

Actual State of Sustainable Building Construction

This survey aims to gather information about the MATERIALS, TECHNOLOGIES and TOOLS commonly used through the building construction process in Europe in order to understand the current situation regarding sustainability.

This survey serves the research undertaken by COST Action CA16114 RESTORE (REthinking Sustainability TOwards a Regenerative Economy), financed by European Commission

* Required

1. Country of origin *

Mark only one oval.

- ☐ EASTERN EUROPE (Belarus, Bulgaria, Czech Republic, Hungary, Israel, Poland, Moldova, Romania, Russia, Slovakia, Ukraine)
- ☐ NORTHERN EUROPE (Aland Islands, Denmark, Estonia, Faroe Islands, Finland, Guernsey, Iceland, Ireland, Isle of Man, Jersey, Latvia, Lithuania, Norway, Sark, Svalbard and Jan Mayen, Sweden, United Kingdom)
- ☐ SOUTHERN EUROPE (Albania, Andorra, Bosnia and Herzegovina, Croatia, Cyprus, Gibraltar, Greece, Italy, Kosovo, FYR Macedonia, Malta, Montenegro, Portugal, San Marino, Serbia, Slovenia, Spain, Vatican City)
- ☐ WESTERN EUROPE (Austria, Belgium, France, Germany, Liechtenstein, Luxembourg, Monaco, Netherlands, Switzerland, UK)
- ☐ Other: _____

2. What type of stakeholder are you? *

Mark only one oval.

- ☐ Owner
- ☐ Investor
- ☐ Construction Company
- ☐ Architect
- ☐ Engineer
- ☐ Labour / Independent Subcontractor
- ☐ Project manager
- ☐ Site manager
- ☐ Director / Strategy
- ☐ Other: _____

3. Your professional experience? *

Mark only one oval.

- ☐ Less than 1 year
- ☐ 1-5 years
- ☐ 5-10 years
- ☐ 10-20 years
- ☐ More than 20 years

Skip to question 21

MATERIALS'
Usage
Information

This section aims to gather the information regarding the type of materials used during construction process, especially in FOUNDATIONS, BUILDING STRUCTURE, FACADE, INTERIOR WALLS and FINISHINGS. Three main identified categories of materials are explained below:

TRADITIONAL MATERIALS (Materials placed on cite, such as - Stone, Concrete, Mortars, Gypsum Plaster, Bricks, Wood, Adobe, etc.)

ADVANCED MATERIALS (Prefabricated Materials made with traditional materials such as - Plasterboards, Glass Reinforced Gypsum (GRG); Precast Concrete, Glass Fiber Reinforced Concrete (GRG), etc. and Sustainable Materials such as - Recycled Materials)

EMERGING MATERIALS (Phase-Change Materials -materials changing their properties depending on the environment- and Restorative Materials such as - Self-Healing Materials; Materials improving the indoor/outdoor air quality; etc.

4. To what extend do you use these materials during construction of buildings' FOUNDATIONS?

Mark only one oval per row.

	I don't use them at all	10%-20%	20%-50%	50%-90%	I always use these types of materials
TRADITIONAL MATERIALS (Materials placed on cite, such as - Stone, Concrete, Mortars, Gypsum Plaster, Bricks, Wood, Adobe, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ADVANCED MATERIALS (Prefabricated Materials made with traditional materials such as - Plasterboards, Glass Reinforced Gypsum (GRG); Precast Concrete, Glass Fiber Reinforced Concrete (GRG), etc. and Sustainable Materials such as - Recycled Materials)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
EMERGING MATERIALS (Phase-Change Materials -materials changing their properties depending on the environment- and Restorative Materials such as - Self-Healing Materials; Materials improving the indoor/outdoor air quality; etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. To what extend do you use these materials during construction of buildings' STRUCTURE?

Mark only one oval per row.

	I don't use them at all	10%-20%	20%-50%	50%-90%	I always use these types of materials
TRADITIONAL MATERIALS (Materials placed on cite, such as - Stone, Concrete, Mortars, Gypsum Plaster, Bricks, Wood, Adobe, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ADVANCED MATERIALS (Prefabricated Materials made with traditional materials such as - Plasterboards, Glass Reinforced Gypsum (GRG); Precast Concrete, Glass Fiber Reinforced Concrete (GRG), etc. and Sustainable Materials such as - Recycled Materials)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
EMERGING MATERIALS (Phase-Change Materials -materials changing their properties depending on the environment- and Restorative Materials such as - Self-Healing Materials; Materials improving the indoor/outdoor air quality; etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. To what extend do you use these materials during construction of buildings' FAÇADE?

