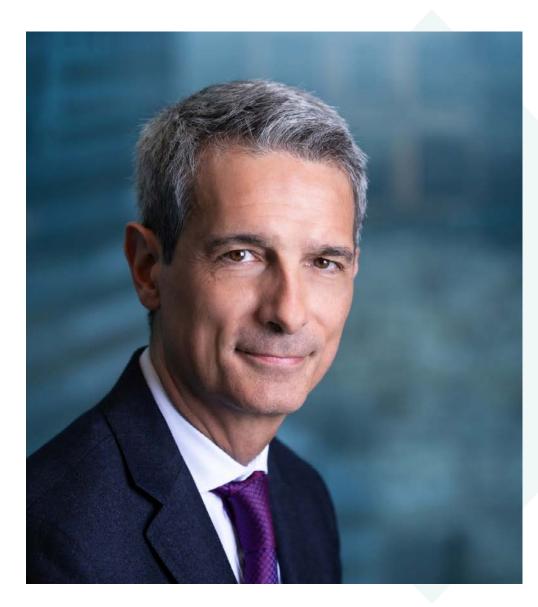
The Sustainale Construction
Observatory

BY SAINT-GOBAIN

Sustainable Construction Barometer

2024 - 2nd edition

Forew Ord



Benoit Bazin
Chief Executive Officer
of Saint-Gobain

"Against a backdrop of increasing urbanization, climate change is one of the major challenges of our century. The construction sector must be equal to its task."

The last decade has been the warmest ever recorded. Greenhouse gas emissions, global temperature rise, increasingly vulnerable ecosystems and populations... the list goes on. According to the 6th IPCC report, published in March 2023, the effects of climate change will intensify with global warming, with some becoming irreversible for centuries if not millennia.

Against a backdrop of increasing urbanization, climate change is one of the major challenges of our century. By 2030, there will be 2.5 billion more people on Earth, and by 2035, for the first time in history, Africa's urban population is expected to outnumber its rural population.

In this rapidly changing world committed to drastically reducing its carbon emissions, the construction sector must be equal to its task: to maintain our planet's balance and the wellbeing of its inhabitants. That is why Saint-Gobain makes this ambition part of its purpose: *Making the world a better home*.

We are well aware that maintaining this balance will require a profound change in the construction and building sectors. This conviction is what powers the one-of-a-kind Sustainable Construction Observatory, which we launched in April 2023. This Observatory's objective is to mobilize and unite figures from a still-fragmented worldwide market, in order to accelerate the sharing of best practice on a worldwide scale. An essential component of this Observatory is the Sustainable Construction Barometer, now in its second edition. Initially conducted in 10 countries, this international survey now covers 22, to allow us to understand local issues pertaining to sustainable construction in finer detail. The Barometer enables us to take the pulse of this crucial topical issue, to measure perceptions and progress, and identify action areas in which to focus our collective efforts. It is also, and above all, a decision-making tool for all stakeholders. It falls to us as stakeholders in the sector to make the switch from reflection to tangible action, in order to build a sustainable future for the generations to come.

The Sustainable Construction Observatory

BY SAINT-GOBAIN

With its commitment to achieving net zero carbon emissions by 2050, the Saint-Gobain Group is asserting its ambition to be the worldwide leader in light and sustainable construction. Saint-Gobain is determined to play a key role in this transition and become a flagship company that is both pioneer and facilitator, to bring all stakeholders on board.

In the face of increasingly intensive planet-wide challenges, the construction sector simply must shift rapidly and comprehensively toward sustainable construction. The aim of this mobilization must be to drastically and permanently reduce construction-related greenhouse gas emissions, to preserve non-renewable natural resources, to reduce energy consumption, and to provide decent, comfortable housing for all.



The Observatory takes
the pulse of sustainable
construction in the world:
perceptions, barriers and
progress levers, anticipated
solutions, the most active
stakeholders, and so on.
It allows us to measure
progress and identify action
areas in which to focus our
collective efforts.

The Sustainable Construction
Observatory sets up a
worldwide Barometer each
year and shares it with
stakeholders and the general
public.



The Observatory compiles knowledge, testimonials, and analyses relating to the challenges and solutions of sustainable construction: it is intended to be a tool for teaching and raising awareness, and an aid to decision-making for all the stakeholders concerned.

The Sustainable Construction
Observatory has launched
a digital magazine –
Constructing a Sustainable
Future, to shed light on
sustainable construction
and its impact on the climate
and society, and to discover
innovative solutions and
inspiring projects.



UNITE

The Observatory
brings together key figures
from a still-fragmented
worldwide market. Uniting
construction professionals,
institutions, and citizens,
it promotes the sharing of
ideas and best practice,
and helps to create and roll
out solutions.

The Sustainable
Construction Observatory
organizes regular
international meetings,
the - "Sustainable
Construction Talks" - at
major multilateral events.



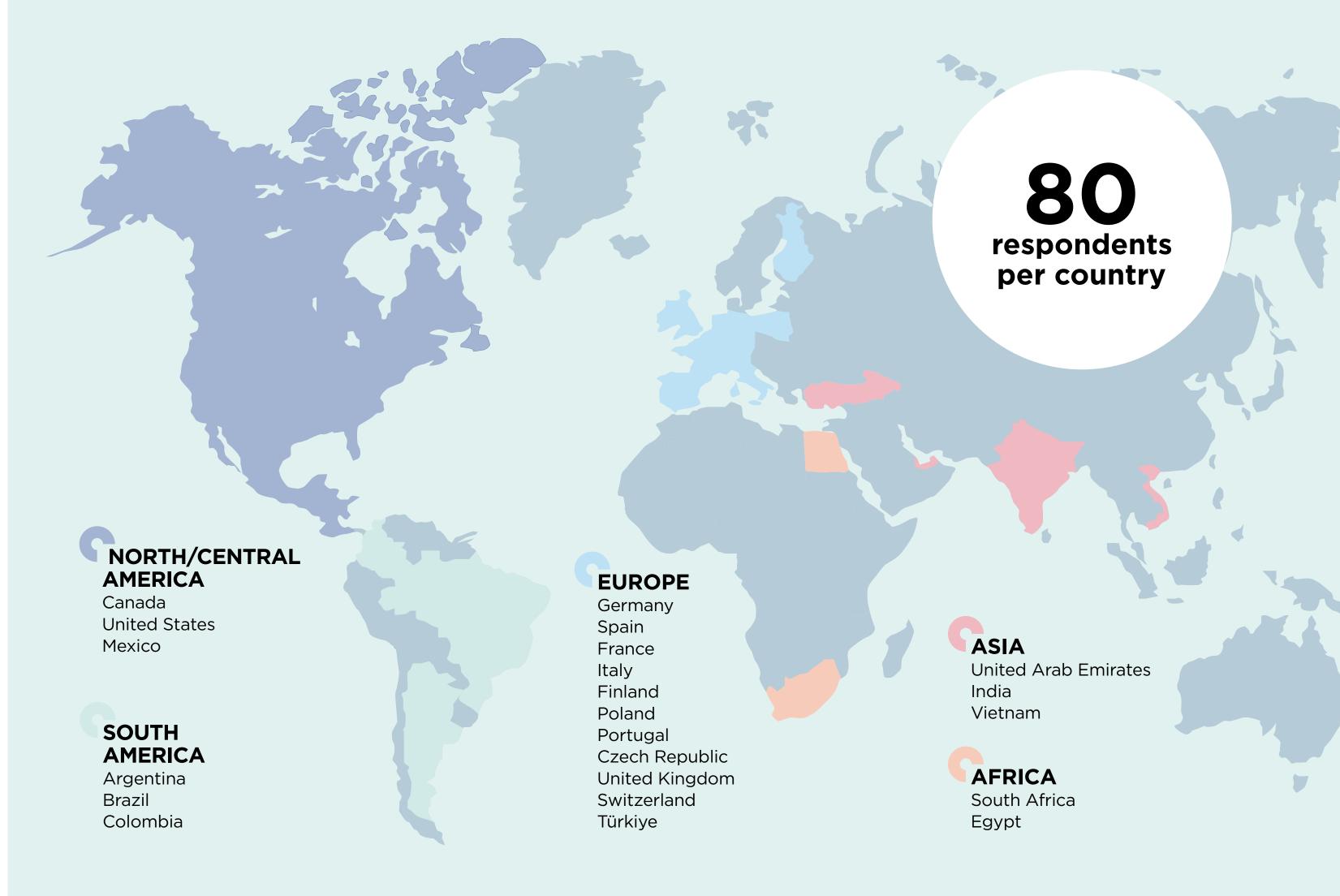
METHODOLOGY

This survey was carried out by the CSA Research (Consumer Science and Analytics) study institute, experts in data intelligence since 1983. The survey took place between December 11, 2023 and January 31, 2024, with a sample of 1,760 respondents aged 18 and over, from 22 countries and composed as follows:

- 440 professionals from sectors that included construction, contracting, architecture, environment, ecological transition, and housing, among others...
- 440 students of construction, civil engineering, architecture, and spatial design...
- 440 members of associations dedicated to ecological transition, housing, construction, energy, etc.
- 440 local elected officials (except in UAE, where, in the absence of local elected officials, we surveyed the equivalent government representatives).

All the analyses presented here have been validated by CSA.

As this is a barometric survey, the results of this edition are compared with those from the previous wave (2023 barometer), but on a constant perimeter, i.e. on the basis of the nine countries common to both editions of the survey: United States, India, Brazil, Spain, France, United Kingdom, Germany, South Africa, and Italy.



Survey Method:



Questionnaire conducted by telephone with professionals, associations, and elected officials.

Self-administered online questionnaire via social networks for the students.

4

KEY LEARNINGS

SUSTAINABLE CONSTRUCTION: STABLE PERCEPTIONS, WITH AN UNCHANGED ENVIRONMENTAL VIEWPOINT

87% of people surveyed say they are familiar with the concept of sustainable construction, a high result consistent with the previous wave⁽¹⁾.

Despite this high familiarity with the concept, it seems that comprehension remains largely "monolithic", mainly associating it with green construction: 42% of people surveyed say sustainable construction is construction that is efficient in terms of energy, 33% say construction that targets carbon neutrality, and 32% say "that uses ecological materials". Only 14% of people surveyed associate sustainable construction with buildings that promote their inhabitants' health and wellbeing, and 13% with resilient construction capable of withstanding extreme weather events.

A SHARED SENSE OF THE URGENT NEED FOR ACTION, BUT WITH A NEED FOR GREATER AWARENESS AND COOPERATION

Though the value has fallen (by four points⁽¹⁾), the vast majority of respondents still want to do more in sustainable construction: 87% of people questioned shared this view, and this is consistent across all zones.

