


# Agenda



1. Shedding light on the reclamation trade



2. Reuse Toolbox



3. Feedback from the field



4. Environmental Aspects

5. Perspectives

# Reclamation dealers: Presentation of online directories Opalis and Salvoweb



**Mathilde Billet**  
Bellastock

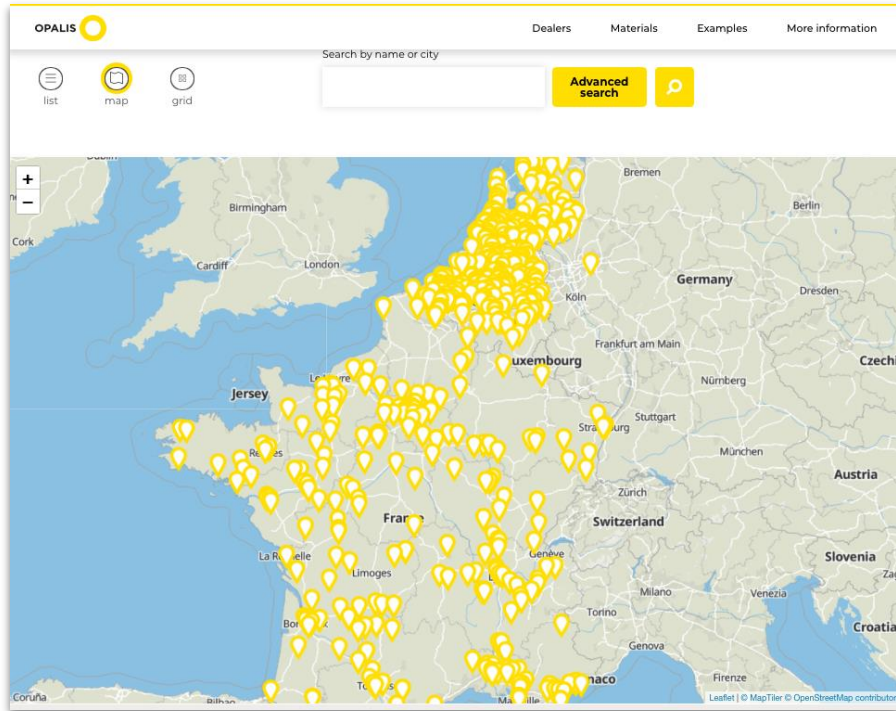


**Thornton Kay**  
Salvo

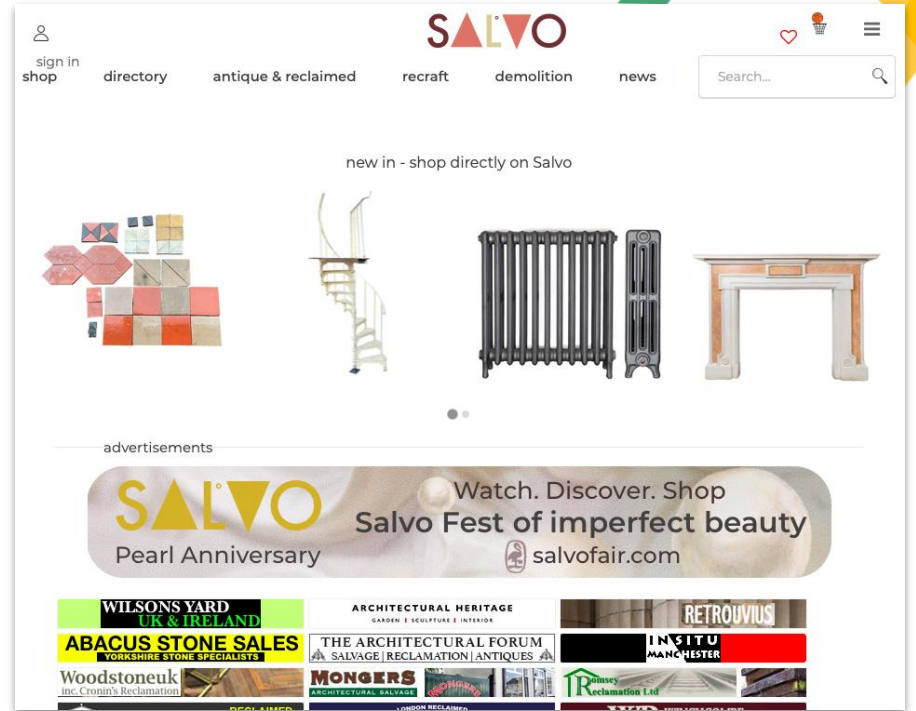


**Arne Vande  
Capelle**  
Rotor

# Two websites at the basis of the research



France, BeNeLux



UK, Ireland

## Antique Tegel Kunnen – Philtjens



### SPECIALITEITEN

Tegels

### BIEDT OOK AAN

Deuren, Baksteen, Stenen vloeren,  
Dakpannen, leistenen en  
muurdeksels

 Klaverstraat, 69  
3650 Rottum  
België

 90 km



## Bouwstocks.be



### SPECIALITEITEN

Baksteen, Stenen vloeren,  
Scheidingswanden en verlaagde  
plafonds, Isolatiemateriaal

### BIEDT OOK AAN

Structuureel hout, Tegels,  
Dakpannen, leistenen en  
muurdeksels

 Marcel Habetslaan, 18  
3600 Genk  
België

 77 km



## Carrière de la Hazotte



### SPECIALITEITEN

Kasseien, boordstenen en klinkers

### BIEDT OOK AAN

Stenen dorpels, treden en  
breukstenen

 Grand-Route 7  
4163 Anthisnes  
België

 105 km



## Corvelyn



### SPECIALITEITEN

Planken- en parketvloeren, Houten  
gevelbekleding en lambrisering

### BIEDT OOK AAN

Structuureel hout, Deuren, Trappen

 Brugstraat, 200  
9880 Aalter  
België

 71 km



## Doehetzelf 2dehands bouwmarkt



## Franck



## Gebruiktebouw materialen.com



## Incomex





**CONTACT**

Rue des Alouettes 171  
4041 Milmort — België

tel 04 278 73 25

fax 04 278 06 37

[info@van-dijck.be](mailto:info@van-dijck.be)

<http://www.van-dijck.be>

Zie website

**SPECIALITEITEN**

Kasseien, boordstenen en klinkers

**BIEDT OOK AAN**

Stenen vloeren, Stenen dorpels, treden en breukstenen, Dakpannen, leistenen en muurdeksels

**PRODUCTBEWERKINGEN**

Reinigen, sorteren, snijden en houwen van steen.

**SERVICES**

Transport

**OPENINGSUREN**

ma-vr 7u-17u

Nieuwe en tweedehandse kasseien en boordstenen en steenbewerking, dat is waar Van Dijck voor staat. Van tweedehandse boordstenen worden de uiteinden afgezaagd zodat u ze beter kunt plaatsen. Als u dat wenst, worden kasseien zo gezaagd, dat ze een vlakke bovenkant hebben. Omdat het bedrijf over een groot machinepark en veel ervaring beschikt, kunt u zowat alle mogelijke be- en afwerkingen vragen.



# How to document reclamation dealers



## Questions about the company/business

Activities: collecting waste, demolition, dealers, supply of reclaimed, etc

Human and material resources

## Questions about the stock

What stock, in which quantity  
Incoming and outgoing flows

## Questions about services and operation on products

Collecting, transportation,  
cleaning, refurbishing ...

## Questions about prices

## Questions about evolution of market

Increase in reuse business  
Expectations



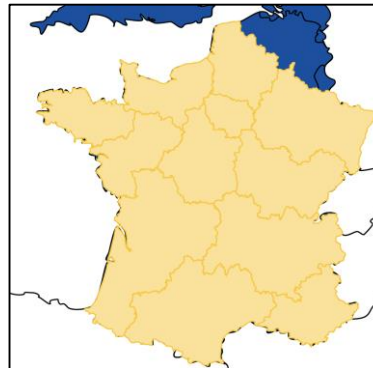


## OUR TARGETS

- To reference 600 companies
- To visit 200 companies

## OUR RESEARCH STRATEGY

- Guide chevalier des entreprises spécialisée, matériaux anciens
- Salvo, Rotor and Bellastock network
- Internet, with keywords
- Le bon coin
- Decoration magazines
- Word of mouth



# Opalis France

## OUR RESULTS

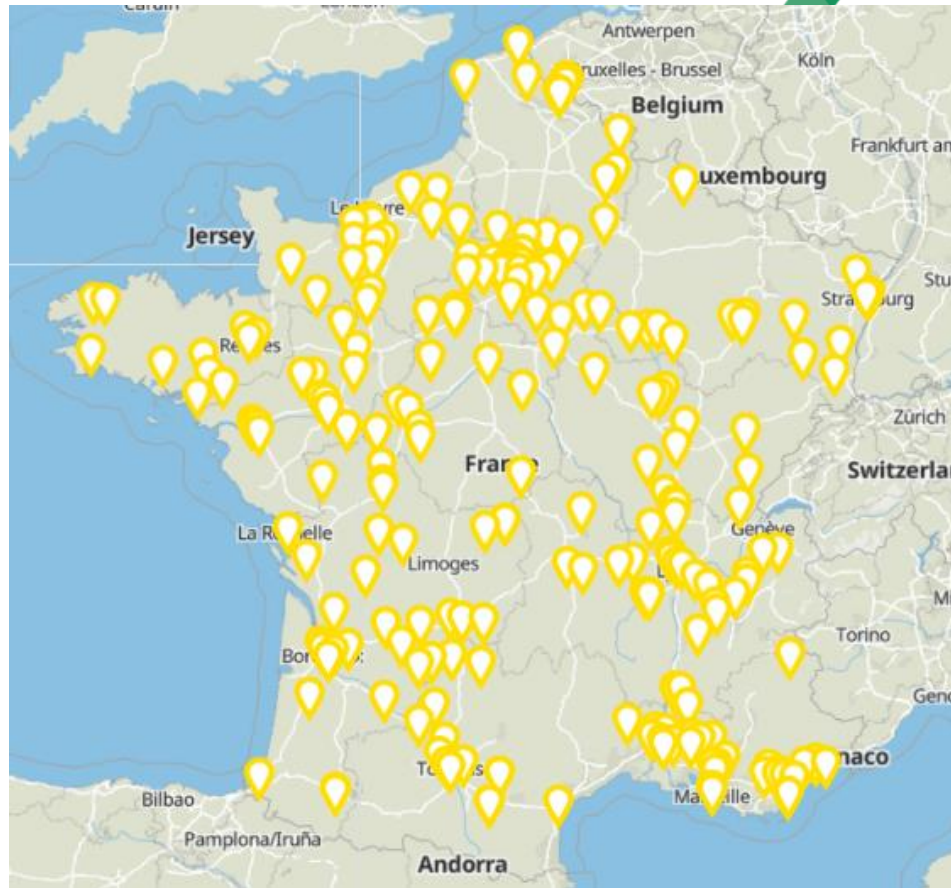
→ 242 companies referenced

→ 185 companies visited

The initial figures were estimated based on an extrapolation of Belgian data and experiences.