Mark only one oval per row.

	I don't use them at all	10%-20%	20%-50%	50%-90%	I always use these types of materials
TRADITIONAL MATERIALS (Materials placed on cite, such as - Stone, Concrete, Mortars, Gypsum Plaster, Bricks, Wood, Adobe, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ADVANCED MATERIALS (Prefabricated Materials made with traditional materials such as - Plasterboards, Glass Reinforced Gypsum (GRG); Precast Concrete, Glass Fiber Reinforced Concrete (GRG), etc. and Sustainable Materials such as - Recycled Materials)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
EMERGING MATERIALS (Phase-Change Materials -materials changing their properties depending on the environment- and Restorative Materials such as - Self-Healing Materials; Materials improving the indoor/outdoor air quality; etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. To what extend do you use these materials during construction of buildings' INTERIOR WALLS?

Mark only one oval per row.

	I don't use them at all	10%-20%	20%-50%	50%-90%	I always use these types of materials
TRADITIONAL MATERIALS (Materials placed on cite, such as - Stone, Concrete, Mortars, Gypsum Plaster, Bricks, Wood, Adobe, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ADVANCED MATERIALS (Prefabricated Materials made with traditional materials such as - Plasterboards, Glass Reinforced Gypsum (GRG); Precast Concrete, Glass Fiber Reinforced Concrete (GRG), etc. and Sustainable Materials such as - Recycled Materials)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
EMERGING MATERIALS (Phase-Change Materials -materials changing their properties depending on the environment- and Restorative Materials such as - Self-Healing Materials; Materials improving the indoor/outdoor air quality; etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. To what extend do you use these materials during construction of buildings' FINISHINGS?

Mark only one oval per row.

	I don't use them at all	10%-20%	20%-50%	50%-90%	I always use these types of materials
TRADITIONAL MATERIALS (Materials placed on cite, such as - Stone, Concrete, Mortars, Gypsum Plaster, Bricks, Wood, Adobe, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ADVANCED MATERIALS (Prefabricated Materials made with traditional materials such as - Plasterboards, Glass Reinforced Gypsum (GRG); Precast Concrete, Glass Fiber Reinforced Concrete (GRG), etc. and Sustainable Materials such as - Recycled Materials)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
EMERGING MATERIALS (Phase-Change Materials -materials changing their properties depending on the environment- and Restorative Materials such as - Self-Healing Materials; Materials improving the indoor/outdoor air quality; etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. In which of the five stages do you think it is easier to apply Emerging/Innovative MATERIALS?

Check all that apply.

- ☐ Soil improvement
- ☐ Building Foundation
- ☐ Building Structure
- ☐ Building Facade
- ☐ Building Interior Walls
- ☐ Building Finishings

Other: ☐ _____

10. If you have used Emerging/Innovative MATERIALS in any stage of new building construction or building renovation, please specify the type of building/s

Check all that apply.

	Residential Building	Comercial Building	Industrial Building	Iconic/Singular Building
New Building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Renovation of Existing Building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. Which are the main barriers for implementing Emerging/Innovative MATERIALS during new buildings' construction or renovation of existing ones?

Check all that apply.

- ☐ Lack of knowledge of the existing ones/Lack of necessary information
- ☐ Lack of training among construction stakeholders
- ☐ Lack of standards and legislation
- ☐ Higher cost
- ☐ Difficult to find them within the country or neighbor countries
- ☐ Difficult to implement

Other: ☐ _____

Technologies'
Usage
Information

This section aims to gather the information regarding the types of TECHNOLOGIES used during construction process, especially during SOIL IMPROVEMENTS, FOUNDATIONS, BUILDING STRUCTURE, FACADE, INTERIOR WALLS and FINISHINGS. Three main identified categories of technologies are explained below:

TRADITIONAL TECHNOLOGY (Concrete mixers, Excavators, Tower cranes, Hand tools, etc.)

