European Architectural Barometer Q4 2021

The European Green Deal

Feb - 2022

On behalf of ARCHVISION by USP Marketing Consultancy

Source report opening picture: https://eo4society.esa.int/2020/09/18/european-green-deal-call-just-launched/

About European Architectural Barometer

THE GOAL

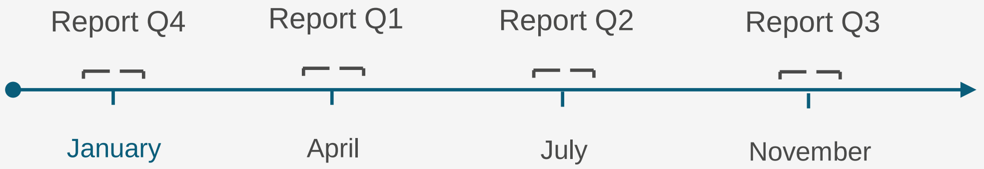
The objective of the European Architectural Barometer of Arch-Vision is to offer profound insight into the current economic situation and trends among architectural firms in the Netherlands, Germany, the UK, France, Spain, Italy, Belgium and Poland. The European Architectural Barometer provides knowledge about the future building volumes and the way in which these building volumes will be realised (trends).

THE RESEARCH TOPICS

Recurring topic: Economic developments of architectural companies in Europe (order book and turnover development)

Quarterly theme topics in 2021:
Q1: Media Orientation after COVID-19
Q2: Building Information Modeling (BIM)
Q3: Prefab
Q4: European Green Deal

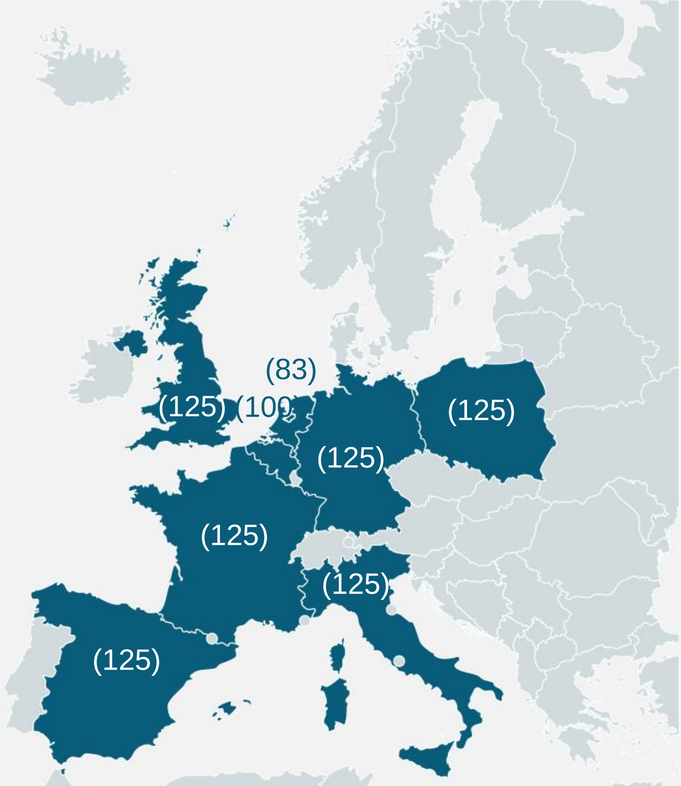
THE TIMELINE



COUNTRY SCOPE

(number of interviews conducted)

Background characteristics of the interviewed respondents can be found in [the country-specific profiling, the architect chapter, and in the appendix as a European overview.]



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Dummy data has been used on the following slides, this means no real data of this edition is shown.

