



Flanders  
State of the Art

# Circular materials management in the construction sector in Flanders region, Belgium

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TOGETHER WE  
MAKE TOMORROW  
MORE BEAUTIFUL

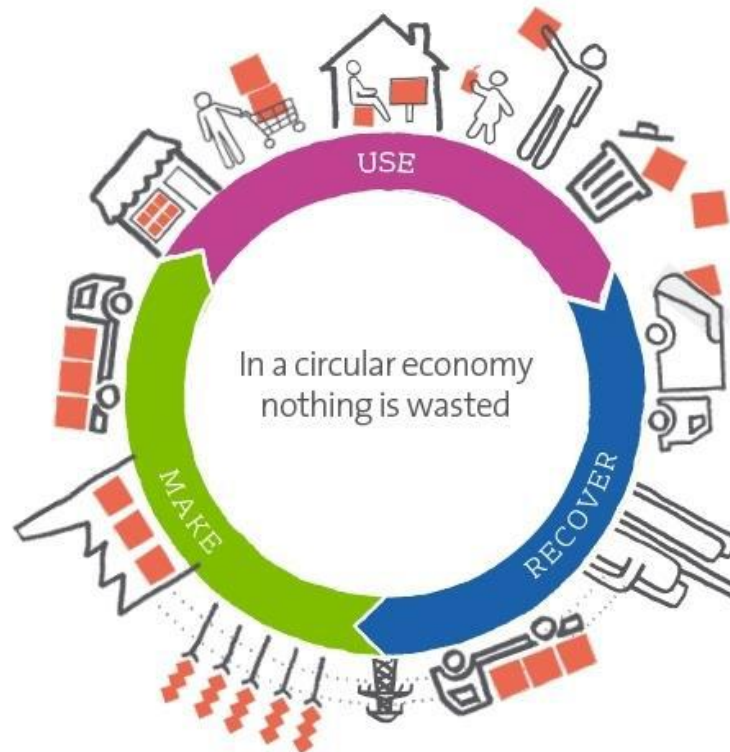
**OVAM**

# Emerging challenges for construction in Flanders

- ▶ Low carbon, energy efficient buildings
- ▶ Climate adaptation
- ▶ Building as material banks



# New orientation of the waste management policy: Move towards green circular economy





# Policy instruments

## ▶ **Legally binding instruments:**

- Pre-demolition audit (inventory) selective demolition / collection
- EoW criteria and certification for aggregates
- Ban on incineration of non-sorted wastes
- Ban on landfill (except asbestos and hazardous)

## ▶ **Economic instruments:**

- Tax on landfill and incineration
- Investment in recycling infrastructure

## ▶ **Participation of all stakeholders**

- Multi-actor governance of policy programs

# From clearing debris to producing raw materials

- ▶ First executive plan construction (1995)
  - Reduce landfilling
  - Encourage crushing to recycled aggregates
  - 50% recycling demolition waste
- ▶ Second executive plan (2007-2013) *Sustainable Materials and Waste Management in Construction*
  - Optimal use of recycled aggregates
  - 90% recycling rate C&D waste
  - Assessing the environmental impact of building materials
- ▶ Policy programme (2014-2020) *Materials management in Circular Construction*
  - From quantitative to a qualitative approach
  - Emphasis on effectiveness rather than efficiency

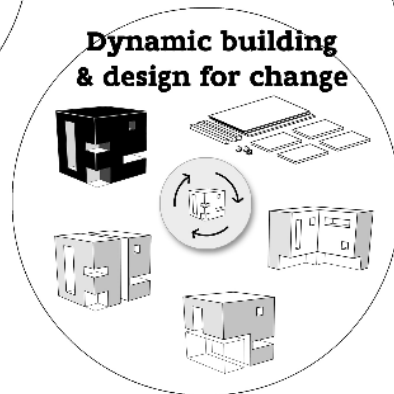
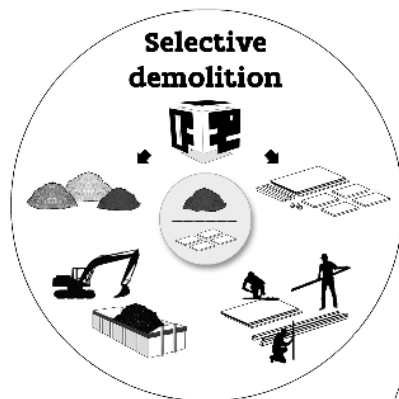
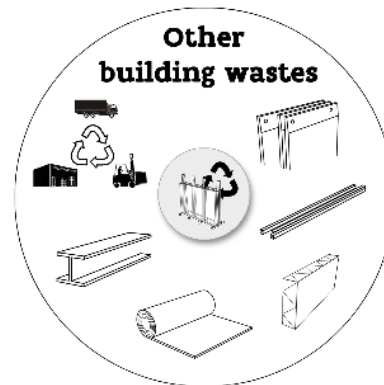
**[www.ovam.be/materiaalbewust-bouwen-kringlopen](http://www.ovam.be/materiaalbewust-bouwen-kringlopen)**