Three levers for accelerating sustainable construction are evident from the responses: raising the general public's awareness; reducing the perceived cost of sustainable materials, products, and solutions; and cooperation from all stakeholders.

The role of public initiatives (standards, public aid, and regulation), though fundamental, remains underestimated by those operating in the field.

(1) At constant scope (see p. 5).

BETTER INFORMED, BETTER TRAINED, AND MORE COMMITTED STAKEHOLDERS

68% of people questioned feel they are sufficiently well informed about sustainable construction, a clear five-point increase on the 2023 Barometer⁽¹⁾.

85% of professionals surveyed say some or all of their activity is in sustainable construction, and 92% expect this to be the case within the next five years. Also, an increasing number (62%, up 3 points⁽¹⁾) consider suppliers' commitment to sustainable construction a factor in their selection.

Similarly, the proportion of elected officials who have excluded, or will exclude, projects with no regard for sustainable construction from public procurement also rises two points⁽¹⁾ to 60%.

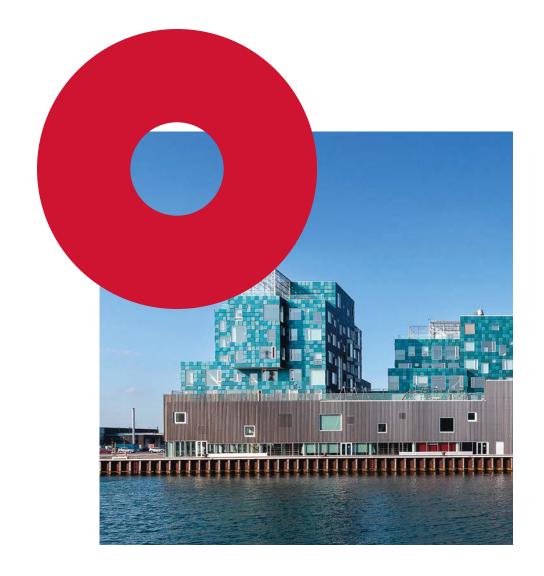
And associations are also shifting: 52% have called, or would call, for a boycott of companies that make too little effort in sustainable construction, a clear five-point increase⁽¹⁾ on the 2023 Barometer: "name and shame" is gaining ground, especially in Europe (up 12 points⁽¹⁾).

ANY IMPLEMENTATION OF SUSTAINABLE CONSTRUCTION WILL ONLY BE EFFECTIVE IF IT MATCHES LOCAL REALITIES

For every item studied, the results reveal geographical particularities. This multi-speed reality due to the specific economic and cultural contexts in each region means that ultra-localized understanding is needed to ensure genuinely appropriate and sustainable construction.

It should be noted that this study highlights the structured part of the market, but not informal settlement or self-build, which are widespread in some southern countries and more difficult for professionals and elected officials alike to understand.

6



Sustainable construction: high visibility, but objectives always differing from one region to another

page 8



Clearly identified levers for going further

page 15



Confidence in construction professionals and public authorities to accelerate transition

page 20



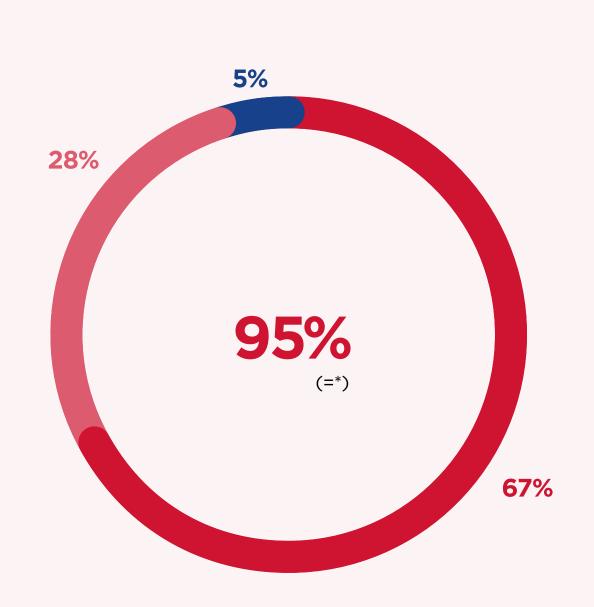
A lack of commitment to sustainable construction seen as a barrier to selection

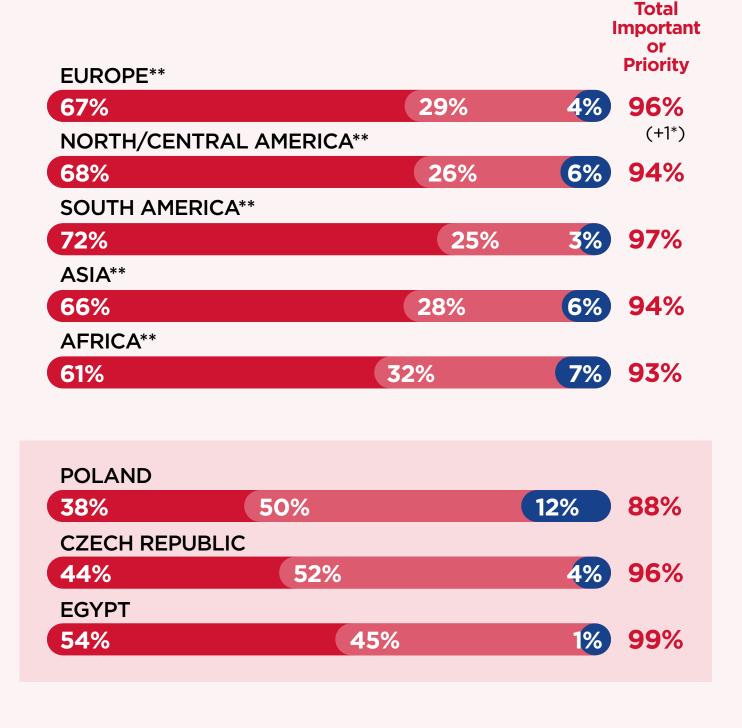
page 25



THE URGENT NEED TO ACT IS A SHARED CONVICTION

In your opinion, would you say implementing more sustainable construction is...?







For 95% of those surveyed, sustainable construction is "important" (28%) or "a priority" (67%). Only 5% of respondents consider the issue "secondary".

As a whole, the stakeholders questioned clearly share a certain sense of urgency, regardless of geographical zone.

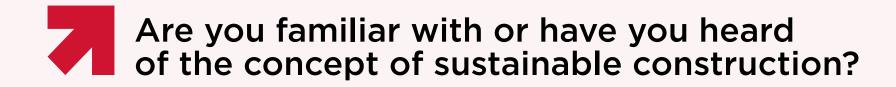
Some exceptions should be noted, however: 61%, 56%, and 46% in Poland, the Czech Republic, and Egypt respectively consider this issue "important but not a priority" or indeed "secondary".

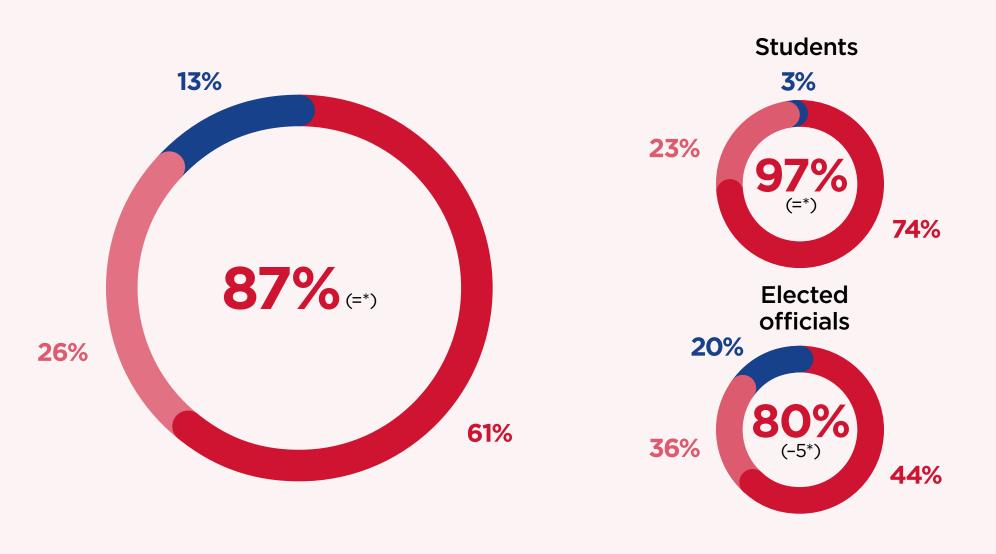
Particular effort should therefore be devoted to informing and raising awareness in these geographical zones.

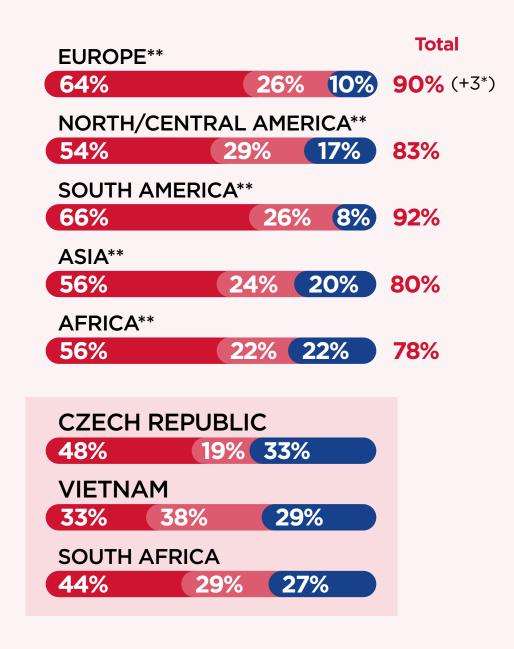
A priority
Important but not a priority

Of secondary importance

THE CONCEPT IS WELL ESTABLISHED ACROSS THE ENTIRE VALUE CHAIN, DESPITE SOME DISPARITIES









87% of respondents say they are familiar with sustainable construction as a concept. Of these, more than half (61%) consider themselves aware. This trend remains high and consistent with the 2023 Barometer.

The feeling that they are familiar with the concept is stronger among students (74% say they understand well what it is) and European audiences (64%), especially in Switzerland, France, Germany, and Spain, and in South America (66%). This is 10 points higher than in North and Central America (54%).

However, the proportion of respondents who admit to "not really knowing anything about it" or who "never heard of it" remains high (39%).

Efforts to educate on sustainable construction should therefore be maintained and strengthened, especially for:

- Elected officials: 20% say they have never heard of it.
- Some countries in eastern Europe, Asia, and Africa, where, for example, this figure stands at 33% in the Czech Republic, 29% in Vietnam, and 27% in South Africa.