As you can see, French and Belgian contexts are very different.

The approach must be local!





# Opalis France

## 3 KEY OBSERVATIONS

- Two generations of reclamation dealers
- Businesses highly innovative
- Local and national dynamic



# Opalis BeNeLux

## OUR FCRBE RESULTS:

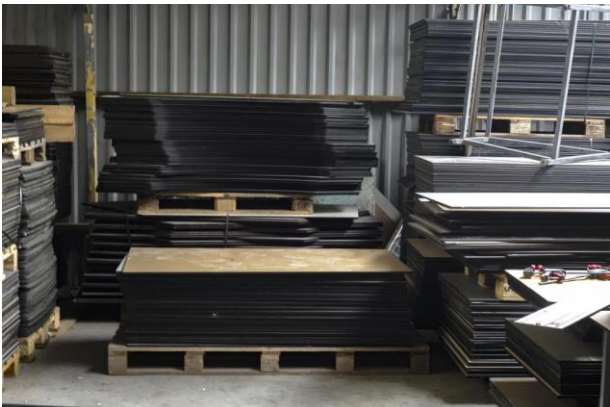
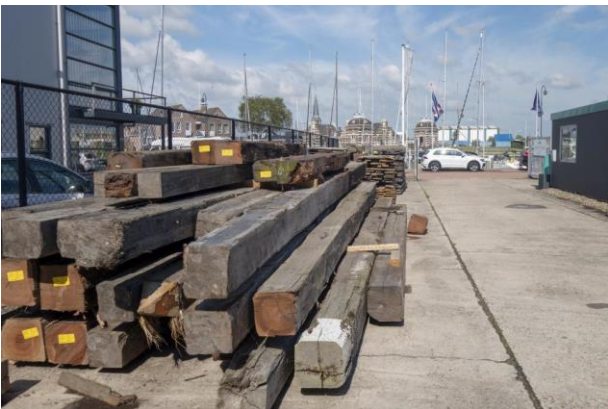
- 182 new companies referenced
- 126 companies visited

## IN TOTAL:

- 287 companies referenced



# New materials





# New materials



## CONTACT

Plesmanstraat 25  
3905 KZ Veenendaal — Netherlands

tel +31 (0)682 51 85 13  
info@carre-dakramen.nl  
<https://www.carre-dakramen.nl/>

## BUSINESS HOURS

Monday to Saturday: by appointment  
Closed on Sundays.

Visit website

## SPECIALITIES

Windows

## SERVICES

Transport Installation  
Transport via subcontract  
Fitting in the case of a local site

## OPERATIONS ON PRODUCTS

Cleaning and repairs





# Demolition contractor / salvage dealer



# Demolition contractor / salvage dealer



## CONTACT

Albert Plesmanweg 21  
4462 GC Goes — Netherlands

tel +31 (0)113 21 68 04  
recyclinggoes@sinkegroep.nl  
<https://www.sturmendekker.nl/gebruikt-e-bouwmaterialen/>

## BUSINESS HOURS

Mon-Fri: 7h-17h

[Visit website](#)

## SPECIALITIES

Structural timber   Structural steel   Doors

Sanitary appliances   Panelling

## ALSO OFFERS

Insulation   Windows   Interior finishing wood

Technical equipment and installations   Radiators

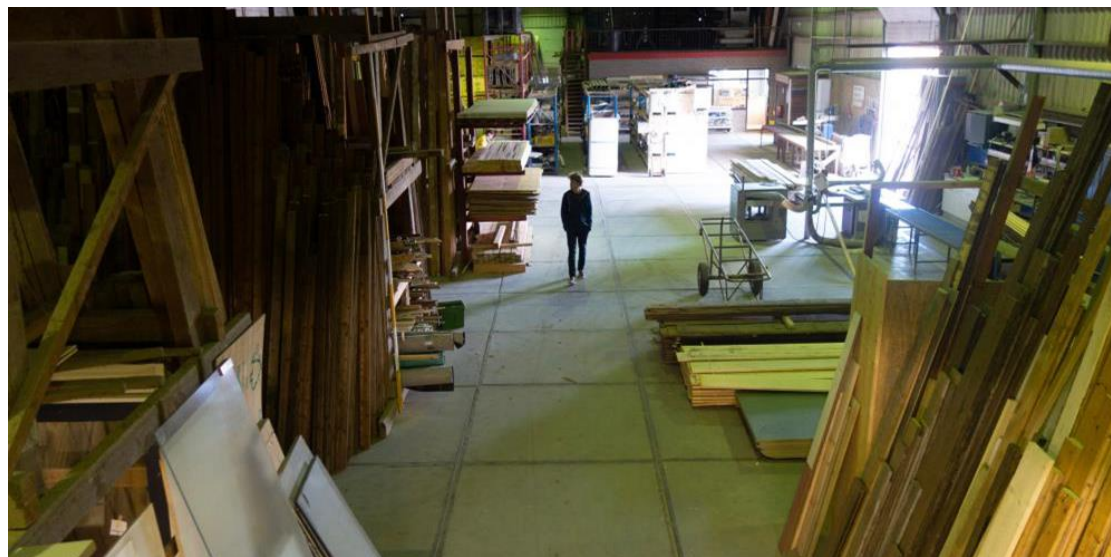
Lights   Finishing wood

## SERVICES

Transport   Demolition   Dismanteling

## OPERATIONS ON PRODUCTS

Basic woodworking (de-nailing, sawing, etc.)



# Demolition contractor / salvage dealer



## CONTACT

Brandekensweg 13 unit 6  
2627 Schelle , VAN — België

tel +32 (0)496 92 97 82  
michael@re-kup.be  
<https://re-kup.be/>

## OPENINGSUREN

op afspraak

Zie website

## SPECIALITIES

Structural timber

Panelling

## ALSO OFFERS

Insulation

Windows

Doors

Stairs

Tiles

Office interior elements

Sanitary appliances

Technical equipment and installations

Radiators

Lights

## SERVICES

Demolition Dismanteling

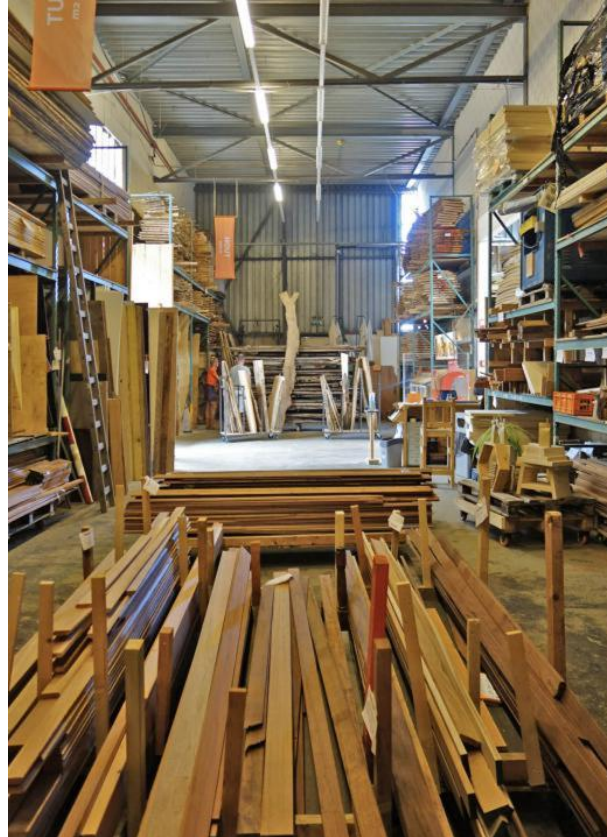
## OPERATIONS ON PRODUCTS

Basic woodworking (de-nailing, sawing, etc.)





