to **1.000.000 houses...**

### Potential geothermics given the geology:

- Lower Cretaceous: 15-25%
- Trias: up to 80%





# Renewable Energy

## Trias Westland: Participants in the project



- Letter of intend with 65 companies: **59,7MWth**
- Estimate of baseload complete area: **>100 MW**
- Estimate coverage per hectare existing projects: **120-150MW (0,3 MW p.ha)**



[www.hvcgroep.nl](http://www.hvcgroep.nl)

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strategy & business development

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E-Mail: [j.born@hvcgroep.nl](mailto:j.born@hvcgroep.nl)



# Dutch Association for Secondary Construction Materials

Aalke Lida de Jong, AquaMinerals

 **VLEIEGASUNIE**  
Constructief Bijdragen aan Duurzaamheid



**aqua**  
**minerals**

**ECOMINERAAL**

**I B R**

  
**TATA STEEL**

 **PELT & HOOYKAAS**  
weg- en waterbouw





## **Tata Steel**

Blast furnace slag 1.300.000 t

## **Pelt & Hooykaas**

Steel slag 700.000 t

C&D granulates 100.000 t

## **AquaMinerals**

Drinking water residuals 200.000 t

## **Vliegasonie**

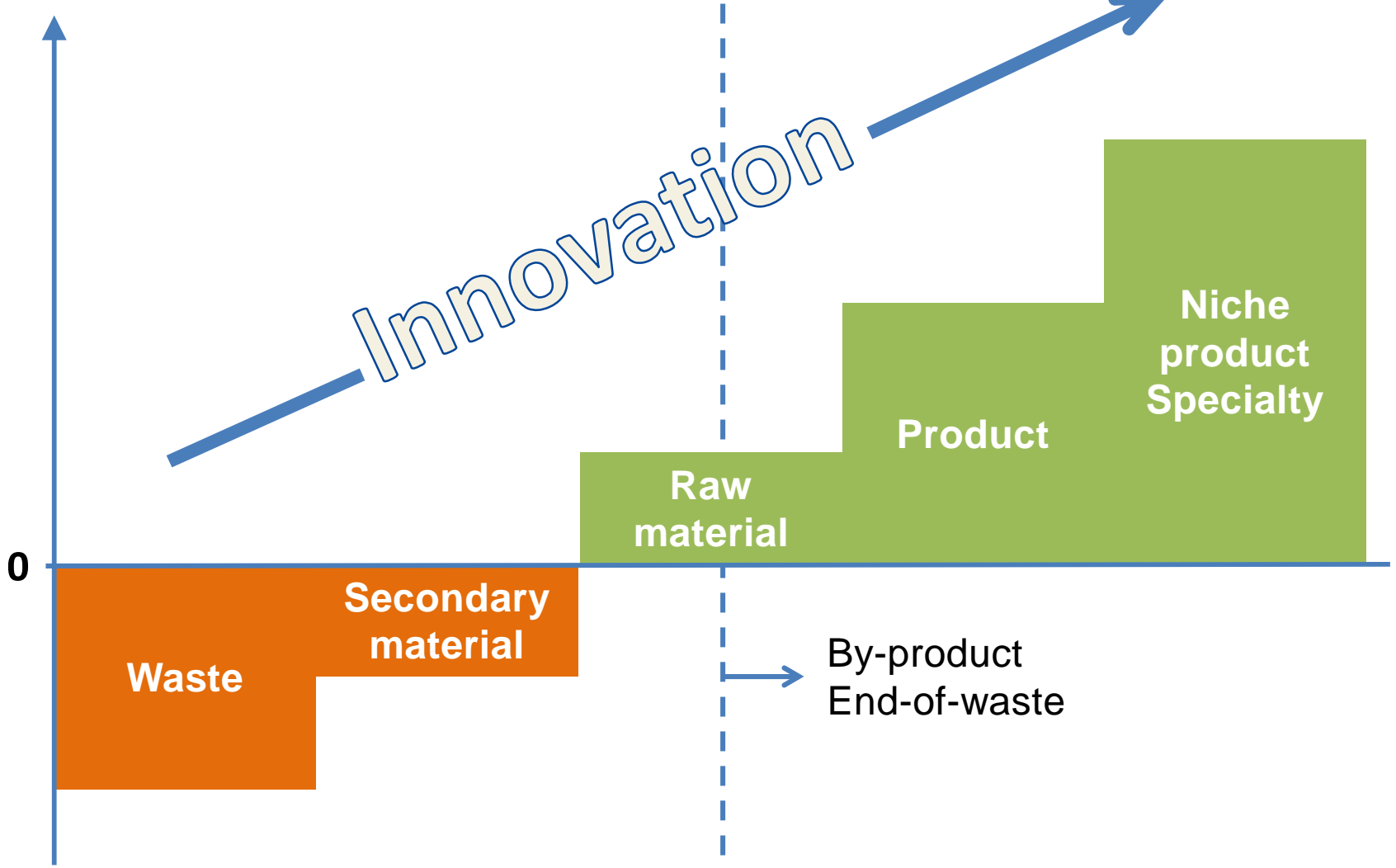
Fly ash, Bottom ash,  
FGD gypsum 1.000.000 t