Yes, and I know exactly what it is about
Yes, but I don't really know anything about it

it

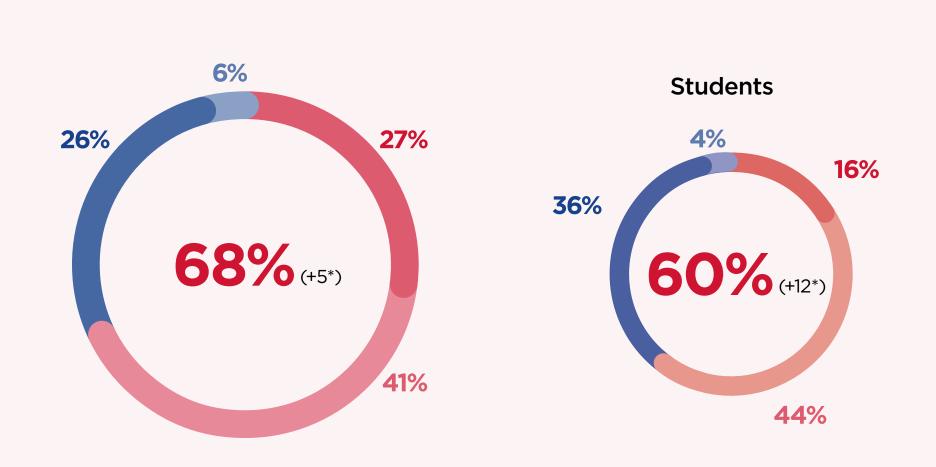
No, I've never heard of it

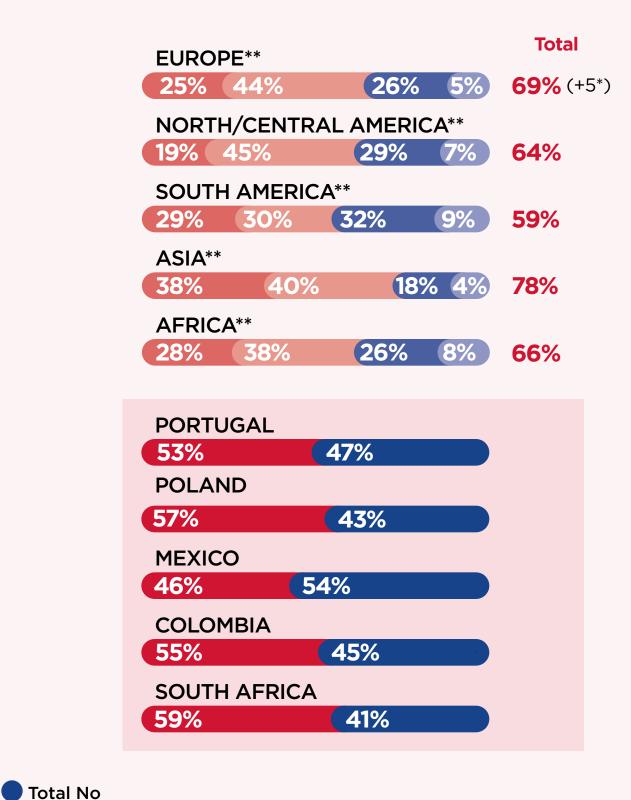
STAKEHOLDERS ARE BETTER INFORMED, BUT A MARKED NEED FOR INFORMATION REMAINS

No. not at all Total Yes



Do you feel sufficiently informed about the subject of sustainable construction?





Familiarity with the concept of sustainable construction is high, but a non-negligible proportion of respondents feel insufficiently informed on the subject.

The countries reporting the greatest perceived information deficit are:

- In Europe: Portugal (47%) and Poland (43%).
- In Latin America: Mexico (54%) and Colombia (45%).
- In Africa: South Africa (41%).

However, the dynamic is encouraging at a planet-wide level, with a feeling of being well informed about sustainable construction up five points on the 2023 Barometer* – an increase primarily noticeable among students (up 12 points*).

* At constant scope (see p. 5).

Yes, definitely

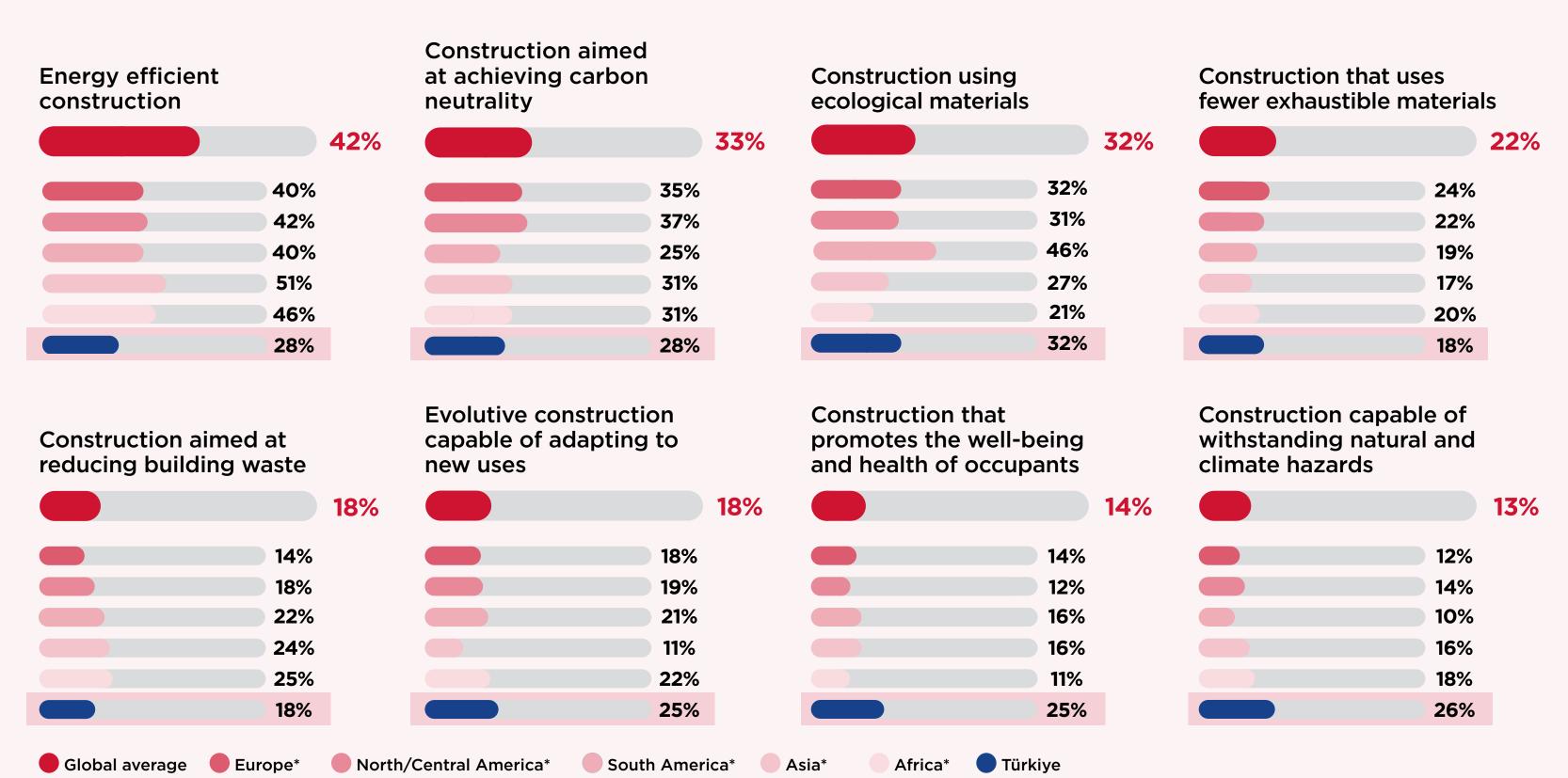
Yes, somewhat No, not really

UNDERSTANDING OF THE SUSTAINABLE CONSTRUCTION CONCEPT REMAINS PARTIAL AND DOMINATED BY "GREEN ISSUES"





Which of the following definitions best fits sustainable construction?



For the majority of respondents, the definition of sustainable construction is directly linked to energy efficiency of buildings (42%) and carbon neutral construction (33%). The use of ecological materials comes third in this overall ranking (32%) – and takes first place in South America (46%). The concepts of resilience and building users' comfort are deemed secondary.

The one exception to this is Türkiye, which differs from other countries in that it defines sustainable construction more through building users' wellbeing (25% compared with the international average of 14%).

It therefore remains to promote a full and shared definition of sustainable construction.

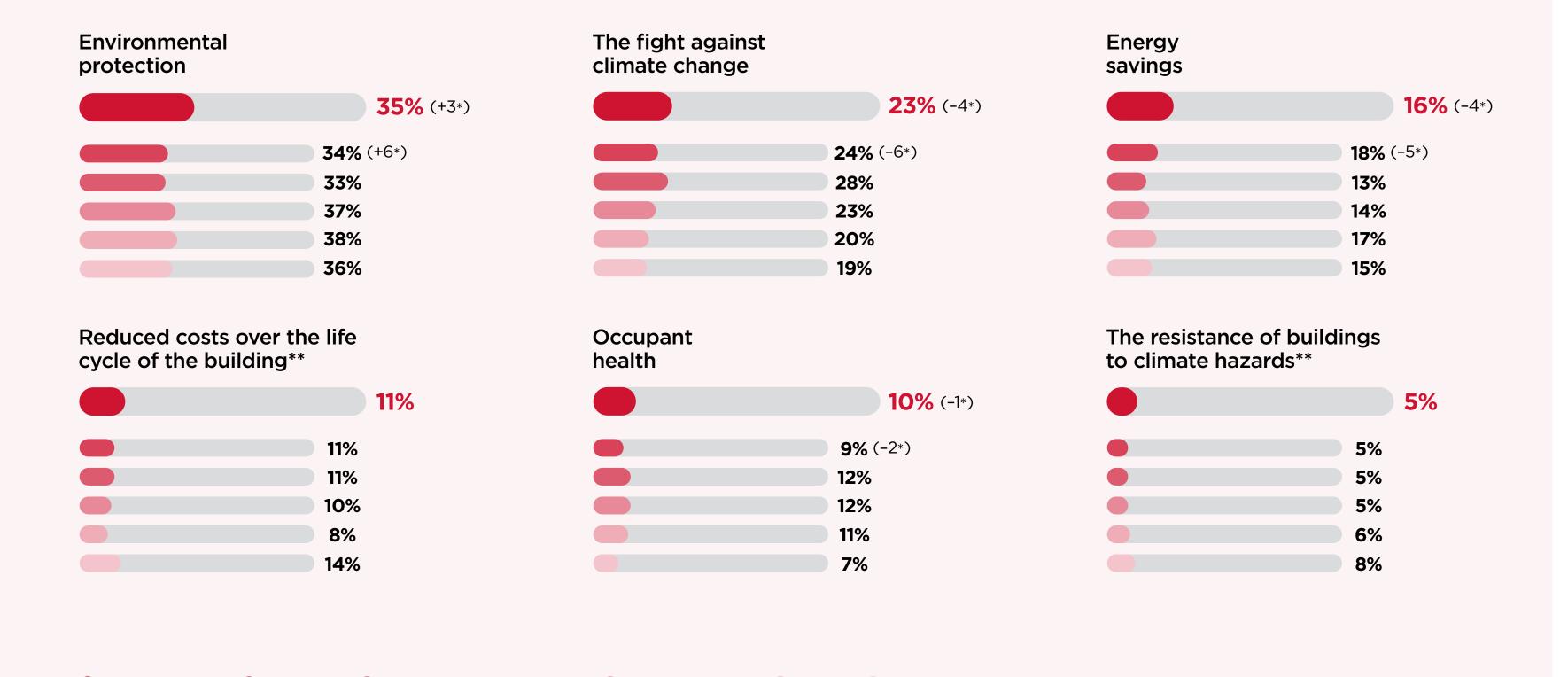
Sustainable construction combines performance and durability: throughout its life cycle, it contributes positively to the health and well-being of people, has a reduced environmental footprint and delivers superior economic value and quality.