ADVANCED TECHNOLOGY (Computer-Aided Design (CAD) and Building Information Modeling (BIM), Computer Numerical Control (CNC) Machines, Robots, etc.)

EMERGING TECHNOLOGY (Internet of Things (IoT), Augmented Reality, Drones, 3D concrete printing, etc.)

12. To what extend do you use these types of TECHNOLOGIES during SOIL IMPROVEMENT?

Mark only one oval per row.

	I don't use them at all	10%-20%	20%-50%	50%-90%	I always use these types of technologies
TRADITIONAL TECHNOLOGY (Concrete mixers, Excavators, Tower cranes, Hand tools, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ADVANCED TECHNOLOGY (Computer-Aided Design (CAD) and Building Information Modeling (BIM), Computer Numerical Control (CNC) Machines, Robots, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
EMERGING TECHNOLOGY (Internet of Things (IoT), Augmented Reality, Drones, 3D concrete printing, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. To what extend do you use these types of TECHNOLOGIES during the construction of buildings' FOUNDATIONS?

Mark only one oval per row.

	I don't use them at all	10%-20%	20%-50%	50%-90%	I always use these types of technologies
TRADITIONAL TECHNOLOGY (Concrete mixers, Excavators, Tower cranes, Hand tools, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ADVANCED TECHNOLOGY (Computer-Aided Design (CAD) and Building Information Modeling (BIM), Computer Numerical Control (CNC) Machines, Robots, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
EMERGING TECHNOLOGY (Internet of Things (IoT), Augmented Reality, Drones, 3D concrete printing, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. To what extend do you use these types of TECHNOLOGIES during the construction of buildings' STRUCTURE?

Mark only one oval per row.

	I don't use them at all	10%-20%	20%-50%	50%-90%	I always use these types of technologies
TRADITIONAL TECHNOLOGY (Concrete mixers, Excavators, Tower cranes, Hand tools, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ADVANCED TECHNOLOGY (Computer-Aided Design (CAD) and Building Information Modeling (BIM), Computer Numerical Control (CNC) Machines, Robots, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
EMERGING TECHNOLOGY (Internet of Things (IoT), Augmented Reality, Drones, 3D concrete printing, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. To what extend do you use these types of TECHNOLOGIES during the construction of buildings' FACADE?

Mark only one oval per row.

	I don't use them at all	10%-20%	20%-50%	50%-90%	I always use these types of technologies
TRADITIONAL TECHNOLOGY (Concrete mixers, Excavators, Tower cranes, Hand tools, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ADVANCED TECHNOLOGY (Computer-Aided Design (CAD) and Building Information Modeling (BIM), Computer Numerical Control (CNC) Machines, Robots, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
EMERGING TECHNOLOGY (Internet of Things (IoT), Augmented Reality, Drones, 3D concrete printing, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. To what extend do you use these types of TECHNOLOGIES during the construction of buildings' INTERIOR WALLS?

Mark only one oval per row.

	I don't use them at all	10%-20%	20%-50%	50%-90%	I always use these types of technologies
TRADITIONAL TECHNOLOGY (Concrete mixers, Excavators, Tower cranes, Hand tools, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ADVANCED TECHNOLOGY (Computer-Aided Design (CAD) and Building Information Modeling (BIM), Computer Numerical Control (CNC) Machines, Robots, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
EMERGING TECHNOLOGY (Internet of Things (IoT), Augmented Reality, Drones, 3D concrete printing, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17. To what extend do you use these types of TECHNOLOGIES during the construction of buildings' FINISHINGS?

Mark only one oval per row.

	I don't use them at all	10%-20%	20%-50%	50%-90%	I always use these types of technologies
TRADITIONAL TECHNOLOGY (Concrete mixers, Excavators, Tower cranes, Hand tools, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ADVANCED TECHNOLOGY (Computer-Aided Design (CAD) and Building Information Modeling (BIM), Computer Numerical Control (CNC) Machines, Robots, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
EMERGING TECHNOLOGY (Internet of Things (IoT), Augmented Reality, Drones, 3D concrete printing, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. In which of the six stages do you think it is easier to apply Emerging/Innovative TECHNOLOGIES?

Check all that apply.