## **Sibelco Ecomineraal**

Ashes, mineral by-  
products, glas and fibres 2.000.000 t

**TOTAL 5.300.000 t**

Value



Construction companies  
Building materials companies  
Recycling companies

Manufacturing  
Trading companies  
End-users

Price

Marketing  
Value



Quality

Trustable  
supply

Certification  
E.o.w./by-  
product



Price

Marketing



Innovation

Quality

supply

Certification  
E.o.w./by-  
product

# Recycled glass



**SIBELCO**

**EUROPE**

Sibelco Green Solutions









Fly ash









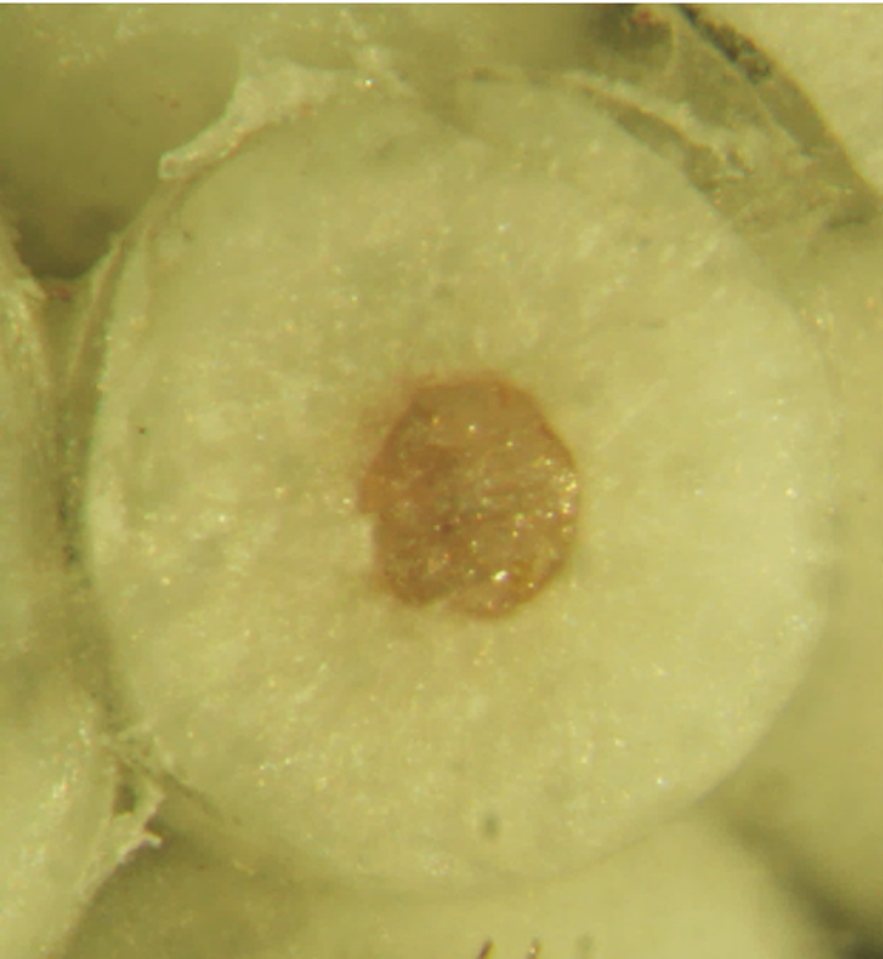


# Softening pellets

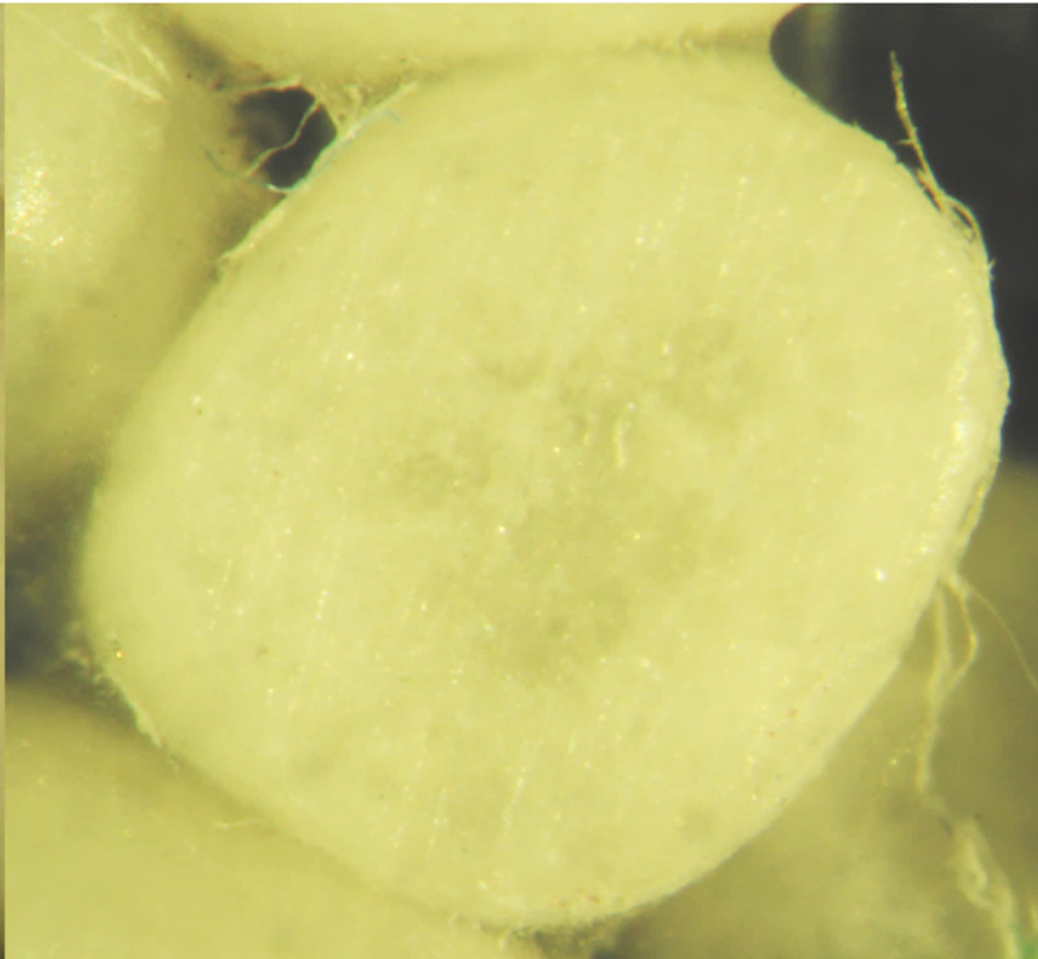








Sand kernel



100% calcite  
( $\text{CaCO}_3$ )