REDUCING ENVIRONMENTAL IMPACT TOPS THE LIST OF PRIORITIES



What do you think should be the main goal of sustainable construction?

Global average Europe*** North/Central America*** South America*** Asia*** Africa***



In every geographical zone, environmental protection is perceived as by far the most important objective of sustainable construction. This is consistent with the extremely "green" definition still predominantly applied to it.

Some notable findings from this question:

- Lower energy bills are ranked third in every region. This trend has slowed slightly compared with the 2023 Barometer*.
- Only 1 in 10 respondents mention objectives linked to building users' health.

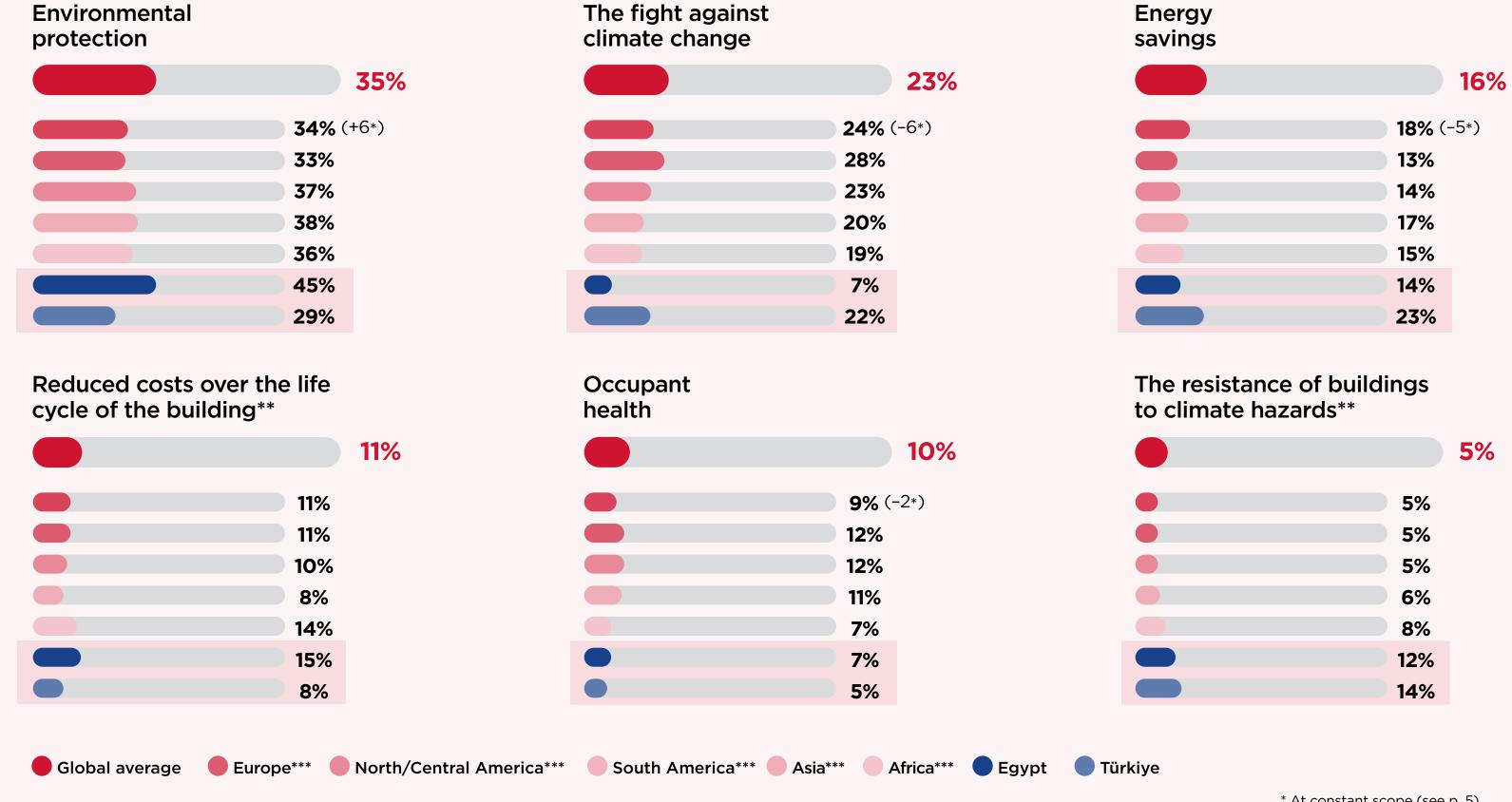
* At constant scope (see p. 5).
** New item compared to the 2023 edition.

AWARENESS OF RESILIENCE OBJECTIVES REMAINS LOW





What do you think should be the main goal of sustainable construction?



Awareness of resilience remains low overall: the resistance of buildings to climate hazards is still a marginal objective.

These figures seem to reflect uneven local realities and vulnerabilities in different countries facing the consequences of climate change. Accordingly, in Türkiye and Egypt, buildings' resistance to climate hazards is already an issue (14% and 12% respectively, compared with a global average of 5%).

* At constant scope (see p. 5).

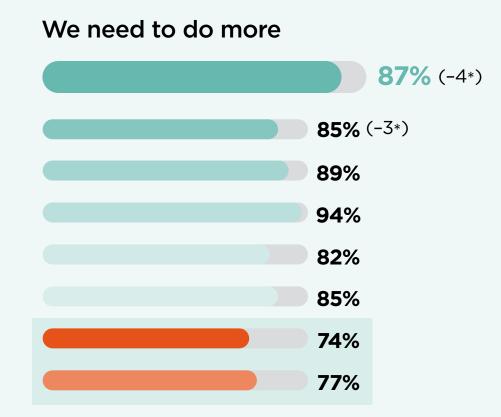


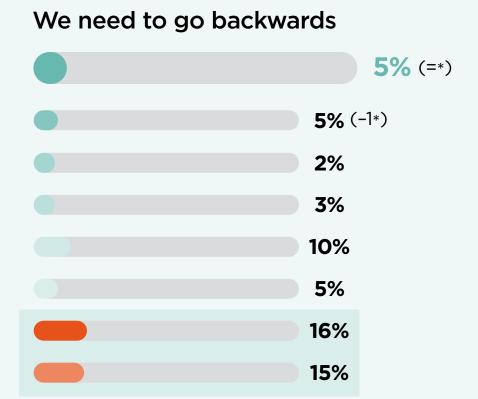
A DETERMINATION TO GO FURTHER, DESPITE A SLIGHT LOSS OF MOMENTUM

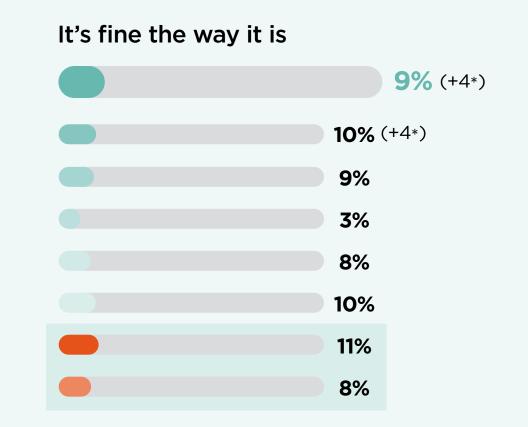




When it comes to sustainable construction, would you say...?







While a great majority of respondents (87%) indicate that more must be done in terms of sustainable construction, there is increasingly an inclination to maintain the status quo, up 4 points on the 2023 Barometer*.

It is interesting to note that people in some countries feel they have gone too far in terms of sustainable construction and want to take a step backward, as in Türkiye (16%) and India (15%), which are well above the international level of 5% on this item.

Questions could be asked about the impact of demographic factors in the responses given: in places where the most pressing problem is how to house a growing population, do considerations of durability become secondary?