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An explanation of forecasting the 2021 and 2022 building volumes in times of disruption

In times of disruption models do not always work properly. Therefore we had to make adjustments to our model to include the most reliable prediction of the building volumes for 2021 and 2022. The steps we took to optimise our model are as followed:

1. XXX
2. XXX
3. XXX
4. XXX

* In Netherlands and Italy the output of construction production has been taken into account
** The development of these companies is tracked in USPs European Contractor Monitor, USPs European Mechinical Installation Monitor and USPs European Electrical Installation Monitor

XXX

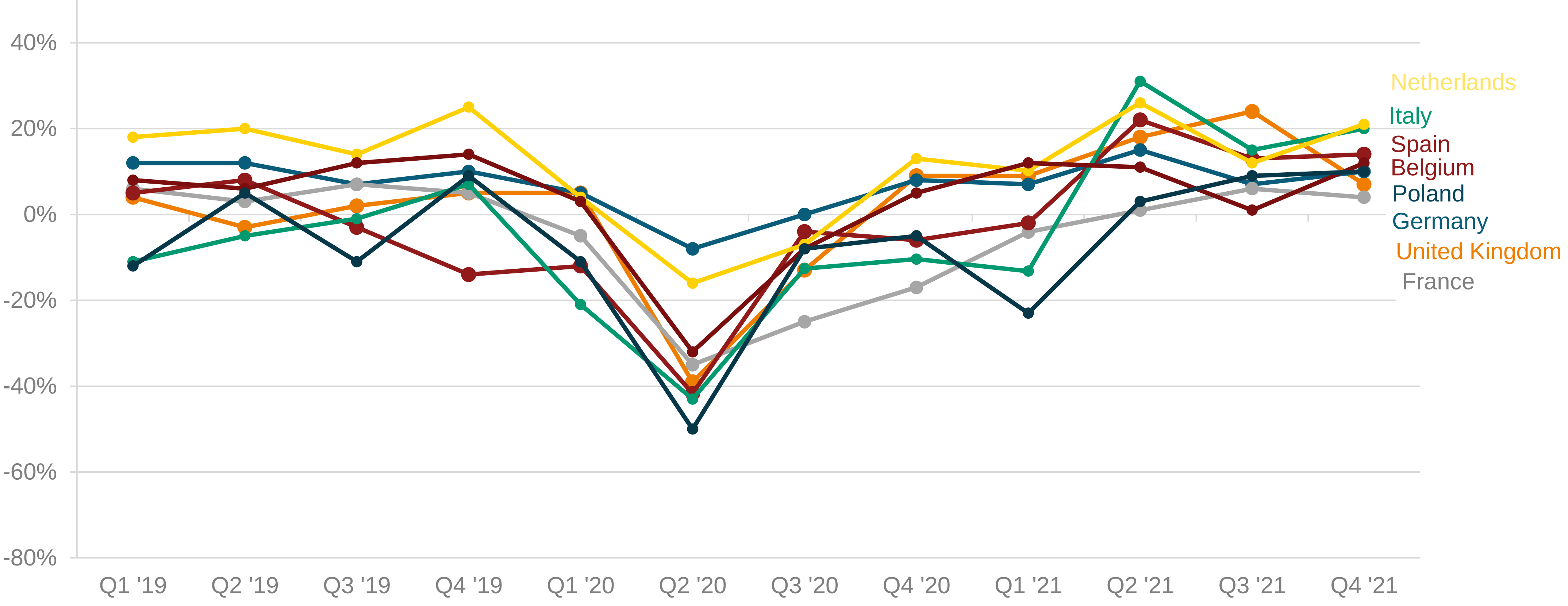
(% change year over year)	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sept-21	Oct-21	Nov-21	Dec-21
Belgium	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	
Germany	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Spain	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	
France	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Italy	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	
Netherlands	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	
Poland	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
United Kingdom	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	

(Source: Eurostat, Production in construction - monthly data, 28-01-2021)

XXX

Architects' experience regarding their turnover
(saldo of architects reporting increase minus architects reporting a decrease)

Q: How did your turnover develop in the past quarter compared to the same period one year ago?