Policy program 2014-2020:  
'Materials management in  
Circular building'

# Materials management in Circular construction

- ▶ Flemish Prevention Programme (2014-2020)
- ▶ Ambitions for 2020 and .... 2050
  - ▶ Minimize the use of virgin materials
  - ▶ Use right materials for the right purpose, with the right techniques
  - ▶ Eliminate or reduce dangerous substances
  - ▶ Low footprint design
  - ▶ Build modular and adaptable





# Demolition ... the next level

- ▶ Ambitions for 2020
  - 'Selective' demolition = Common practice
  - Monitoring all demolition waste in value chains
  - Basis of cycles with optimal application of recycled or re-used materials
- ▶ Target for 2050
  - Less demolition, exclusively dismantling (of building elements)

# Selective demolition: policy steps

- Link pre-demolition audit and building permit
- Demolition Monitoring Organisation (DMO)
  - Legislation frame work
  - Standaard procedures (Tracimat)
- Trial projects
  - DMO operations audited and tested
  - Viability selective demolition of small building and in renovations
  - “Difficult” sites

# Demolition inventory plan

## ■ Listing of

- type and quantities hazardous waste: with great detail
  - ▶ asbestos, tar, pcb, mineral oils, ...
- non-hazardous waste and debris: estimated amounts

## ■ **Compulsary for demolition of buildings (except 'homes') larger than 1000 m<sup>3</sup>**

## ■ **Drawn up by architect or expert**

- report and plan of waste presence
- follow up on waste disposal in separate streams

## ■ **Given to demolition company prior to allocation of works**

# Managing the stony fraction

- ▶ Ambitions for 2020
  - Maximal valorisation recycled aggregates
  - Best aggregate in the best application in building and infrastructure works
  - Tar, asbestos, ... excluded from recycled aggregates
- ▶ Targets for 2050
  - All stony materials incorporated in closed value chains
  - Hazardous waste premanently excluded from building materials