Global average

Europe**

North/Central America**

South America**

Africa**

Türkiye

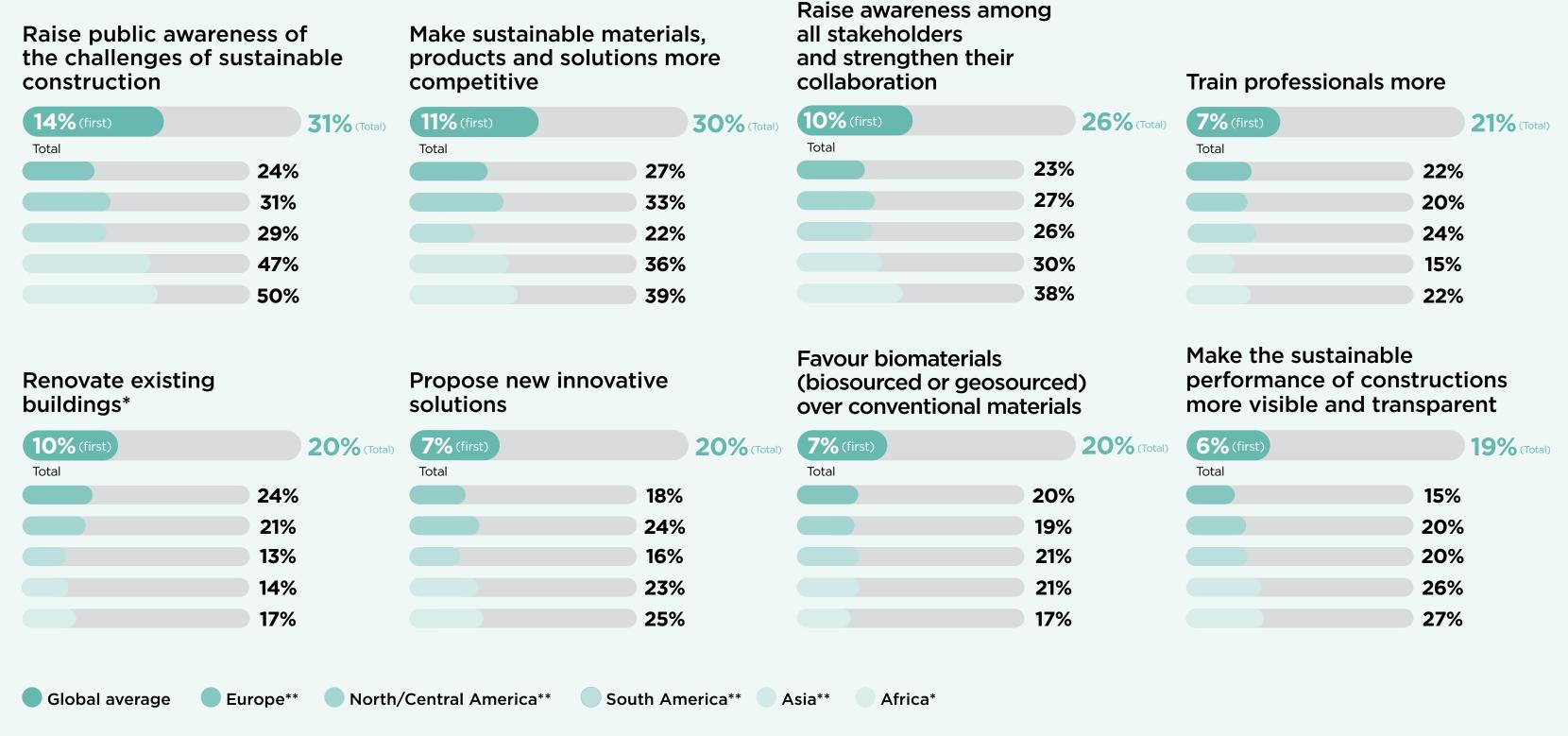
India

RAISING PUBLIC AWARENESS AND ACTING ON PERCEPTIONS OF COSTS ARE PRIORITY LEVERS...





In your opinion, which of the following actions should be put in place as a priority to accelerate the development of sustainable construction?



One in three consider raising the general public's awareness to be a priority for advancing sustainable construction, especially in Africa (50%) and Asia (47%).

The perceived value and competitiveness of construction solutions are also considered crucial in these two regions.

How can stakeholders in the value chain facilitate access to sustainable construction solutions and materials, especially in emerging countries?

See the rest of the results for this item on p. 18 and p. 19.

See previous answers to this item p. 17

Among the priority actions for accelerating sustainable construction, public initiatives appear at the bottom of the list.

But there are some interesting differences to note in various regions:

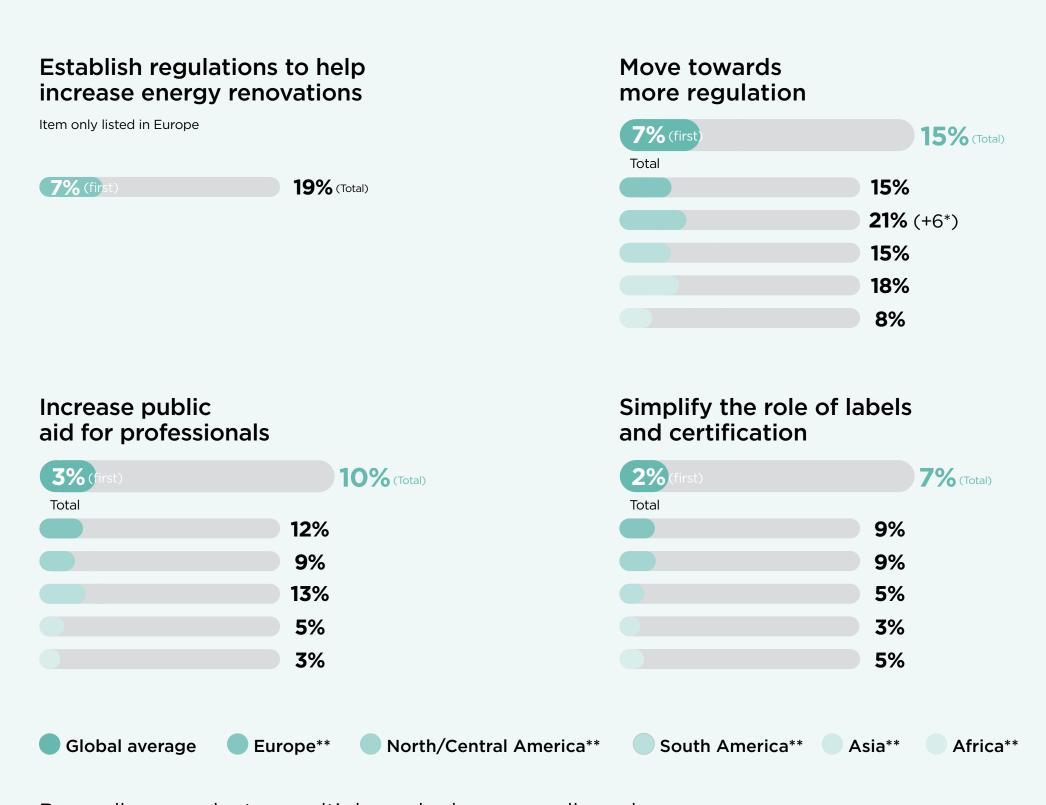
- Europeans are more in favor of public aid for individuals compared with the international average (17% vs. 13%, 4 points higher).
- In North and Central America, the people surveyed are more in favor of regulation (21% vs. 15%, 6 points higher).

The role of public initiatives (standards, public aid, and regulation), though fundamental, thus remains underestimated by those operating in the field. How can views be changed to shift from public action seen as restrictive to public action that people understand to be necessary?

... AND YET LEGISLATION AND PUBLIC AID ARE PERCEIVED AS SECONDARY LEVERS



In your opinion, which of the following actions should be put in place as a priority to accelerate the development of sustainable construction?



Increase public

4% (fi

Total

aid for individuals

13% (Total)

17% (+4*)

9%

9%

7%

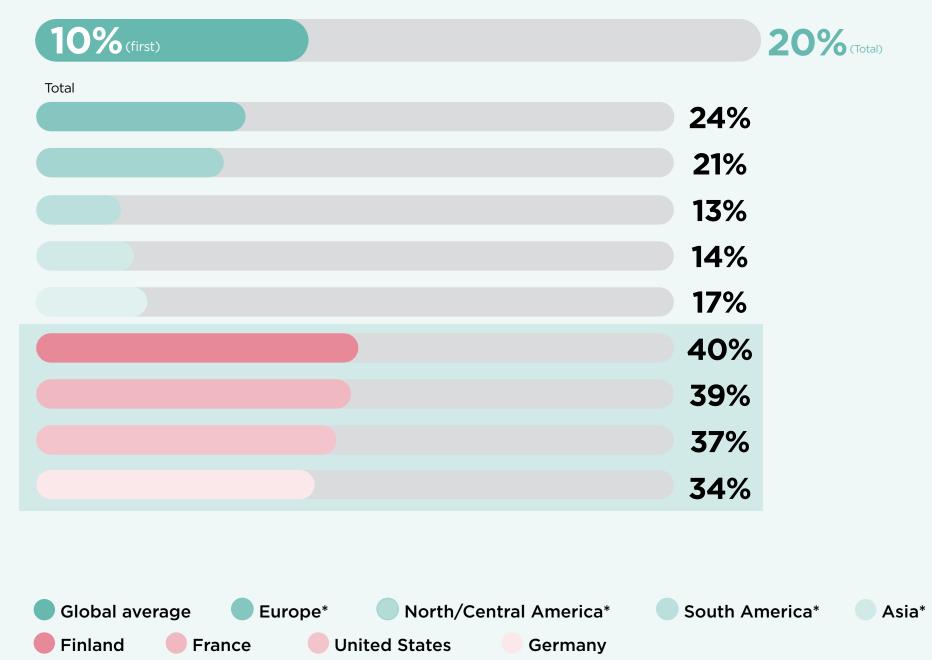
7%

MAJOR ATTENTION FOCUSED ON ENERGY RENOVATION IN EUROPE AND THE UNITED STATES



In your opinion, which of the following actions should be put in place as a priority to accelerate the development of sustainable construction?

Renovate existing buildings**





A clear trend emerges in the area of energy renovation. It is, unsurprisingly, seen as a priority action in countries with very well-established building stocks, such as in Europe – especially in Finland (40%), France (39%), and Germany (34%) – and in the United States (37%). In these regions, energy performance in existing buildings presents a real challenge compared with those countries that are prioritizing new-build programs to house an increasing population, such as Canada, and Latin American and Asian countries.

Addressing this priority in the regions concerned means restructuring the energy renovation market, encouraging professionals to develop specific skills, harmonizing standards and certifications, and calling for public policy commitments, but also raising public awareness of the methods and financial resources available to help achieve this.