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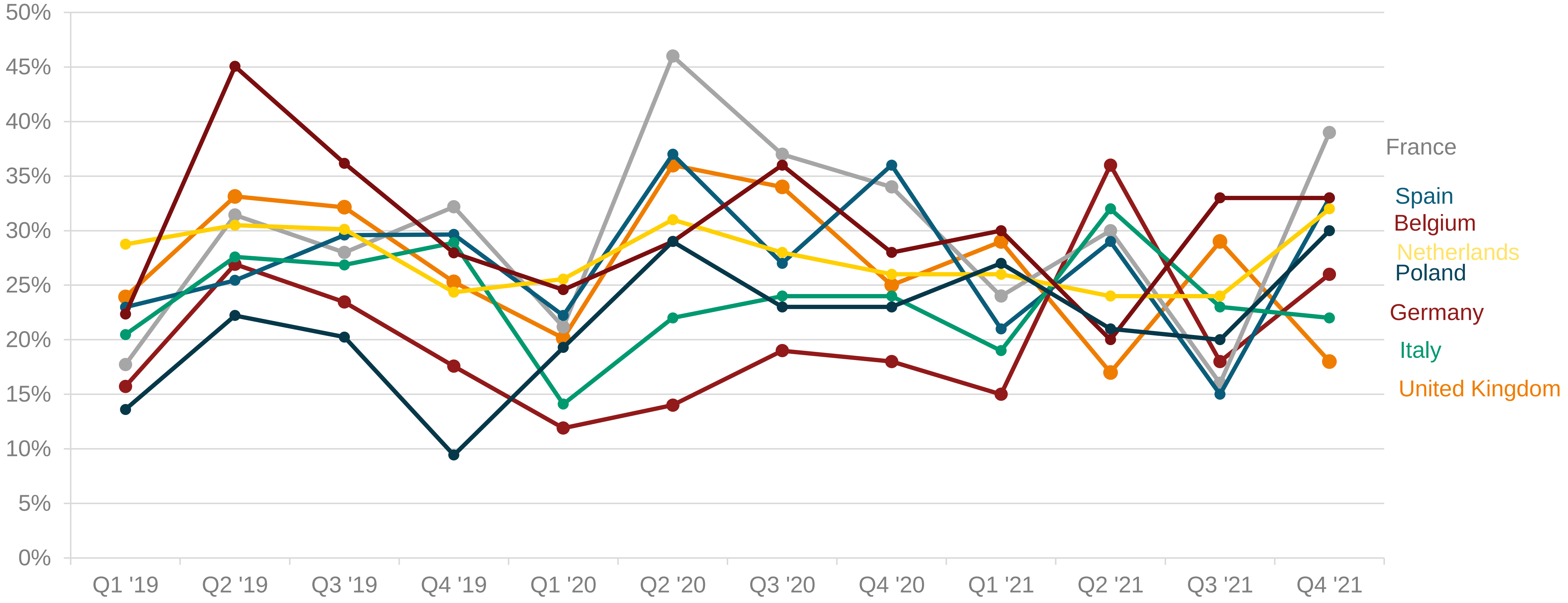
% of architects experiencing cancelled projects

Q: How many projects have been cancelled in the past quarter?



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% change year over year

Residential: *# of dwellings*	Q3-19	Q4-19	Q1-20	Q2-20	Q3-20	Q4-20	Q1-21	Q2-21	Q3-21	Q4-21
Belgium	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Germany	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Spain	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
France	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Italy	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Netherlands	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Poland	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
United Kingdom	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX

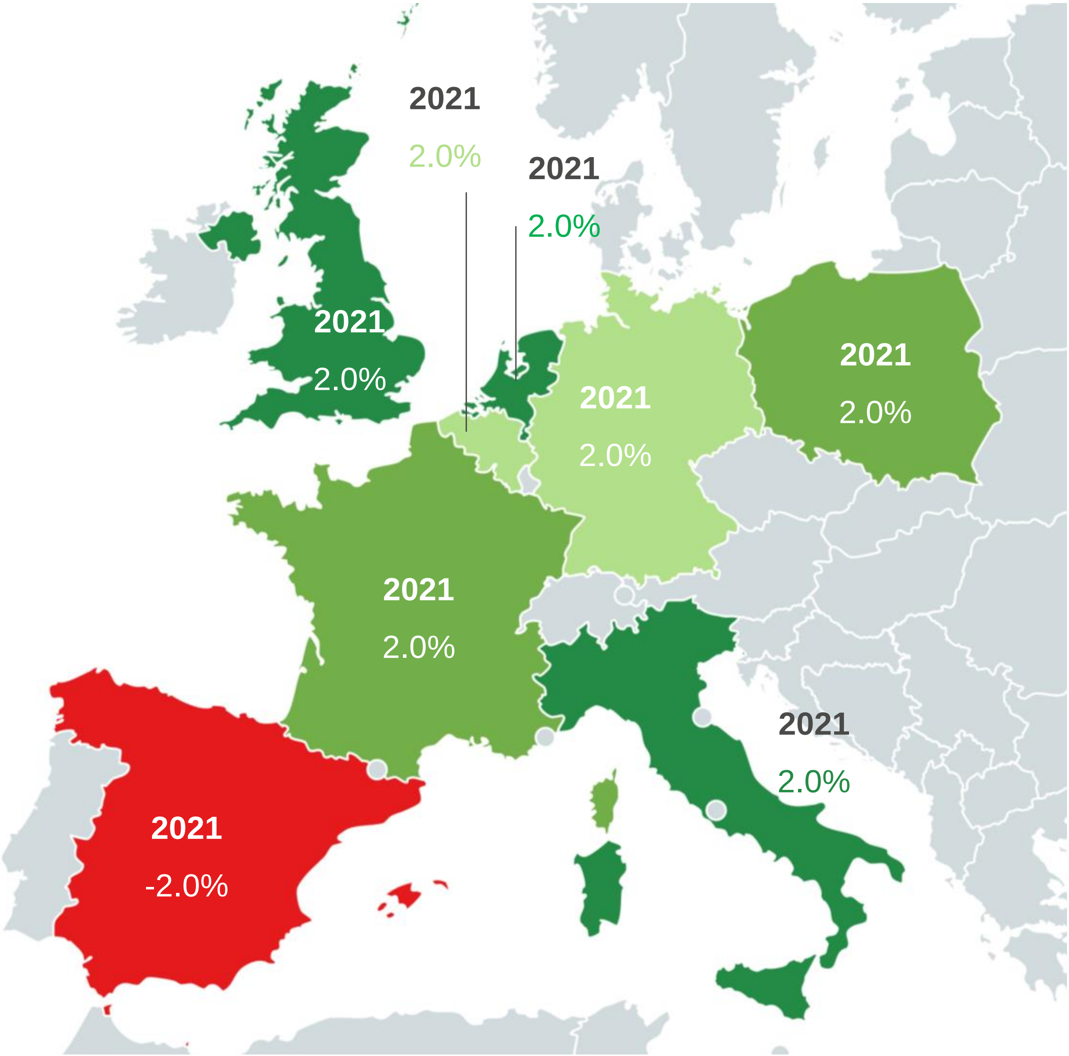
Non-residential: *m2 useful floor area*	Q3-19	Q4-19	Q1-20	Q2-20	Q3-20	Q4-20	Q1-21	Q2-21	Q3-21	Q4-21
Belgium	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Germany	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Spain	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
France	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Italy	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Netherlands	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Poland	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
United Kingdom	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX

(Source: Eurostat, Building permits - quarterly data, 28-01-2022)

Forecast 2021 European overview

Taking all the indicators into account, this leads to a positive development of the construction volumes for 2021 throughout Europe.

Spain is the exception, it seems COVID still has a strong impact on the industry here.