- ☐ Soil improvement
- ☐ Building Foundation
- ☐ Building Structure
- ☐ Building Facade
- ☐ Building Interior Walls
- ☐ Building Finishings

Other: ☐ _____

19. If you have used Emerging/Innovative TECHNOLOGIES in any stage of new building construction or building renovation, please specify the type of building/s

Check all that apply.

	Residential Building	Comercial Building	Industrial Building	Iconic/Singular Building Project
New Building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Renovation of an Existing Building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. Which are the main barriers for implementing Emerging/Innovative TECHNOLOGIES during new buildings' construction or renovation of existing ones?

Check all that apply.

- ☐ Lack of knowledge of the existing ones/Lack of necessary information
- ☐ Lack of training among construction stakeholders
- ☐ Lack of standards and legislation
- ☐ Higher cost
- ☐ Difficult to find them within the country or neighbor countries
- ☐ Difficult to implement

Other: ☐ _____

Skip to question 21

Tools utilization
Information

This section aims to gather the information regarding the Construction Standards and Certification Systems used during construction process, in different countries in Europe.

The Construction Standards considered for this survey are: ISO, Eurocodes, DIN, BSI, etc.
The Certification Systems considered for this survey are: LEED, BREEAM, DGNB, etc.

21. What type of Construction Standards do you COMMONLY USE during construction of RESIDENTIAL BUILDINGS?

Check all that apply.

- ☐ ISO
- ☐ Eurocodes
- ☐ DIN
- ☐ BSI
- ☐ None (use of local standard's packages, not required by law, not necessary, or any other reason...)

Other: ☐ _____

22. What type of Construction Standards do you COMMONLY USE during construction of COMMERCIAL BUILDINGS?

Check all that apply.

- ☐ ISO
- ☐ Eurocodes
- ☐ DIN
- ☐ BSI
- ☐ None (use of local standard's packages, not required by law, not necessary, or any other reason...)

Other: ☐ _____

23. What type of Construction Standards do you COMMONLY USE during construction of INDUSTRIAL BUILDINGS?

Check all that apply.

- ☐ ISO
- ☐ Eurocodes
- ☐ DIN
- ☐ BSI
- ☐ None (use of local standard's packages, not required by law, not necessary, or any other reason...)

Other: ☐ _____

24. What type of Construction Standards do you COMMONLY USE during construction of ICONIC/SINGULAR?

Check all that apply.

- ☐ ISO
- ☐ Eurocodes
- ☐ DIN
- ☐ BSI
- ☐ None (use of local standard's packages, not required by law, not necessary, or any other reason...)

Other: ☐ _____

25. If you don't use any official standard's package during buildings construction in your country, please explain the reason

26. What type of Certification System do you COMMONLY USE during construction of RESIDENTIAL BUILDINGS?

Check all that apply.

- ☐ LEED
- ☐ BREEAM
- ☐ DGNB
- ☐ None (use of local certification system, not required by law, not necessary, or any other reason...)
- Other: ☐ _____

27. What type of Certification System do you COMMONLY USE during construction of COMMERCIAL BUILDINGS?

Check all that apply.

- ☐ LEED
- ☐ BREEAM
- ☐ DGNB
- ☐ None (use of local certification system, not required by law, not necessary, or any other reason...)
- Other: ☐ _____

28. What type of Certification System do you COMMONLY USE during construction of INDUSTRIAL BUILDINGS?

Check all that apply.

- ☐ LEED
- ☐ BREEAM
- ☐ DGNB
- ☐ None (use of local certification system, not required by law, not necessary, or any other reason...)
- Other: ☐ _____

29. What type of Certification System do you COMMONLY USE during construction of ICONIC/SINGULAR BUILDINGS?

Check all that apply.

- ☐ LEED
- ☐ BREEAM
- ☐ DGNB
- ☐ None (use of local certification system, not required by law, not necessary, or any other reason...)
- Other: ☐ _____

30. If you don't use any Certification System for constructed buildings in your country, please explain the reason

General
Information

This section aims to gather the general information regarding the Sustainable Building Construction and overall participant understandings and experiences

31. Would you please explain in simple words what does Sustainable Construction means to you *

32. Please use this section to give examples or additional information from your experience with Sustainable Construction *

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