Africa*



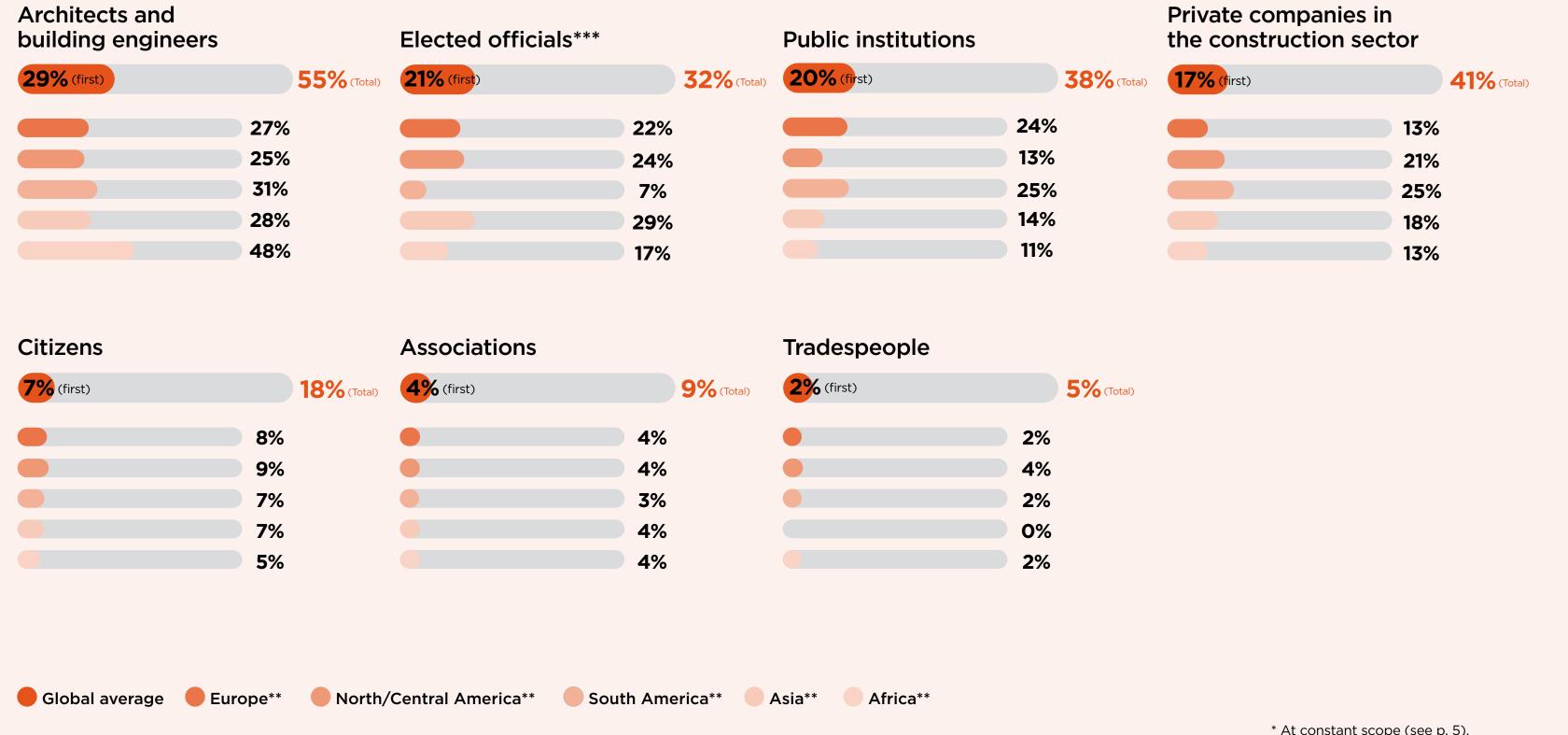


PROFESSIONALS AND PUBLIC AUTHORITIES ARE CONSIDERED KEY TO ACCELERATING SUSTAINABLE CONSTRUCTION





Which of the following do you think are the most legitimate to advance sustainable construction? (% cited first)



Overall, architects and building engineers top the list of players most often mentioned in terms of advancing sustainable construction.

Buildings design professionals represent 29% of first-choice responses, with elected officials (21%) and public institutions (20%) close behind.

How the results obtained may be affected by the way politics functions in the countries surveyed is perhaps something to consider.

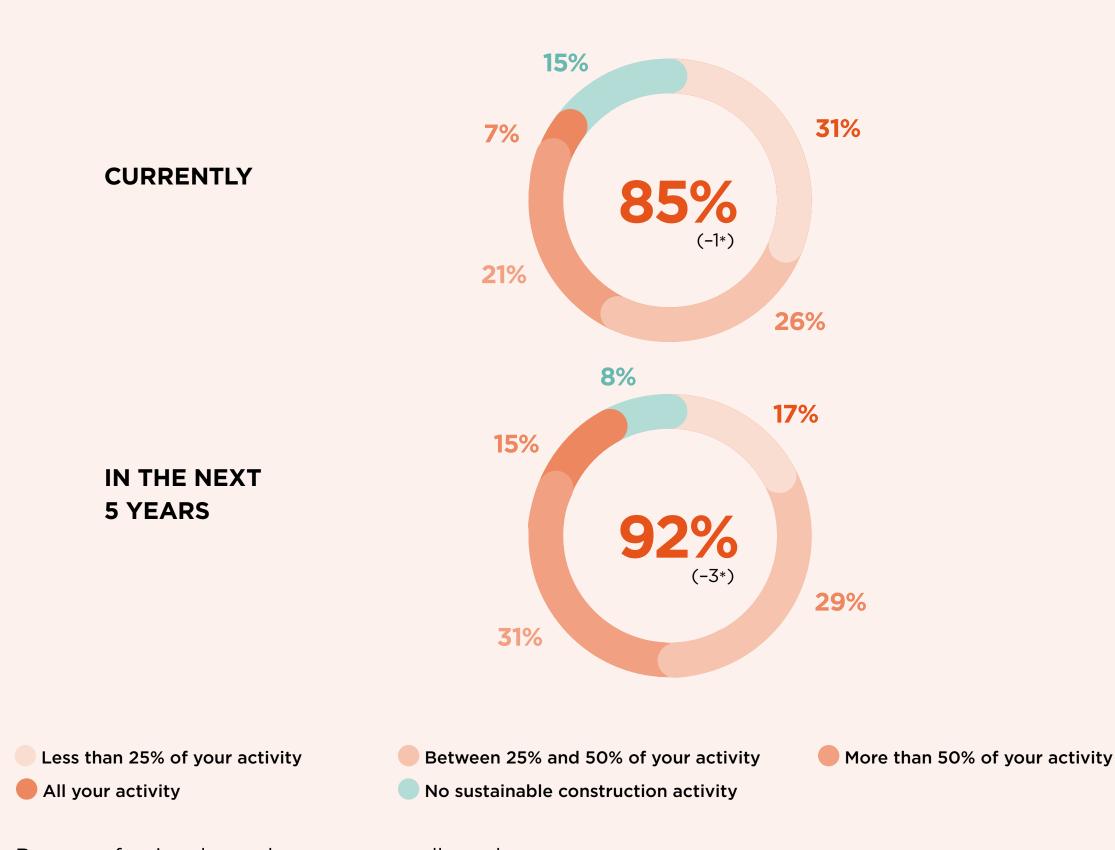
- O In Europe, for example, does the second place occupied by public institutions (with 24% of responses judging them "first") reflect the strong role that European institutions play in sustainable construction?
- O In Canada, the United Kingdom, and Vietnam, elected officials top the list by some distance (with respectively 59%, 67% and 68% of total responses), ahead even of buildings design professionals.
- O Conversely, in the United States and South America, the role played by private companies seems far more important (with respectively 47% and 56% of total responses, i.e. +6 and +15 points compared to the whole sample).

* At constant scope (see p. 5).

^{**} See details of the countries surveyed for the Barometer in each region (p. 5). *** "Government officials" listed for United Arab Emirates respondents.

PROFESSIONALS WHO STILL FEEL DEEPLY COMMITTED...







28%

46%

31%

28%

19%

34%

17%

47%

41%

36%

57%

44%

A positive sign: professionals, who are seen as spearheading transition in the sector, feel strongly committed to sustainable construction and expect to become even more committed in future.

85% of professionals surveyed say some or all of their activity is the field of in sustainable construction, and 92% expect this to be the case in the next five years. These stable results confirm the figures from the 2023 Barometer and show that the movement is irreversibly underway.

However, the degree of commitment varies from one geographical zone to another.

Professionals are most significantly committed in Europe, Asia, and North and Central America: 31%, 34% and 28% respectively say more than 50% of their activity is the field of in sustainable construction.

But the Africa zone is where the development potential is strongest. Though currently only 17% of professionals surveyed in this zone say more than 50% of their activity is in the field of sustainable construction, 44% expect this to be the case within the next five years.

* At constant scope (see p. 5).