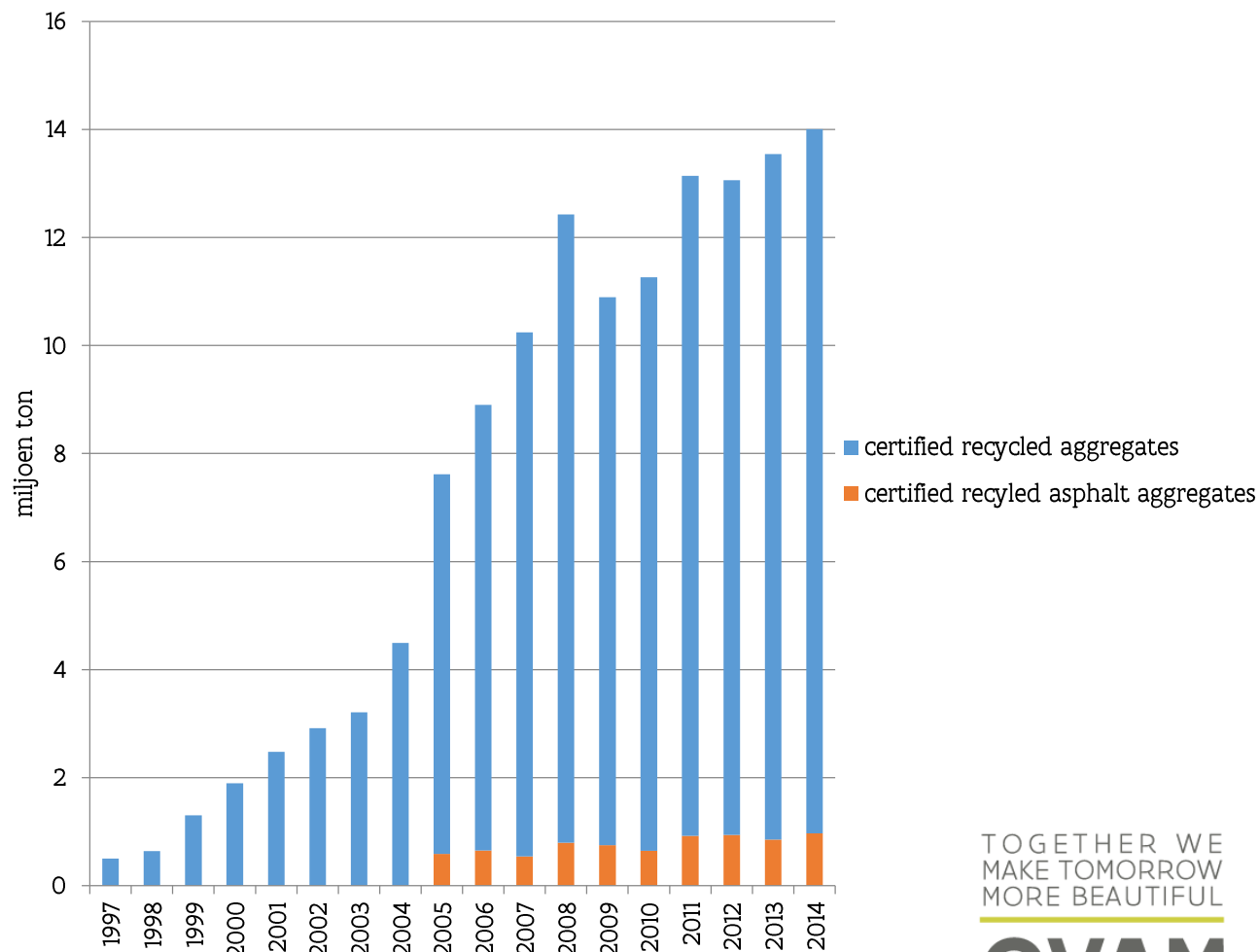
# Recycling C&D waste in Belgium

## Recycling rates:

**2010 95.6 %**

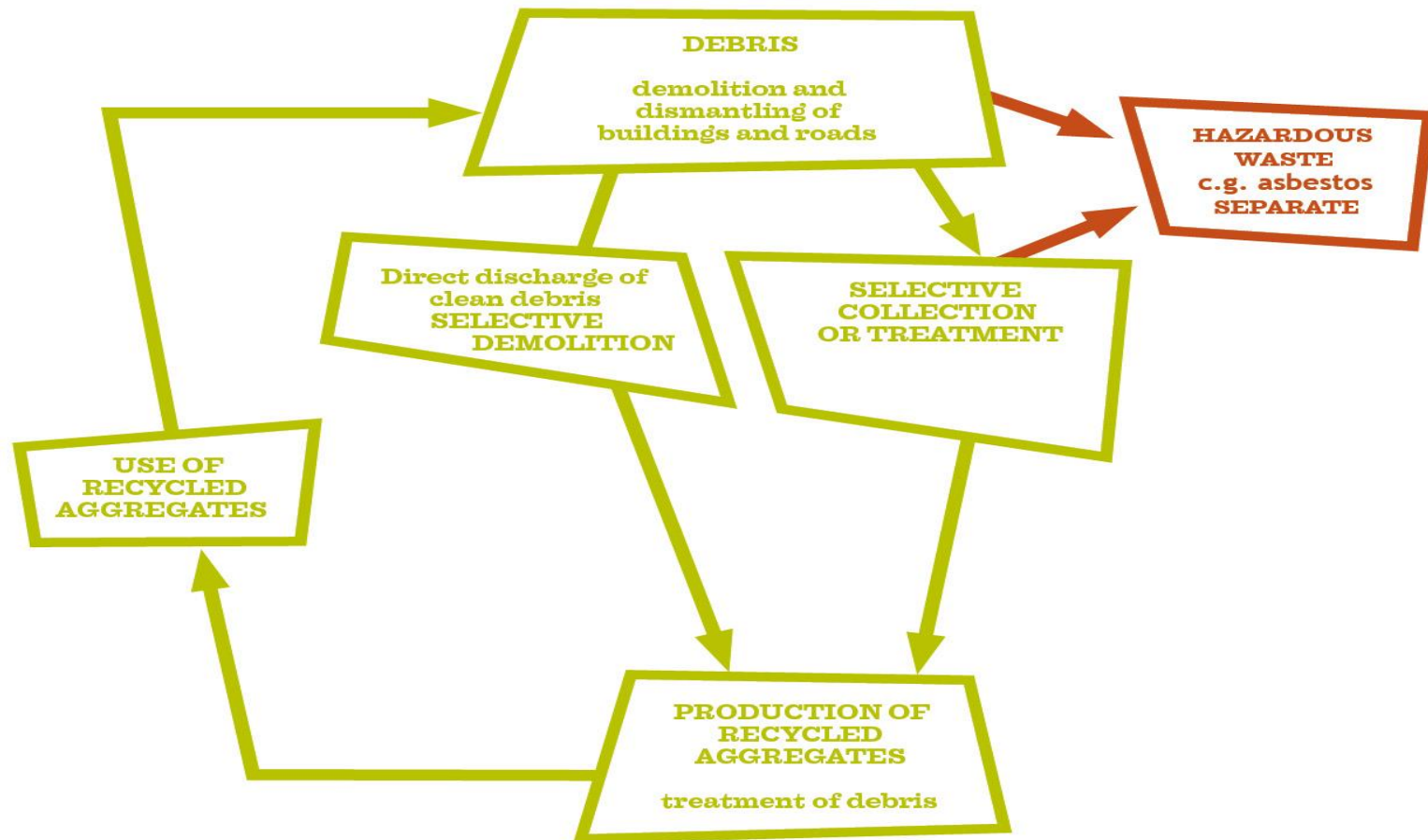
**2012 96.4 %**

**2014 96.4 %**





# Management system for aggregates



# Criteria for aggregates use (Vlarema)

- ▶ For resources intended for use as or in building materials:
  - The list of materials in Appendix 2.2 Section 2 contains the approved origin, description and composition for the intended resource
- ▶ Aggregates can be used in molded and non-molded building materials
- ▶ Recycled aggregates have to conform to the requirements in the the General Regulation for Aggregates(GRA)
- ▶ For other materials (ferrous and non-ferrous slags, washed granules, ..) a resource certificate is required.
- ▶ For materials not mentioned in Annex 2.2 the OVAM can issue a resource certificate

# General Regulation for Aggregates (GRA)

- ▶ Guarantees the environmental quality of recycled aggregates according to requirements in VLAREMA and if applicable VLAREBO (soil)
- ▶ Procedure for certification of the environmental and health criteria by CERTIPRO or COPRO
  - Self assessment by operators crushing plants
  - External control of work process and output
- ▶ Construction requirements are not part of the certification, but compliance with them is a necessary condition to obtain a certificate for aggregates for a specific application
  - harmonized European norms: NBN EN 13242, NBN EN 12620, ...;

# Further steps for stony materials

- ▶ High quality recycled aggregates
  - Elimination of hazardous and nuisance wastes
  - Improve aggregate production and management
- ▶ Increase market confidence and willingness
  - Expanding the 'Unity Regulation'
  - Risk profiles and demolition monitoring
- ▶ Optimal application
  - Information in users data base
  - Norms and standaard tender information

# Handling other building waste streams

## ► Ambitions for 2020

- Cooperation in value chains: glass, gypsum, plastics
- Apply concept of urban mining as a rule
- Aiming for optimal use in new building materials or high-end in other sectors.

## ► Targets for 2050

- Non-stony materials are used in the production of new building materials with creating rest streams.