# “Urban” dealers



Materialenbank Leuven

Buurman Rotterdam / Utrecht / Antwerpen

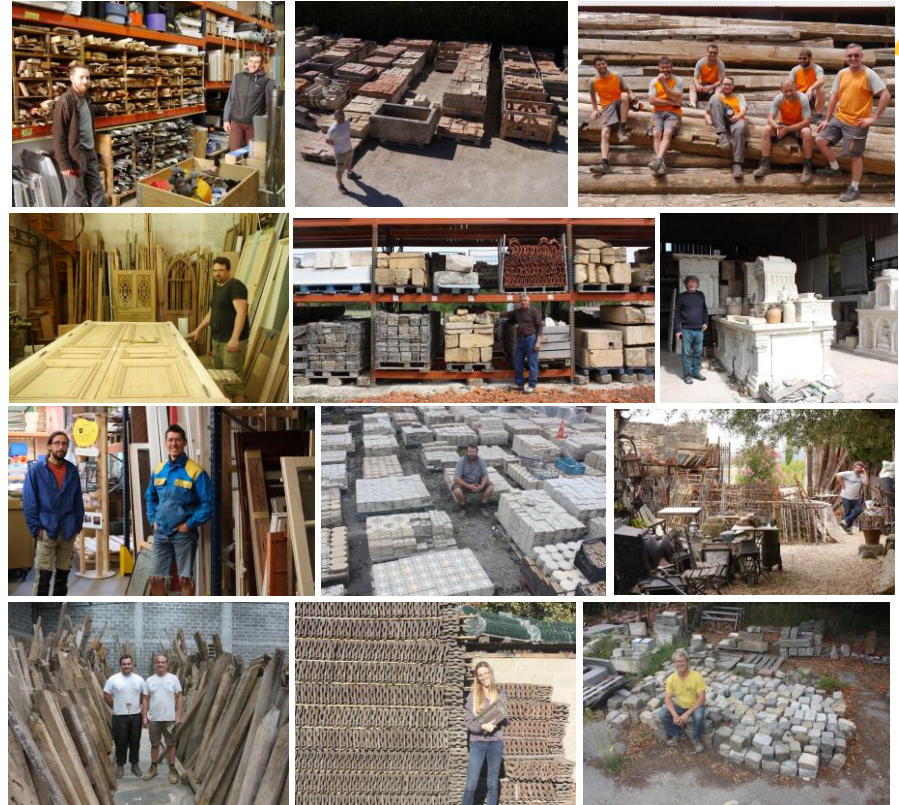
BatiTerre (Brussels)



# Perspectives



- **popularity of the service**
- **make the offer visible and constantly updated**
- **regional lay partners**











salvoweb.com

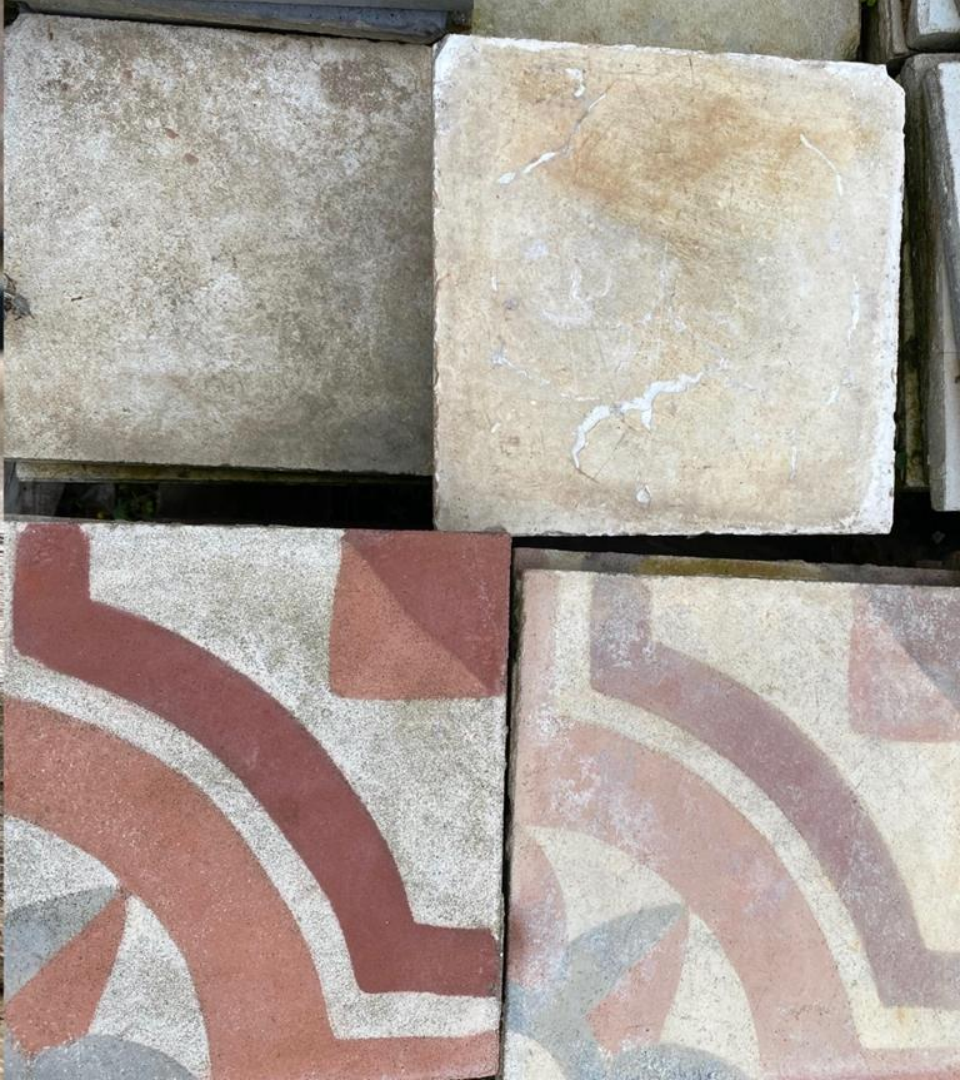
Reclaim, Reuse, Repeat since 1991.

























Architectural stone



Peg & plain tiles



Welsh purple slate











ANCHOR













futuREuse  
DIRECTORY

UK & IRELAND 500

[salvoweb.com/salvo-directory/fcrbe](https://salvoweb.com/salvo-directory/fcrbe)



# Statistical survey of the reuse sector in Belgium, France, Ireland, the United- Kingdom and the Netherlands



**Mathilde  
Doutreleau**  
CSTB



# Statistical survey



## Why?

- Lack of quantitative data on the economic activities specialised in the reclamation and supply of reusable building elements

## How?

- Data from a questionnaire filled in by the partners who carried out the visits or had direct contact by phone (Rotor, Bellastock and Salvo)
- Approach based on the first statistical effort conducted by Salvo in the UK in 1998 and 2007 with 'BigREC'

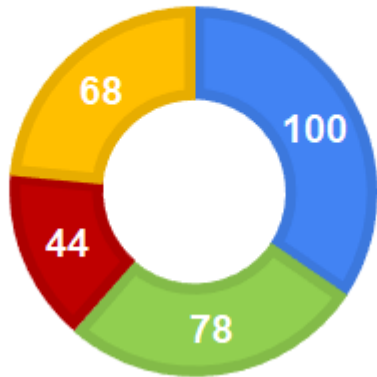
## What?

- Description of dealers' activities and an estimation of the type and quantities of materials stored
- Characteristics of the stock : distances travelled by materials, the origin of the stock and the type of customers.
- Business trends

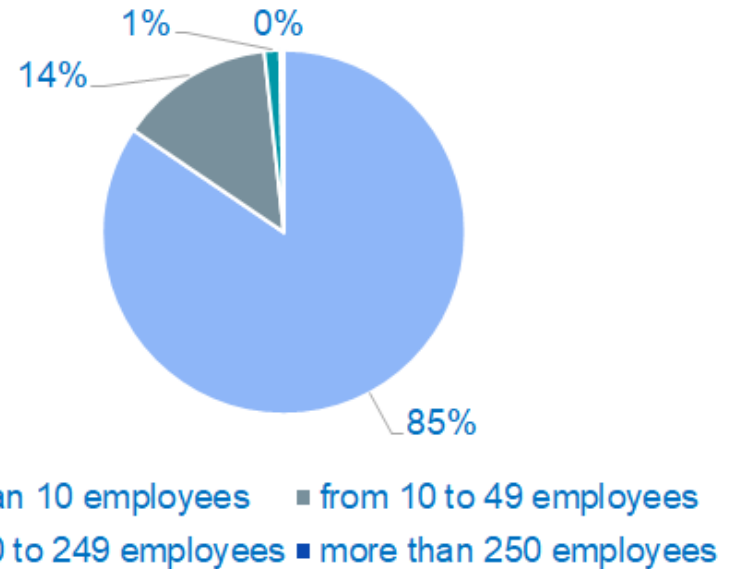
# Structural profiles of the companies

A total of 290 questionnaires filled out:

■ France  
■ Belgium  
■ UK and Ireland  
■ Netherlands

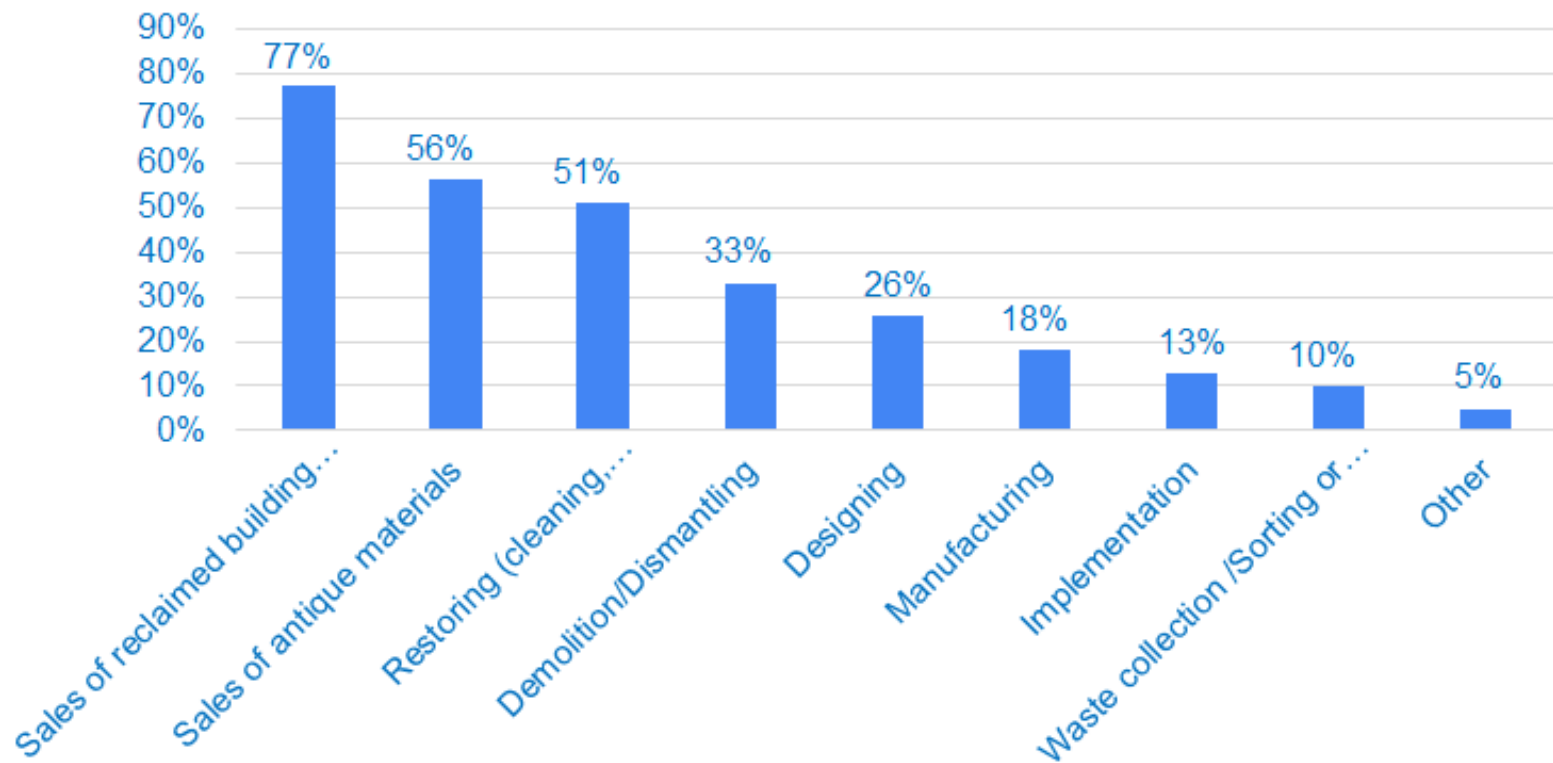


Size of the companies:





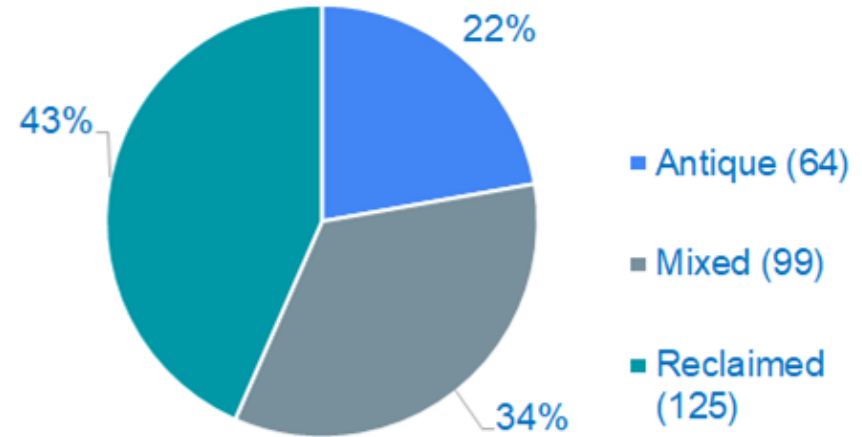
# The core business of the dealers



# Profiles of the dealers

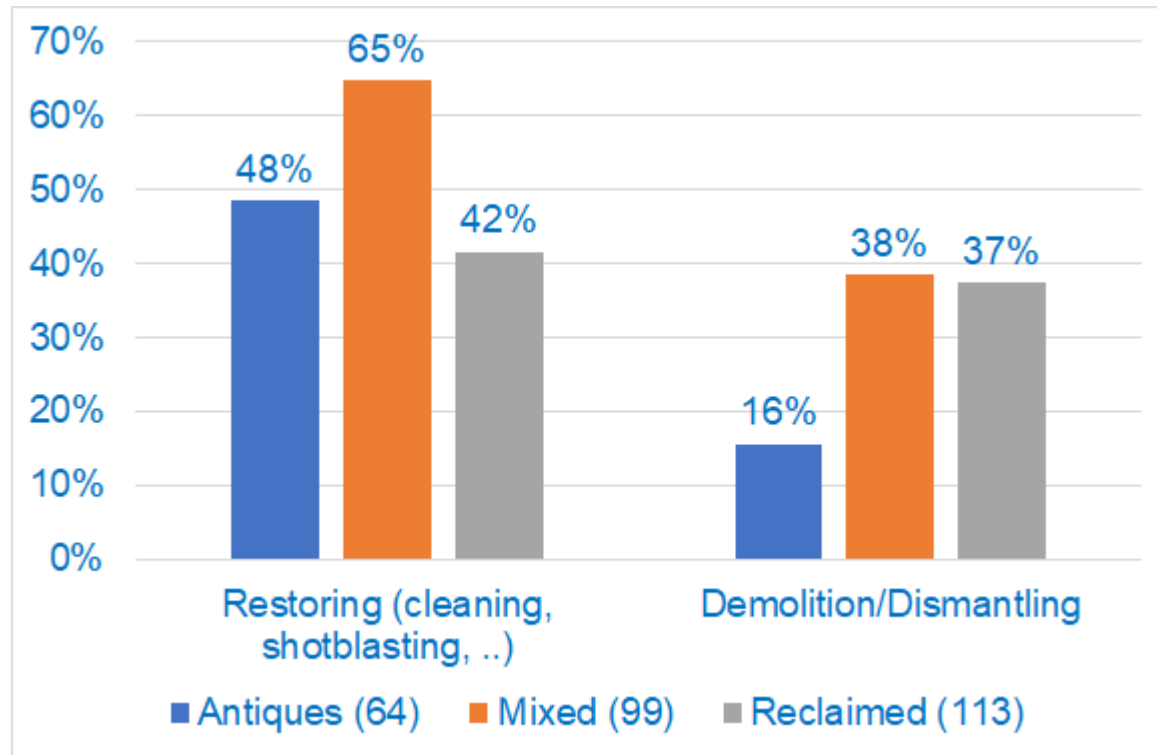


- 'Antique' = dealers that sell only antique materials (and no reclaimed ones).
- 'Reclaimed' = dealers that sell only reclaimed materials (and not antique).
- 'Mixed' = dealers in both reclaimed and antiques materials.