More than 50% of

NORTH/CENTRAL AMERICA**

More than 50% of your

NORTH/CENTRAL AMERICA**

activity in the next 5 years

your activity

GLOBAL AVERAGE

SOUTH AMERICA**

GLOBAL AVERAGE

SOUTH AMERICA**

EUROPE**

ASIA**

AFRICA**

EUROPE**

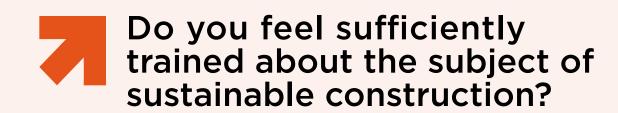
ASIA**

AFRICA**

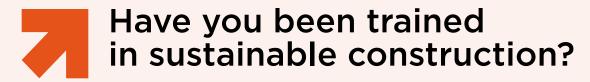
Yes, somewhat

... AND WHO ARE BECOMING BETTER TRAINED



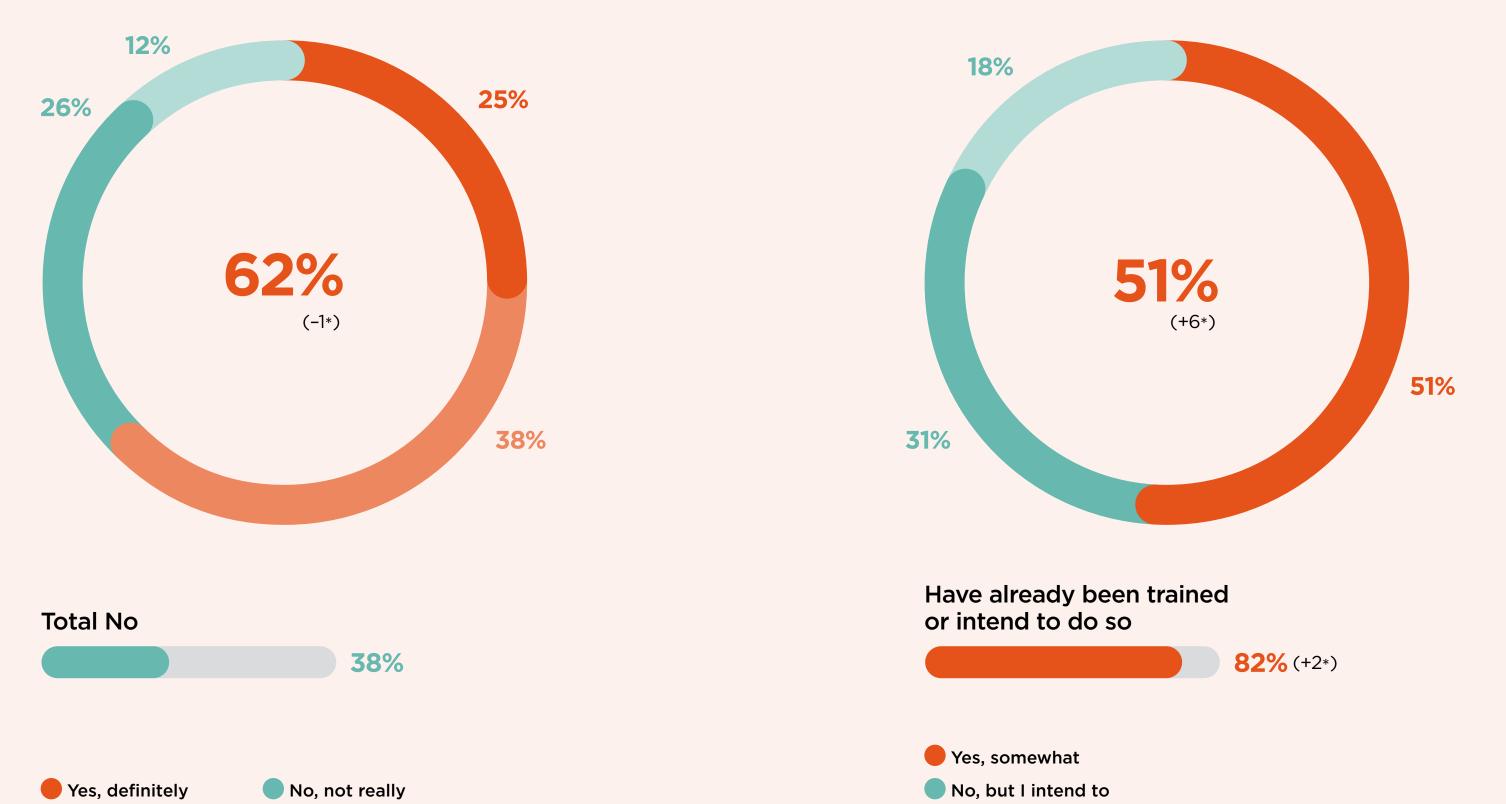


No, not at all



No, and I have no intention to do so

* At constant scope (see p. 5).



Training for professionals in the sector continues to improve. Across all zones, almost two-thirds feel adequately trained in the area of sustainable construction.

51% say they have already benefited from sustainable construction training. This is up six points compared with the 2023 Barometer.* And 31% say they intend to access training.

FUTURE PROFESSIONALS FEEL AWARE OF THE SUBJECT

Total Yes

71% (+7*)

70% (+3*)

60% (+12*)

70% (-1*)





ASSOCIATIONS

PROFESSIONALS

STUDENTS

ELECTED OFFICIALS

46%

37%

Do you feel sufficiently informed about the subject of sustainable construction?

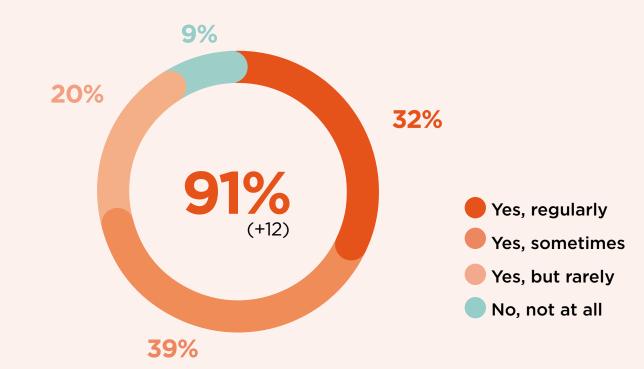
22%

22%

25%

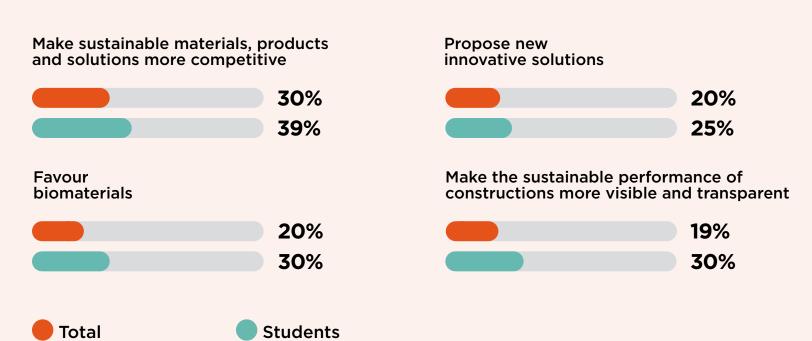


As part of your training, do you receive lessons on the subject of sustainable construction?



Base: students - only one answer allowed





Students in the sector say they are better informed and better trained now. Their feeling of being informed and having access to training shows an increase of 12 points* compared with the 2023 Barometer.

In addition to action on the perception of cost, this future generation of professionals considers that the future of sustainable construction will involve: more innovation, the use of biomaterials and more transparent communication about the sustainable performance of construction projects.

Base: all respondents - only one answer allowed

33%

40%

Base: all respondents - multiple, ranked answers allowed

<sup>Yes, definitely
Yes, somewhat
No, not really
No, not at all</sup>

^{*} At constant scope (see p. 5).

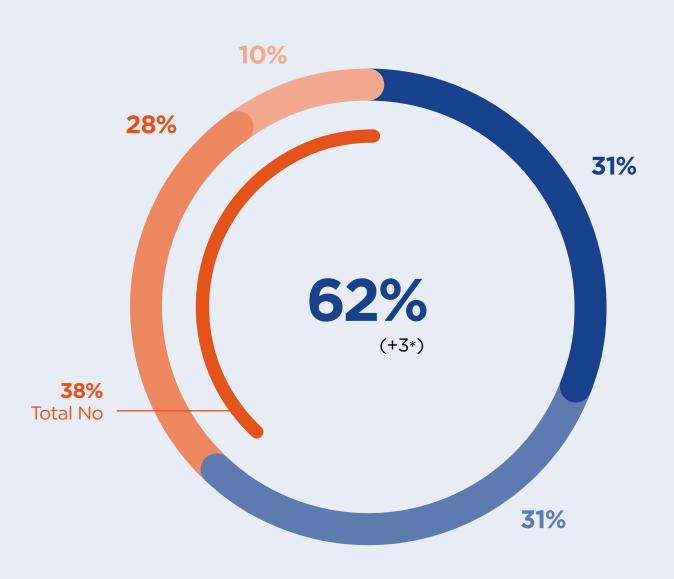
^{**} Focus on certain results, see full chart p. 17.

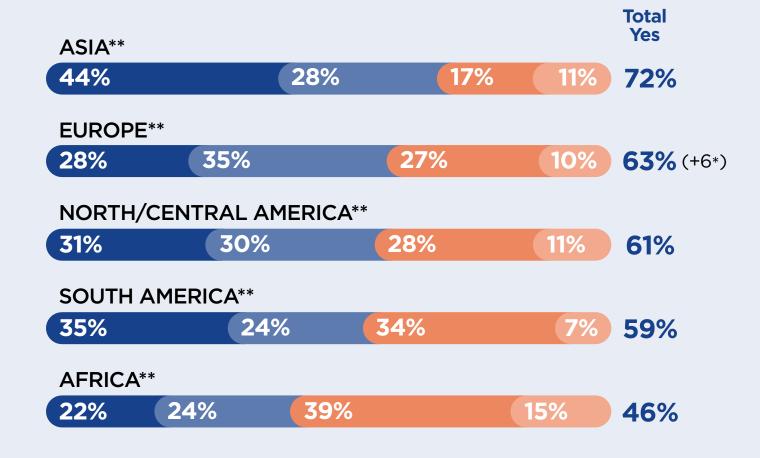


SUSTAINABLE CONSTRUCTION SEEN BY PROFESSIONALS AS AN INCREASINGLY IMPORTANT SELECTION FACTOR



Is the commitment of your suppliers and partners to sustainable construction a selection criterion for you?





An increasing number of professionals in the sector (62%, up 3 points on the 2023 Barometer*) consider suppliers' commitment to sustainable construction a factor in their selection. This strongly illustrates their desire to become more involved in projects of this type.

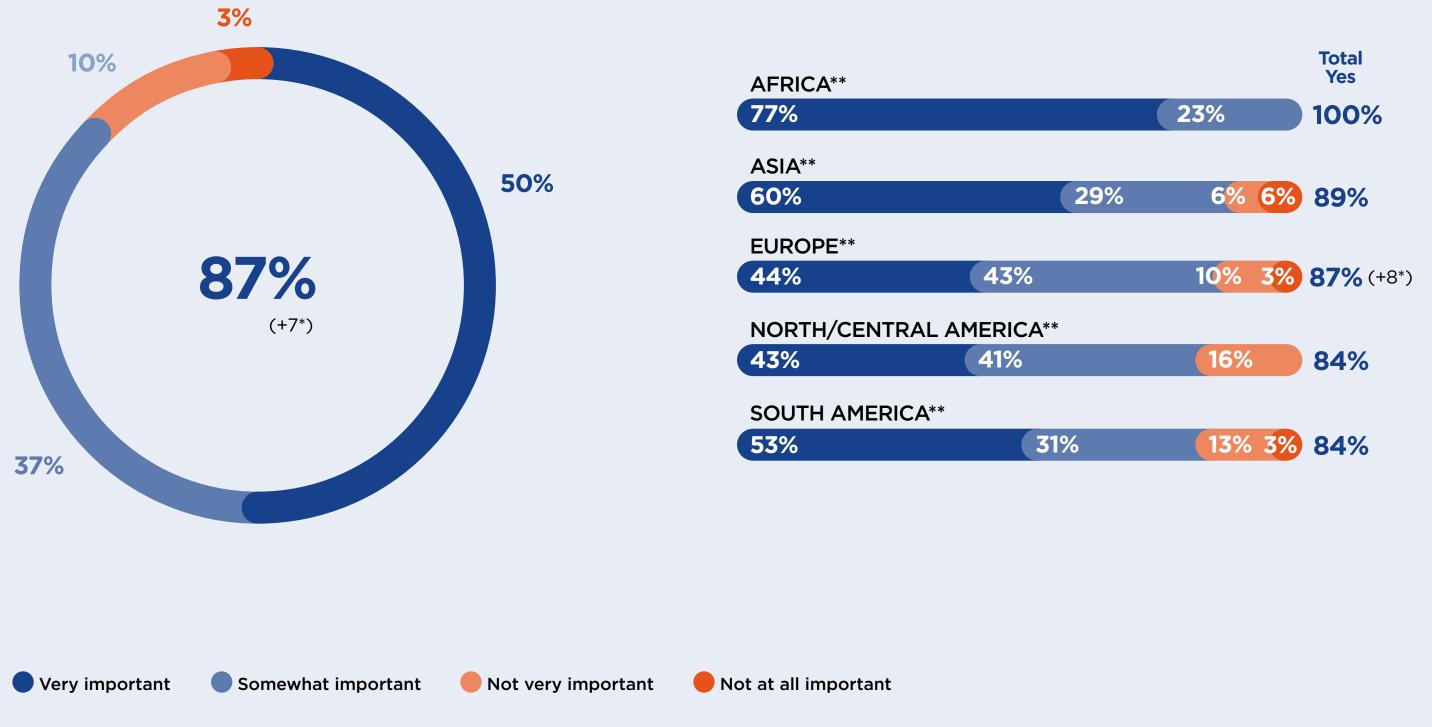
Is it notable that, for the Africa zone, this value is falling (46%, 16 points lower than for all professionals surveyed), despite their expressed intent to increase their activity in this segment (see p. 22).

