

# WORLD MATERIALS FORUM

Laurent MUSY





# TILES AND BRICKS: WHAT IS MORE DURABLE THAN CLAY (TERRACOTTA)?

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... **DURABILITY** AS KEY ELEMENT OF SUSTAINABILITY (LIFE CYCLE ANALYSIS)



# CLAY PRODUCTS HAVE AN AFTER-LIFE

Final destinations of end-of-life clay products (example of France)

Material recovery		Storage installations	Other (on-site use etc.)
Recycling (closed or open-loop) and reuse	Quarry backfilling		
39%		5%	2%
Roof tiles:  50% reuse 50% recycling	Bricks:  <5% reuse		



# BUT IT IS NOT ENOUGH

## DECARBONIZATION

- Process optimization
- Waste heat reduction
- Raw materials
- Technology
- Alternative fuels
- Electrification
- Carbon Capture and Storage

## ECO-DESIGN

- Products
- Solutions
- System thinking
- Quality of building process
- Training of installers
- End-of-Life: reuse, recycling

## USAGE\*

- Use of building envelope e.g. from protective to multi-purpose roof
- Production of energy
- Optimization of surfaces and volumes
- Quality of life (air quality, summer comfort, protection against extreme weather events etc.)
- Maintenance
- Working from home

## #BuildBetter

Contributing to climate-neutral buildings for a better life and a better planet

\* Buildings in EU currently account for 36% of emissions



# ECO DESIGN AS KEY LEVER ON THE PRODUCT SIDE - SOLUTIONS

## Criteria for our ECO design scoreboard

### CO2 emissions

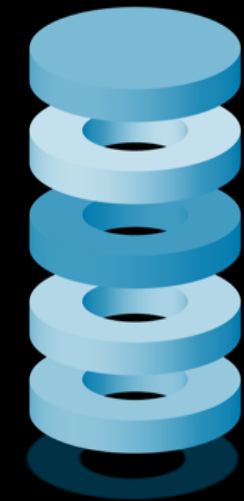
(global warming effect, energy consumption, renewable energy transportation mode)

### System performance / useful surface

Lightening, design, weight,

### Raw material virtuous

(natural resources depletion, harmful substances, geopolitical risks..)



### Benefit for Installer

Fitting comfort, implementation duration, penibility ..

### Maintenance recyclability

Packaging, demontability, reparability, potential of recyclability ..

### Short loop

(raw material, manufacturing, transport, recycling)

### Resistance to climate change & urban heat island

Hail, storm, wind, rain, warm, frost, thermal resistance, ventilation, seismic ..

ECO DESIGN Trend evaluation of products: 1<sup>st</sup> estimation, 1<sup>st</sup> trend

Issue CSR Weak to strong	Potential Evolution CSR Weak to strong	Product A	Product B	Product C	Product D	Product E
Issue CSR Weak to strong	Potential Evolution CSR Weak to strong					
CSR ⊕	CSR ⊕					
CSR ⊖	CSR ⊖					
CRITERIA						
Resistance to climate change		2	4	2	4	2
Lightening		2	2	2	5	2
Benefit for the installer		2	3	2	4	5
Building energy		1	1	2	5	2
Short loop		2	4	2	5	4
Urban heat island effect		2	2	1	2	2
Raw materials virtuous		2	2	5	5	5
Full print carbon		2	3	2	5	5
CO <sub>2</sub> emission		4	2	2	4	2
Consumption energy		2	4	2	4	2
Recyclability		2	4	2	4	4
EHS		2	5	2	4	4
Fire safety		2	1	2	2	1
Sustainability		2	1	2	3	1

Examples of products

## WE GET SUPPORTED BY EXTERNAL EXPERTS

**CSTB**  
le futur en construction

**DGNB**  
Deutsche Gesellschaft für Nachhaltiges Bauen e.V.  
German Sustainable Building Council

**ecoscale**

L'ÉVALUATION ENVIRONNEMENTALE DE LA CIRCULARITÉ DU CSTB



Certification for sustainable products and buildings in Europe

# SYSTEM THINKING - THE BUILDING AS A WHOLE

## Energy efficiency – Saving energy

- Insulation
- Summer comfort



## The smart and useful roof

- Solar Reflectance
- Energy production
- Light – expanding useful surfaces
- Water capture and reuse



# BUILD BETTER - HELPING DESIGNERS AND BUILDERS

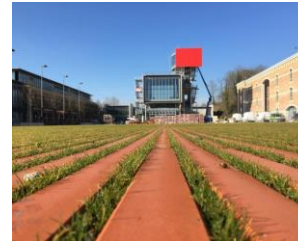
## Prefabrication

Easy to use, easy to install products



## Material mix

- The right solution at the right place



## Functional integration



## Training



... DRIVING **QUALITY AND PRODUCTIVITY**