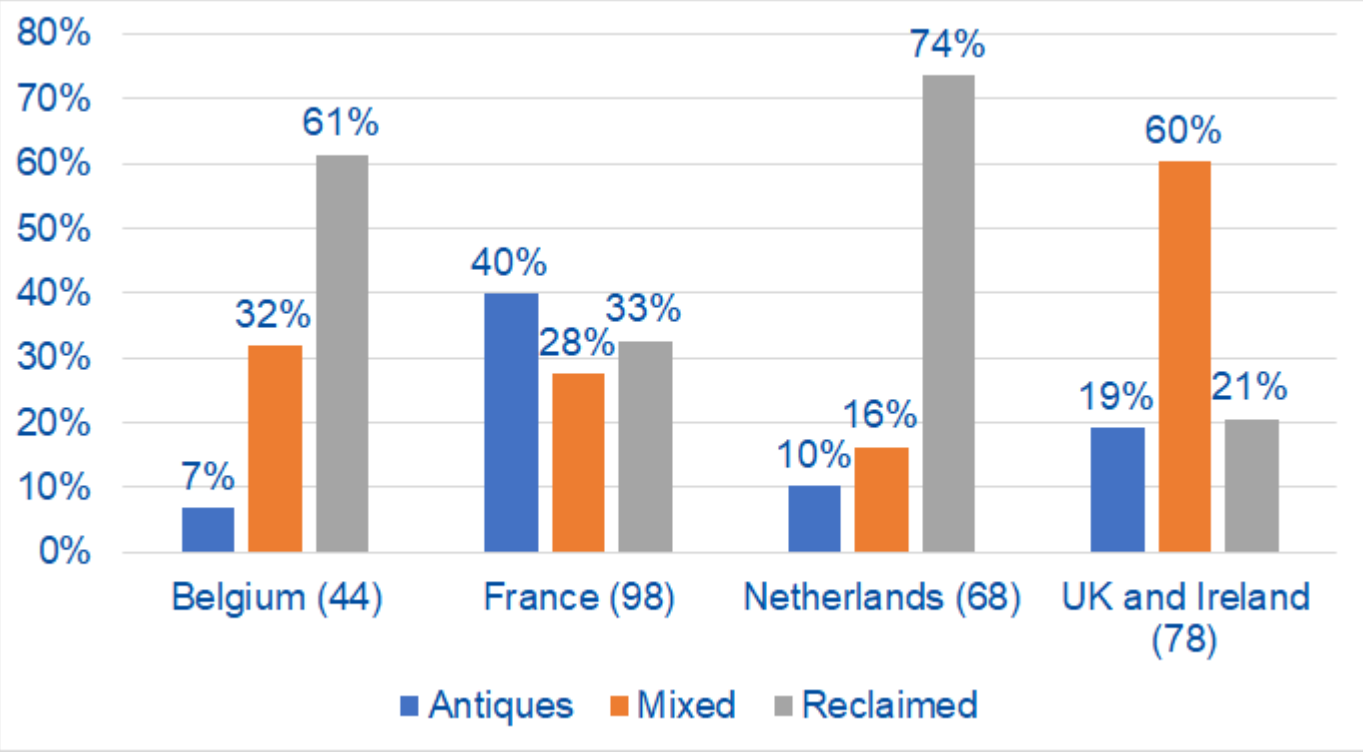




# Activities and materials sold

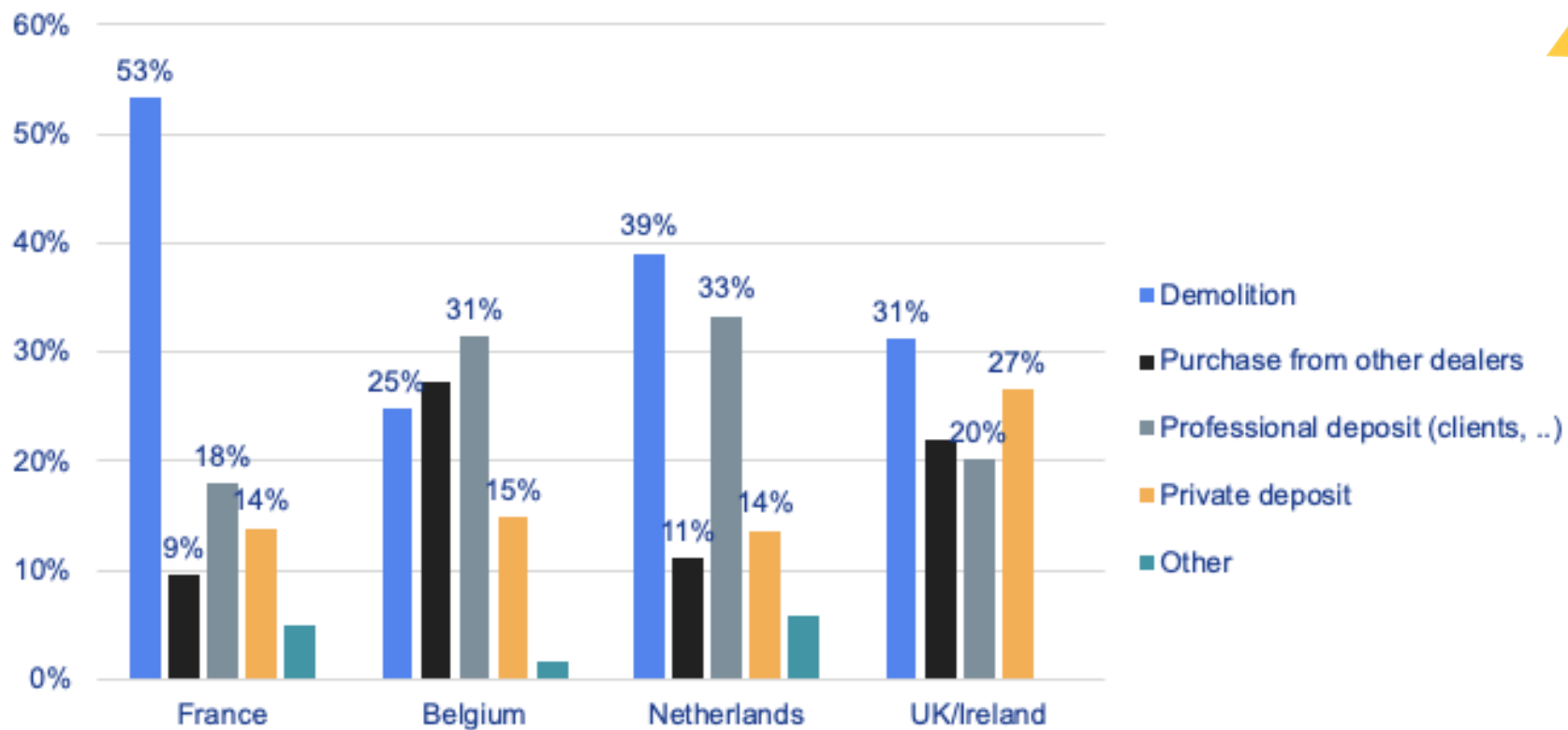


# Profiles of the dealers per country

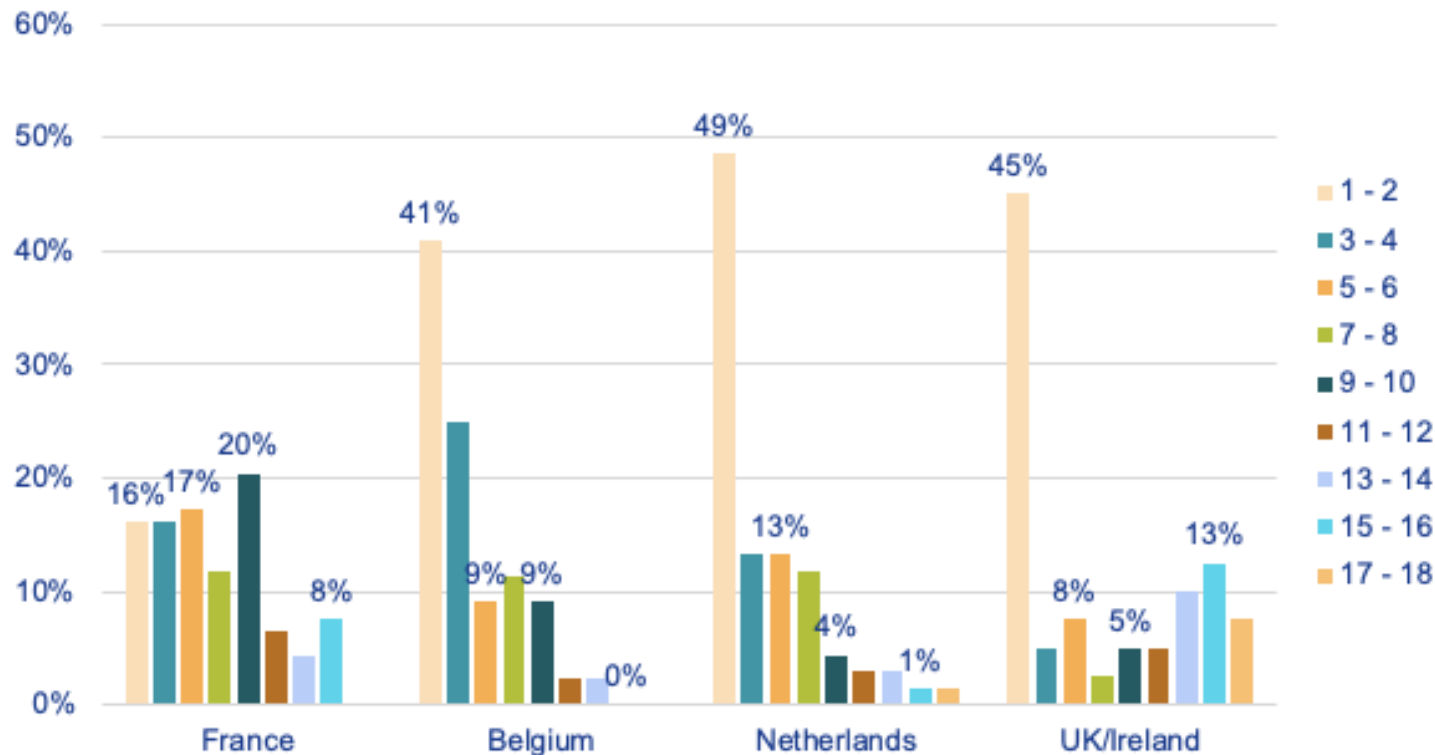




# Origin of the stock



# Number of materials category held by dealers





# Main material quantities per country



- In France:

- Steps in stone (**29% of the stock**);
- Floor in natural stone;
- Slate, roof tiles and wall copings.

- In the Netherlands:

- Slate, roof tiles and wall copings. (**47% of the stock**);
- Steel structure;
- Bricks and Windows.

- In Belgium:

- Bricks (**58% of the stock**);
- Tiles;
- Slate, roof tiles and wall copings.

- In the UK/Ireland:

- Floors in natural stone (**32% of the stock**);
- Slate, roof tiles and wall copings;
- Timber framing; Parquet and wooden floors