Yes, definitely Yes, somewhat No, not really No, not at all

FOR ELECTED OFFICIALS, THE SUSTAINABLE DIMENSION IS A DECISIVE FACTOR IN AWARDING PUBLIC CONTRACTS



Today as an elected official, in relation to construction projects, is the sustainable dimension an important or unimportant criterion among those for awarding public contracts?



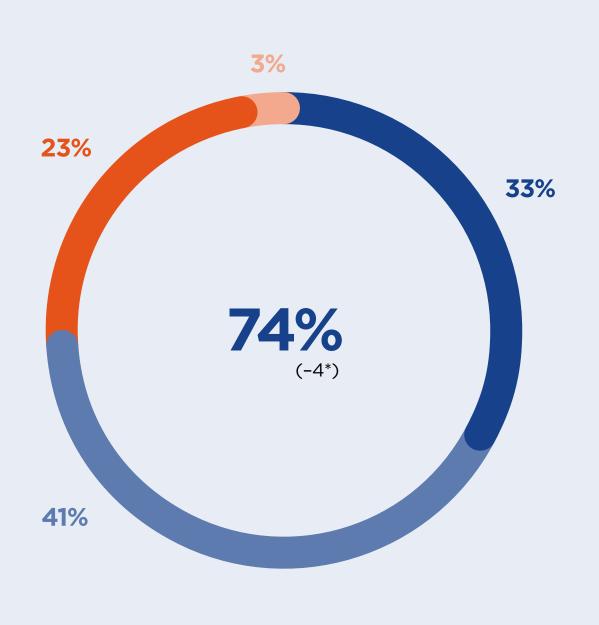
For elected officials, the sustainable dimension is a decisive factor in awarding public contracts. Almost nine in ten elected officials consider this an important factor. This is an increase of 7 points compared with the 2023 Barometer*.

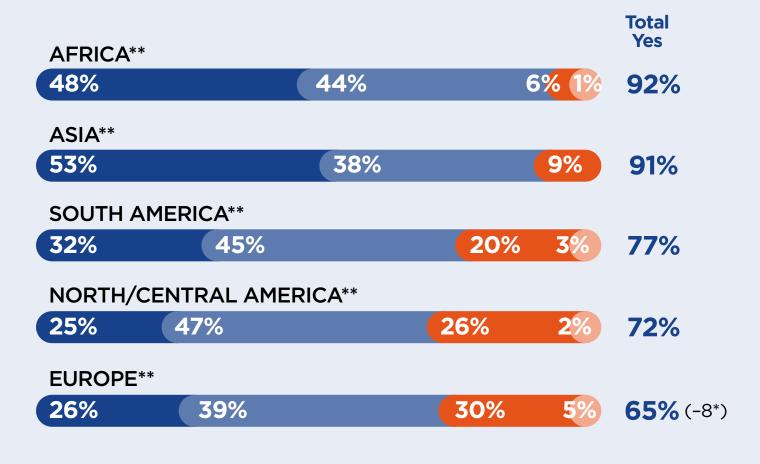
In the Africa zone, the sustainable dimension is considered crucial: 77% rate this factor "very important", many more than in Europe (44%) or the Americas (48%).

STUDENTS STILL SEE SUSTAINABLE CONSTRUCTION AS A VALUABLE ADVANTAGE IN THE LABOR MARKET



In your opinion, is your training in the field of sustainable construction a criterion that could make the difference for obtaining a job?







Despite a 4-point drop compared with the 2023 Barometer*, students still perceive training in sustainable construction as a decisive advantage in terms of standing out in the labor market.

This view is particularly pronounced in Africa and Asia (with 92% and 91% positive results respectively). It is far less so in Europe and North/Central America (with 65% and 72% positive results respectively). Reflecting varying degrees of awareness of the constraints of sustainable construction?

Base: students who receive teaching on sustainable construction - only one answer allowed

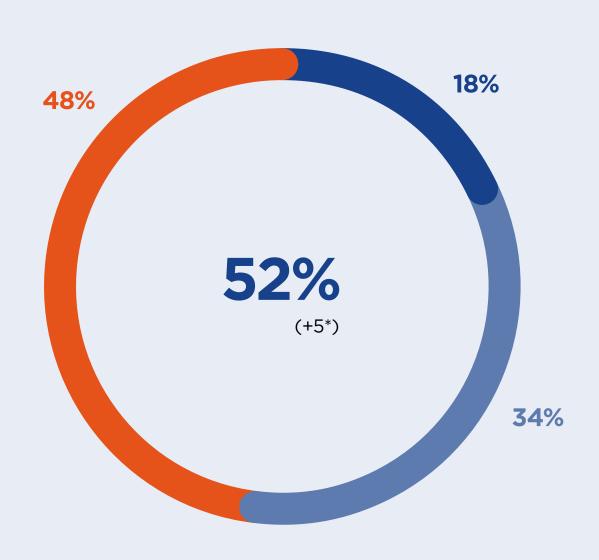
Yes, somewhat No, not really No, not at all

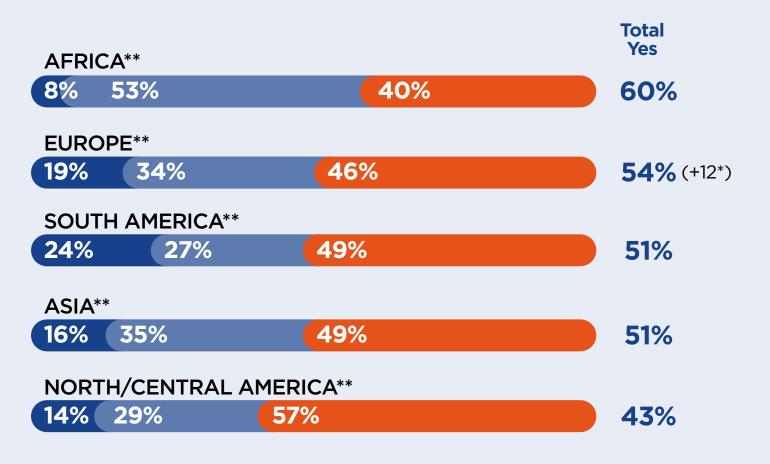
Yes, definitely

SUPPORT FOR BOYCOTTS IS GROWING AMONG ASSOCIATIONS



Are you personally prepared to boycott construction companies that are not doing enough to build more sustainably?





People representing associations increasingly see a lack of commitment to sustainable construction as a major impediment. More than one in two respondents say they are prepared to boycott construction companies that make insufficient effort to build more sustainably. The propensity to "name and shame" is clearly increasing: up 5 points compared with the 2023 Barometer.*

This increase is particularly pronounced in Europe (up 12 points compared with the 2023 Barometer*).

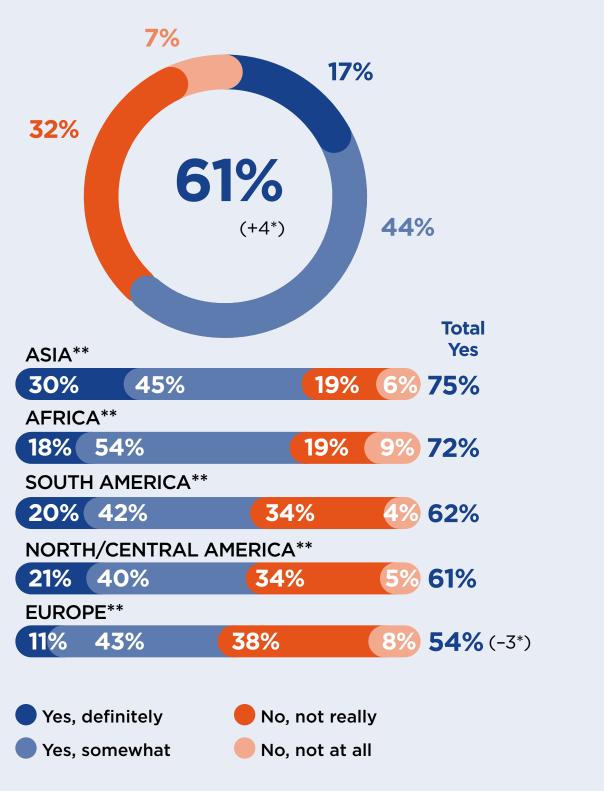
Yes, I have already done so Yes, I intend to No

THERE ARE POSITIVE DECLARATIONS OF INTENT THAT HAVE YET TO BE TRANSFORMED INTO ACTION



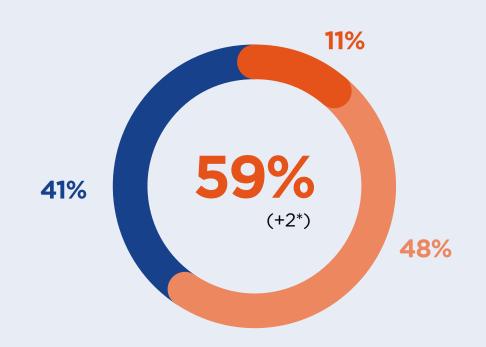


Are you personally prepared to accept a job offer at a company that is not committed to sustainable construction?



Base: students - only one answer allowed







Base: elected officials – only one answer allowed * At constant scope (see p. 5).

Students are still open to the possibility of accepting an employment offer from a company that is not invested in sustainable construction, especially in Asia.

However, of those students who see the implementation of sustainable construction projects as a priority, 45% say they would not accept a job offer from a company not invested in sustainable construction (against 39% of students as a whole).

Four in ten elected officials still do not feel ready to exclude projects with no regard for sustainable construction from public procurement.

It is interesting to note that, among elected officials who see the implementation of more sustainable construction projects as a priority, 70% (compared with 60% overall) say they are prepared to exclude projects with no regard for sustainable construction from public procurement, and 13% have already done so (compared with 11% overall).

These figures show the importance of going further and increasingly uniting all stakeholders in the sector's transition.



^{**} See details of the countries surveyed for the Barometer in each region (p. 5).

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To find out more and to read the 2024 edition of our Barometer, visit the Sustainable Construction Observatory page at:

https://www.saint-gobain.com/en/sustainable-constructionobservatory

For a more in-depth look at sustainable construction and its acceleration levers, please visit our online magazine, *Constructing a Sustainable Future:*

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