Waste = Product



Same norms for waste and (virgin) building products





Waste  $\neq$  Product

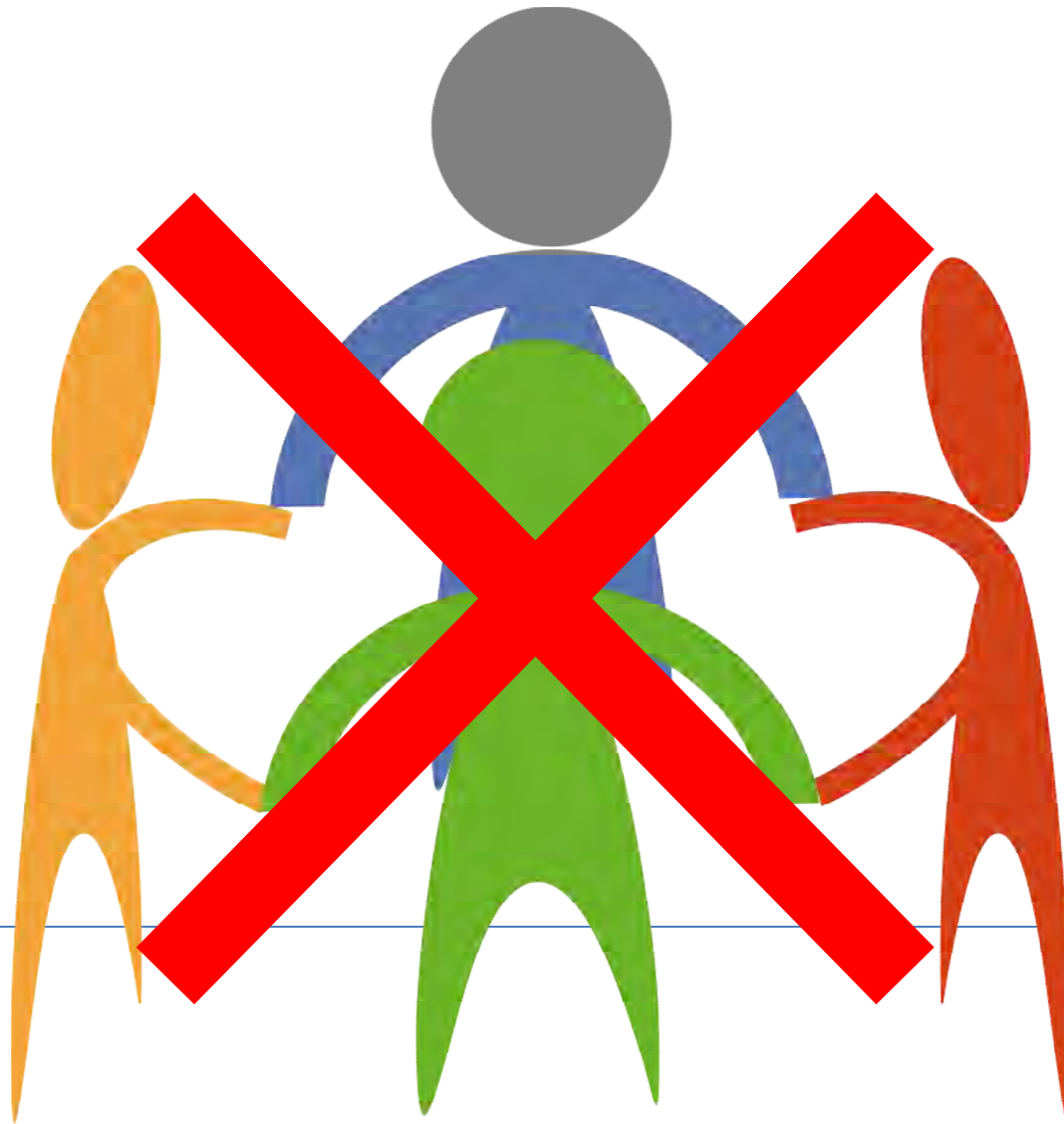
Leaching norms for waste





Size & knowledge:  
collaboration