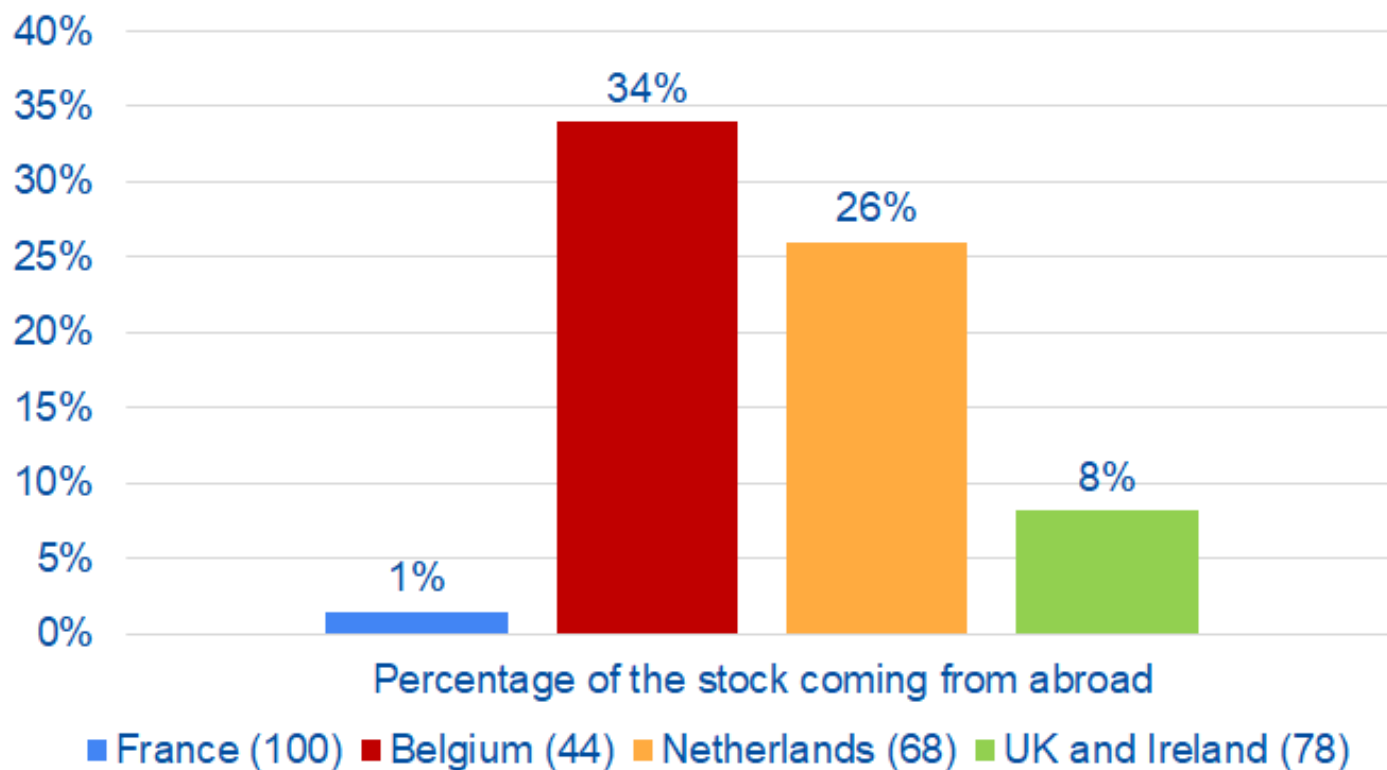
# Size of the storage place



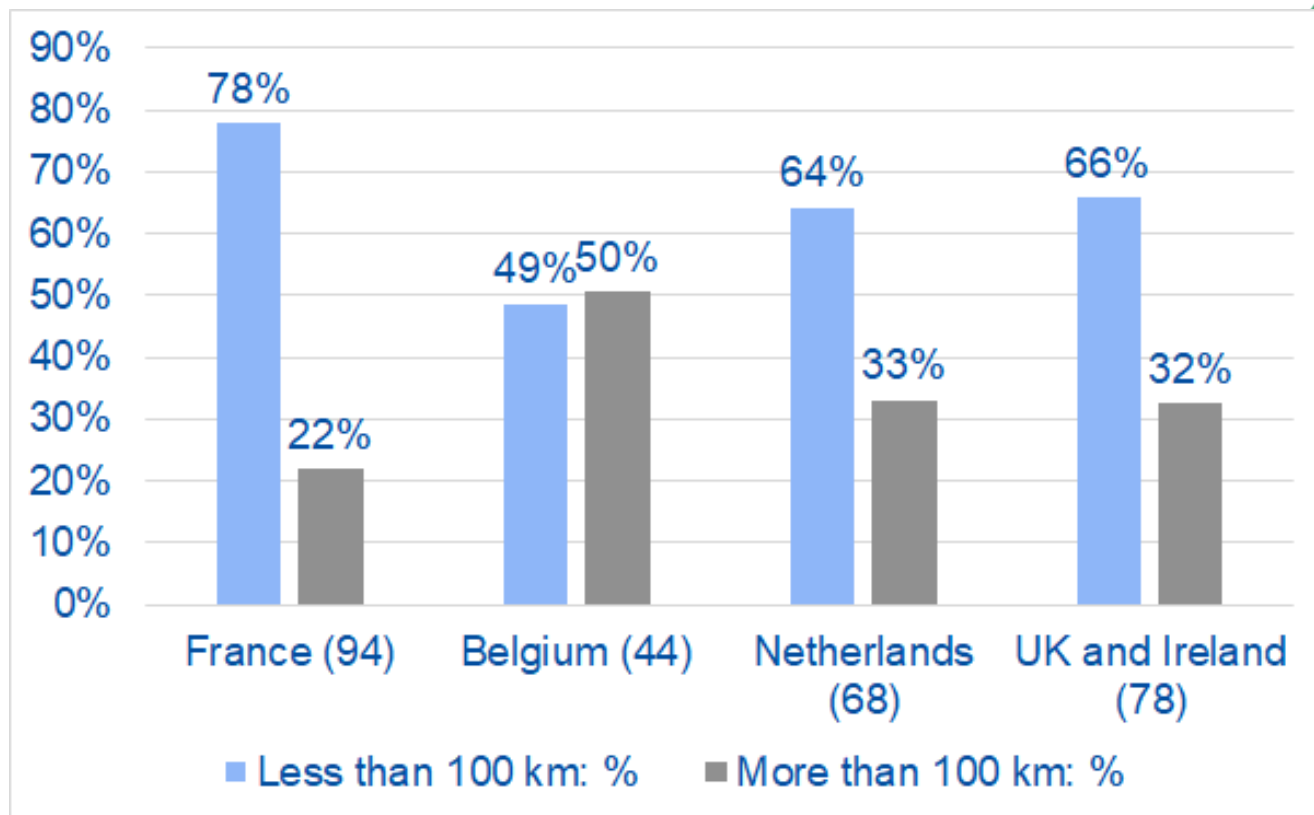
	1 <sup>st</sup> quartile	median	mean	3 <sup>rd</sup> quartile
Up to 6 materials	1 000,00	<b>2 400,00</b>	8 618,91	<b>6 000,00</b>
More than 6 materials	1 500,00	<b>4 000,00</b>	9 806,33	<b>10 000,00</b>



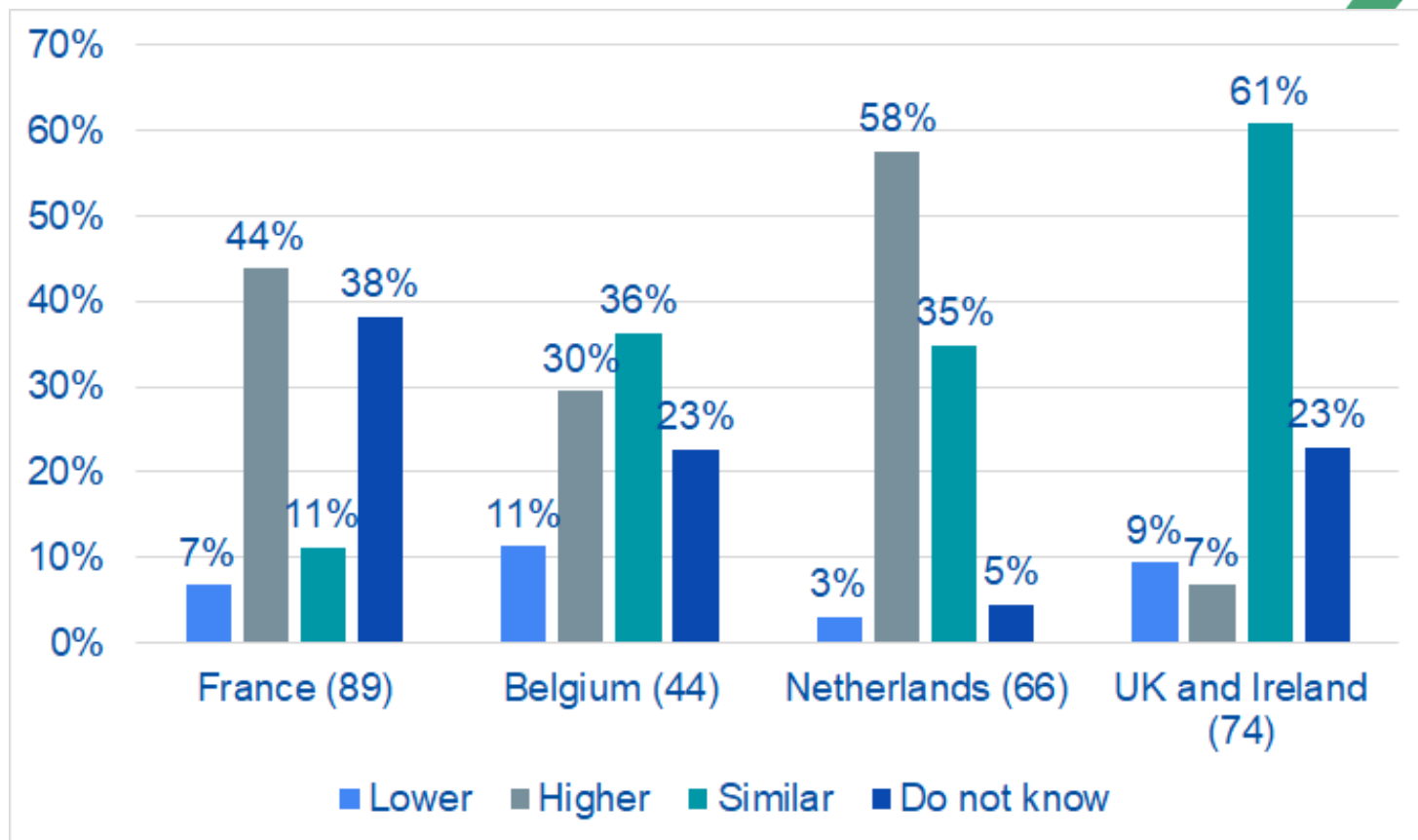
# Stock coming from abroad



# Distances travelled



# Business expectations





# Economic volumes and materials quantity

- Extrapolation coefficients used to estimate these volumes for the whole population

	Sample size	Population size	Extrapolation coefficients
France	100	210	2,10
Belgium	44	125	2,84
Netherlands	68	250	3,68
UK/Ireland	78	500	6,41

- The extrapolation gives for France, Belgium, the Netherlands and the UK/Ireland:
  - Total turnover : **325,2 million €**
  - **4 513** Full Time Employees.
  - **441,9** thousands of tons of stored materials.