- Materials are recovered completely from building materials and elements easily and cheaply.



# Actions on non-stony waste fractions

- Initiatives 'value chain management' on cellular concrete, sheet glass, mineral insulation, ...
- Study on feasibility of extended producer responsibility
- Development of exchange platform
- Trials and test projects
- Research on end-of-waste criteria in circular economy (considering second and further lives of materials)

# Environmental performance of buildings

## ► Ambitions for 2020

- Developing policy frame work: materia performance at building level.
- Design application for architects that calculates the total impact at building scale
- Assessment of 'acceptable' impact related to choice of materials in buildings

## ► Targets for 2050

- During construction of buildings, neighbourhoods, roads and infrastructure materials with the smallest possible environmental impact are applied.

# Work fields and actions Environmental performance

- Collecting quality data on performance for wide range of environmental criteria
- Relationship energy and materials
- Calculation-methods ('MMG'): fine tuning and extension
- Development of design tool for architects and product developers

# Dynamic and adaptable building

## ► Ambitions for 2020

- Design takes into account the ability to reuse buildings and elements after selective dismantling
- Increase re-use of building materials and elements
- New impulse to development of modular systems

## ► Targets for 2050

- All buildings are effectively and efficiently adaptable to changing needs.
- Reused elements are easy and common to apply
- Cost effective recovery of materials from building (elements) at end-of-life stage

# Work fields for dynamic building

- Development of policy frame work and of assessment tool to determine adaptability of buildings
- Belgian Learning Network 'Dynamic building and renovation'
- Living lab: starting trials
- Land development of 'blackfields' to enhance optimal use and innovative strategies



# Thanks for your attention

## Are there any questions?

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