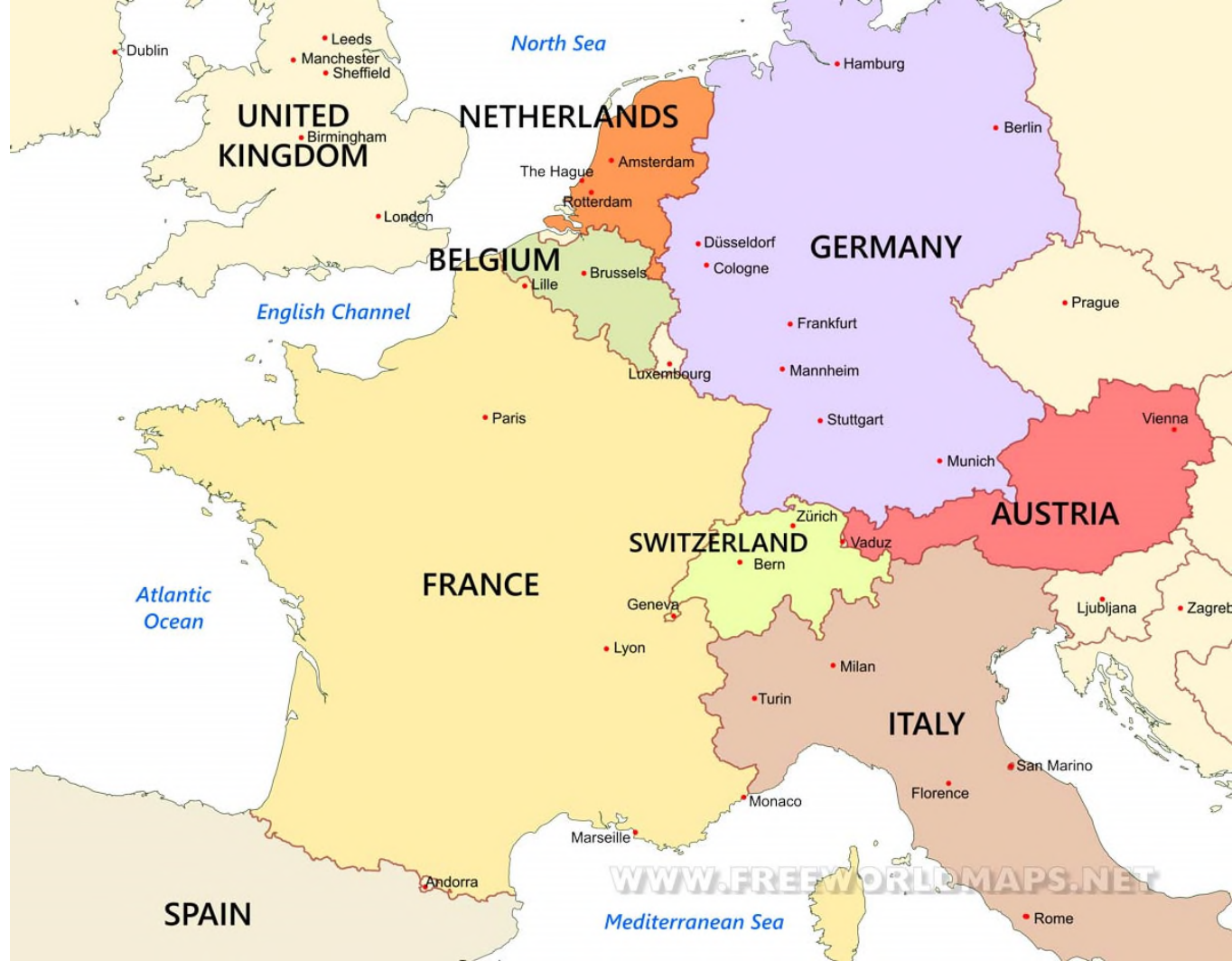




EU competition law







By-product or  
end-of-waste status



No open market  
Different national systems





Waste is scary:  
too strict interpretations