- Some questions remain and need to be addressed in future studies:
  - Switching from stock to flow
  - Computing the embodied carbon
  - Identifying the nature of jobs created (qualified or not)
  - Finding a way to organize a regular statistical survey on the reclamation trade, at regional or national level
  - ...

# A catalogue of 36 material sheets



**Michaël Ghyoot**  
Rotor



slido



**Have you ever had to search  
for information about  
reclaimed materials?**

ⓘ Start presenting to display the poll results on this slide.

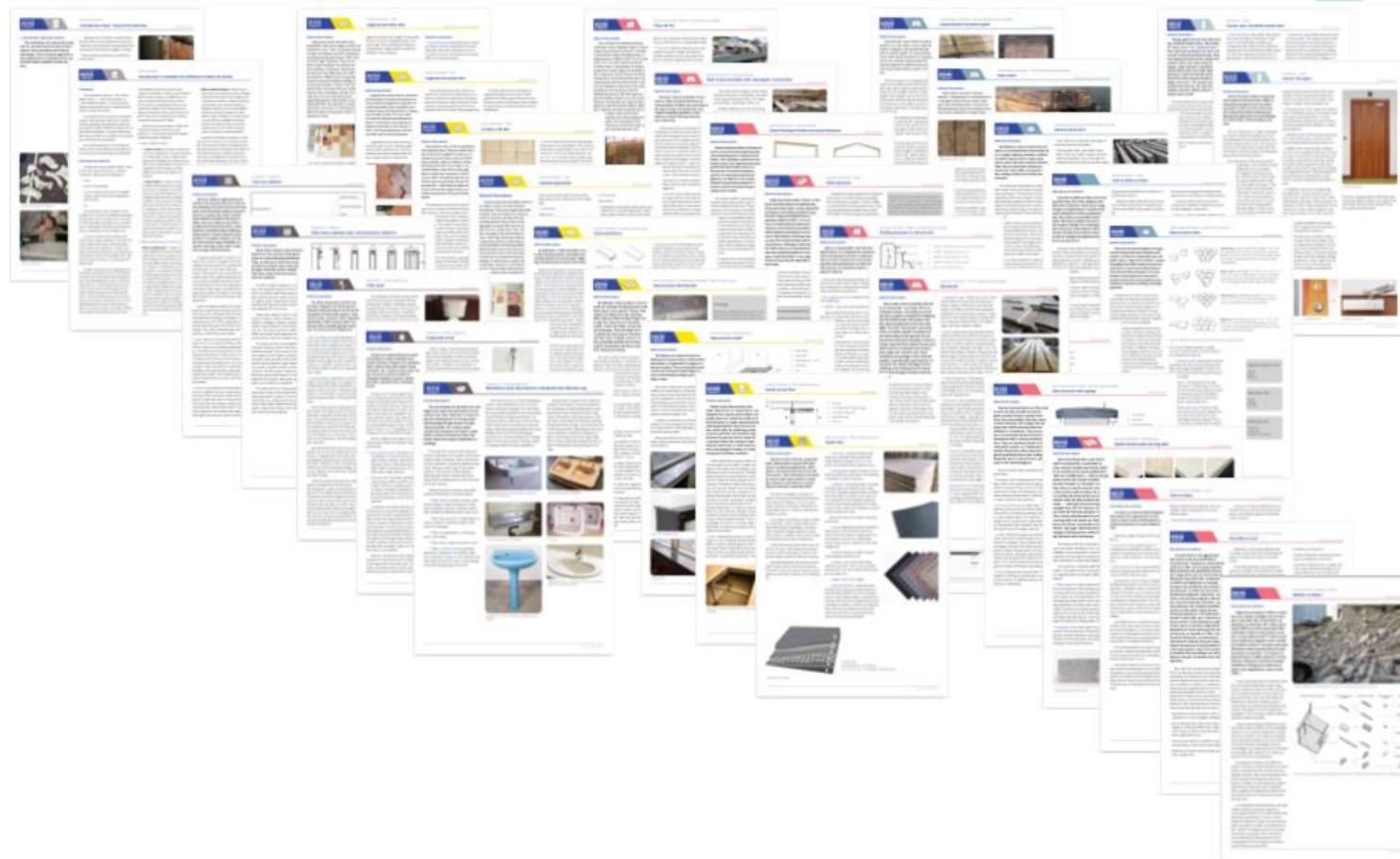
slido



**For those of you who  
answered yes, was it  
difficult to find?**

ⓘ Start presenting to display the poll results on this slide.

# 36 material sheets





# 36 material sheets



*Introductory sheets*

*Interior finishings*

*Structure and shell*

*Landscape, paving*

*Doors, windows*

*Equipment*



# What you will find in these sheets: description

Interreg FCRBE  
**REUSE**  
TOOLKIT

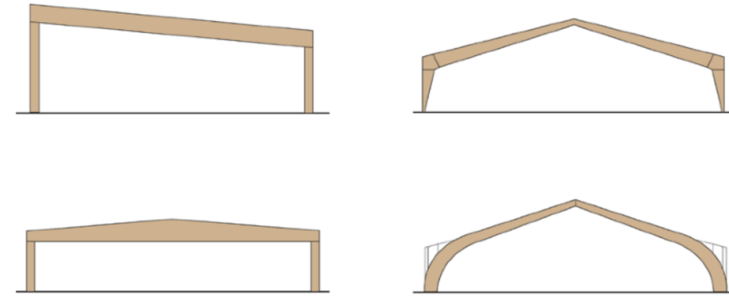
Structure and shell → Structural timber

## Glued laminated timber structural elements

Material description

### Material description

Glued laminated timber (Glulam) elements are produced by superimposing and laminating layers of planed wood timber. This technique, known for hundreds of years, has experienced strong growth during the 20th century. Glulam has become a structural element appreciated for its mechanical performance, its lightness, its ability to cross long spans (limited in practice by transport constraints) and the diversity of geometric shapes that it allows.



Examples of shape variability of glued laminated timber structural elements

The timber used for manufacturing is obtained by joining wooden parts free from

component of a promising sector for the future. Currently, the elements in glulam are most

→ **Formats and dimensions.** The beams can be straight or curved, with constant or variable



# What you will find in these sheets: reclamation

## Material reclamation

**Currently, reclaimed glulam comes mainly from the dismantling of framing elements, floor beams or poles generally dating from the second half of the 20th century.**

The reclamation of structural elements in glulam requires good coordination as well as a certain level of expertise. It is preferable to be accompanied by professionals (structural engineers, control offices, demolishers, contractors, etc.) who will be able to guarantee the stability of the building via an adequate removal methodology, to ensure the feasibility and the profitability of a removal and

It will also be necessary to study what type (s) of stress the structure had to face during its use: exposure to polluting substances, operating overloads, accidents, etc. The analysis of the types of assembly also makes it possible to consider the most suitable removal method.

### • Basic tests:

- 'Hardness' test using a resistograph. It allows the detection of superficial areas of rot.
- 'Screwdriver' test. Consists in causing a localised splinter using a blunt object. In healthy wood, the breakage occurs along the fibres while rotten wood



Humidity measurement





# What you will find in these sheets: applications

### Applications and installation

**In principle, reclaimed glulam elements offer many possibilities for re-use.**  
**In practice, several scenarios can arise:**

- depending on the new application targeted:
  - Structural
  - Non-structural
- depending on the starting point of the design work:
  - From a still standing structure
  - From a batch of elements already dismantled and offered for sale by professional suppliers

The most demanding case is of course that of a structural application. This is gov-

The case of non-structural applications also requires a balance between the properties of the original material and the intended use.

Certain properties of the elements are detailed by professional suppliers who, in addition to reconditioning services, are generally able to provide information on the dimensions of the elements (thicknesses, length, width), their weight, species or even condition of the elements (presence of holes, cracks, metallic elements, etc.). It can also be useful to go on-site to see the quality of the batch.

Depending on the intended use, the specifier is required to specify his expectations regarding the following characteristics:

→ **Types and dimensions.** Leaving some latitude on dimensions, species, wood colour and

Most of the reclaimed building materials are sold as is on the reclamation market. The conditions of sale may however contain special guarantees specific to the material. Some suppliers are able to indicate the origin of the material and/or provide documentation on the product purchased (for more information, see the introductory sheet).

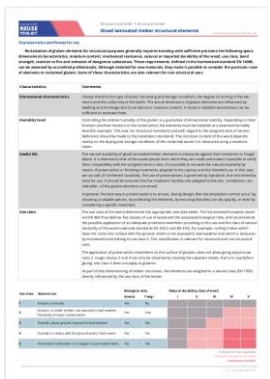


# What you will find in these sheets: characteristics

## Characteristics and fitness for use

Reclamation of glulam elements for structural purposes generally requires knowing with sufficient precision the following specs: **dimensional characteristics, moisture content, mechanical resistance, natural or imparted durability of the wood, use class, bond strength, reaction to fire and emission of dangerous substances.** These requirements, defined in the harmonized standard EN 14080, can be assessed by accredited professionals. Although detailed for new materials, they make it possible to consider the particular case of elements in reclaimed glulam. Some of these characteristics are also relevant for non-structural uses.

Characteristics	Comments
<b>Dimensional characteristics</b>	Closely linked to the type of wood, the drying and storage conditions, the degree of sorting of the elements and the uniformity of the batch. The actual dimensions of glulam elements are influenced by swelling and shrinkage due to variations in moisture content. A visual or detailed examination can be sufficient to estimate them.
<b>Humidity level</b>	Controlling the relative humidity of the glulam is a guarantee of dimensional stability. Depending on their function and their location in the construction, the elements must be installed at a balanced humidity level (for example: 15% max. for structural members) and with regard to the assigned class of service. Reference should be made to the installation standards. The moisture content of the wood depends



# What you will find in these sheets: reuse indicators

(GL24h). All of these parameters were then used for structural calculations and sizing of the new building. The restoration of the beams consisted of a surface cleaning with water, a shortening in length, and a machining for the new assembly parts. A total of 13 beams measuring  $16.100 \times 890 \times 133$  mm were reclaimed.

(<https://naturalcapital.futureproof.community/uploads/71dbb80a7b0136dff3f57725f4b11762.pdf>) in HOUTWERELD, N° 11 (May 2015).



Assessing the impact of re-

## Indicative prices (Excl. tax)

Random sampling of the reclamation market in Western Europe (Belgium, France, Great Britain and the Netherlands) made it possible to extract some indicative prices. These vary depending on the models, condition and quantities needed. Some observed prices for private customers :

→ Glulam beam: 200 - 450 €/m<sup>3</sup>

Similarly, the Dutch company De Groot Vroomshop, which also manufactures new beams, contributed to the reclamation of 80 tonnes of arched beams, around 40 years old, from the demolition of an old ice rink (NL).  
© De Groot Vroomshop  
<https://degrootvroomshop.nl/gelijmde-hout-constructies/hergebruik-houten-spanten/>

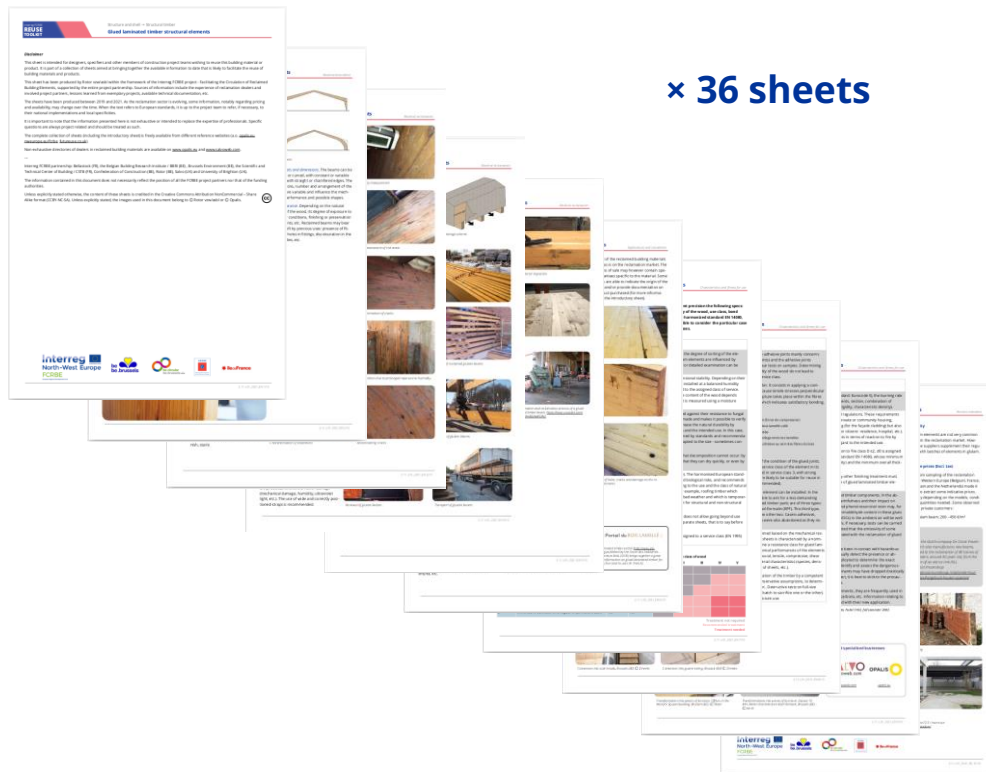




# What you will find in these sheets



- Description
- Guidelines for reclamation
- Guidelines for reuse
- Characteristics
- Reuse indicators:
  - Availability on the market
  - Indicative prices
  - Carbon benefits
- Inspiration, references



# Why these sheets?

- To inspire and inform
- To collect information on reclaimed materials
- To facilitate specifications

→  
*Reusing high pressure laminates as ceiling:  
extract from the  
specifications book of a  
FCRBE pilot operation.*

## 3.6 FAUX PLAFOND EN STRATIFIE COMPACT

### Description :

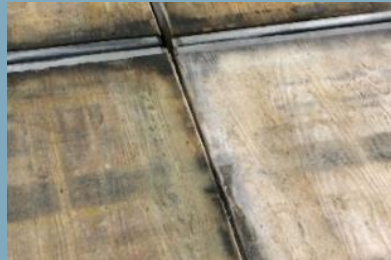
Fourniture par « RECUPERATION-REEMPLOI », puis pose d'un faux plafond de type stratifié compacte conforme à la norme EN 438-6 :2005. Voir annexe du guide fiche matériau.

- Support : suivant détail architecte
- Ossature : suivant détail architecte

L'entreprise veillera à se rapprocher des différents fournisseurs listés la fiche de lot de réemploi, et ce dès la période de préparation pour constituer un lot en quantité suffisante. Les quantités à retenir devront être évaluées en fonction de la qualité ou des caractéristiques du stock (tenir compte des pertes, voir description ci-après). Les délais d'approvisionnement du matériaux dépendent des opportunités de stock et doivent être anticipés au démarrage des travaux.

Finition : **Le lot devra présenter une teinte identique à minimum pour chaque sous-face de loggia.** Pour un même appartement, les panneaux devront avoir la même teinte pour l'habillage des sous-face des loggia.

# Landscape, paving, terraces



- Kerbs (natural stone)
- Setts (natural stone)
- Clay pavers (*Dutch clinkers*)
- Concrete rubble pavers
- *Steenschotten* boards
- Ship timber

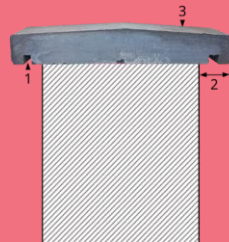


# Structure...



- Timber
- Glulam beams
- Structural steel
- Concrete slabs
- Bricks
- Concrete masonry rubble

# ...and shell



- Clay roof tiles
- Slate roof tiles
- Barnwood cladding
- Stone slabs cladding
- Stone sills
- Wall copings in natural stone

# Interior finishings (incl. office buildings)



- Ceramic tiles
- Clay tiles
- Glazed tiles
- Cement tiles
- Flagstones
- Shelves in natural stone
- Raised floors systems
- Carpet tiles



# Doors and windows



- Interior panelled wooden door
- Interior fire doors

# Equipment



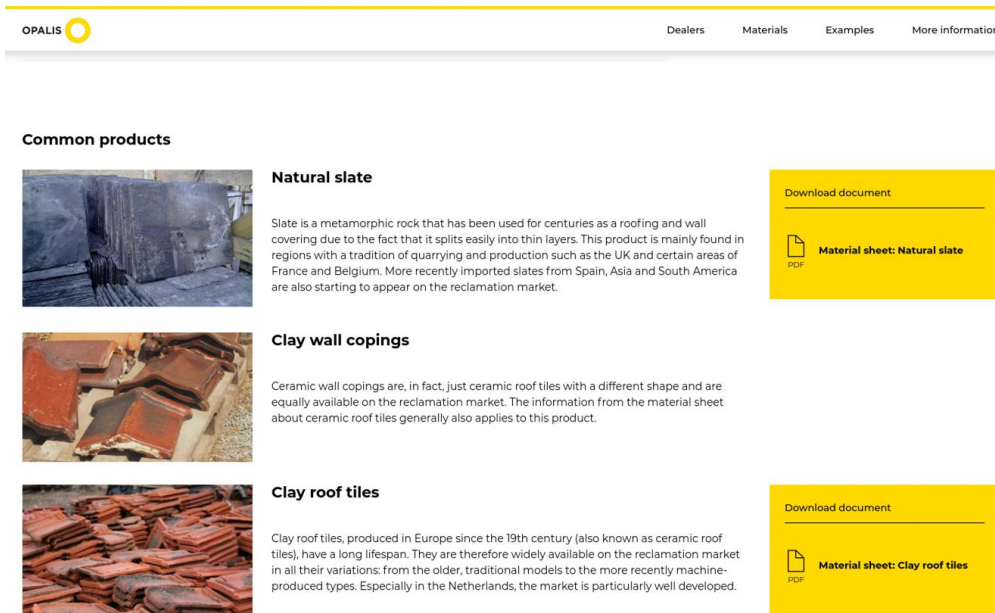
- Cast iron radiators
- Sheet steel radiators
- Toilet bowl
- Sinks
- Urinals

# Where can they be found?

 Project website:  
<https://nweurope.eu/FCRBE>

 [Opalis.eu](https://opalis.eu), materials section

 [Futureuse.co.uk](https://futureuse.co.uk) (soon)



The screenshot shows the OPALIS website interface. At the top, there is a navigation bar with the OPALIS logo on the left and links for 'Dealers', 'Materials', 'Examples', and 'More information' on the right. Below the navigation bar, the 'Common products' section is displayed. It features three rows of product information, each consisting of a photograph, a title, a descriptive paragraph, and a yellow button for downloading a material sheet PDF.

**Common products**

**Natural slate**

Slate is a metamorphic rock that has been used for centuries as a roofing and wall covering due to the fact that it splits easily into thin layers. This product is mainly found in regions with a tradition of quarrying and production such as the UK and certain areas of France and Belgium. More recently imported slates from Spain, Asia and South America are also starting to appear on the reclamation market.

**Clay wall copings**

Ceramic wall copings are, in fact, just ceramic roof tiles with a different shape and are equally available on the reclamation market. The information from the material sheet about ceramic roof tiles generally also applies to this product.

**Clay roof tiles**

Clay roof tiles, produced in Europe since the 19th century (also known as ceramic roof tiles), have a long lifespan. They are therefore widely available on the reclamation market in all their variations: from the older, traditional models to the more recently machine-produced types. Especially in the Netherlands, the market is particularly well developed.

Download document

Material sheet: Natural slate

Download document

Material sheet: Clay roof tiles