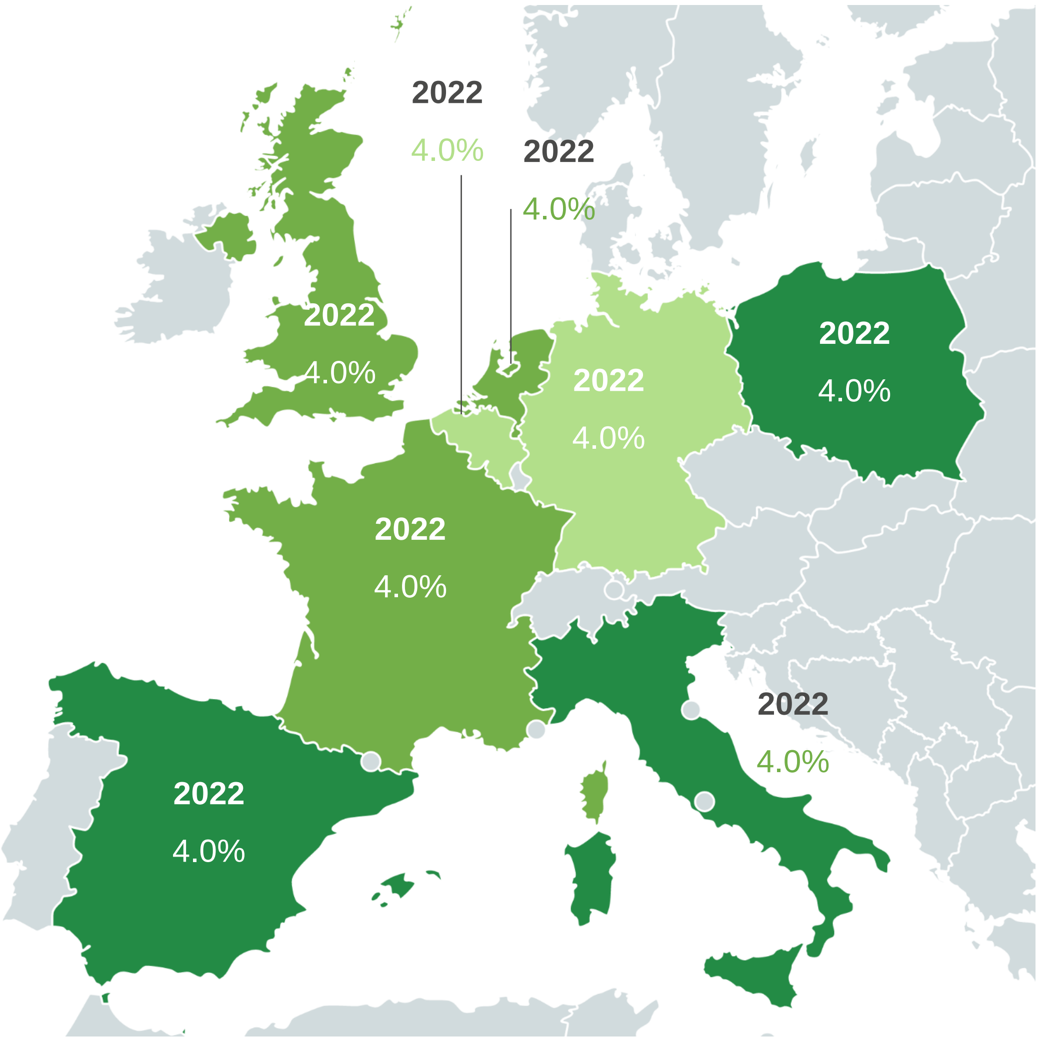


•*See the country slides for more detailed information on the developments per construction segment.*
•*Volumes are in billion euros at 2013 prices.*

Forecast 2022 European overview

2022 looks promising for every country in Europe. All signs are green for a positive development in each country.

Also Spain that was hit hard can finally expect a growht figure in 2022.



•*See the country slides for more detailed information on the developments per construction segment.*

•*Volumes are in billion euros at 2013 prices.*

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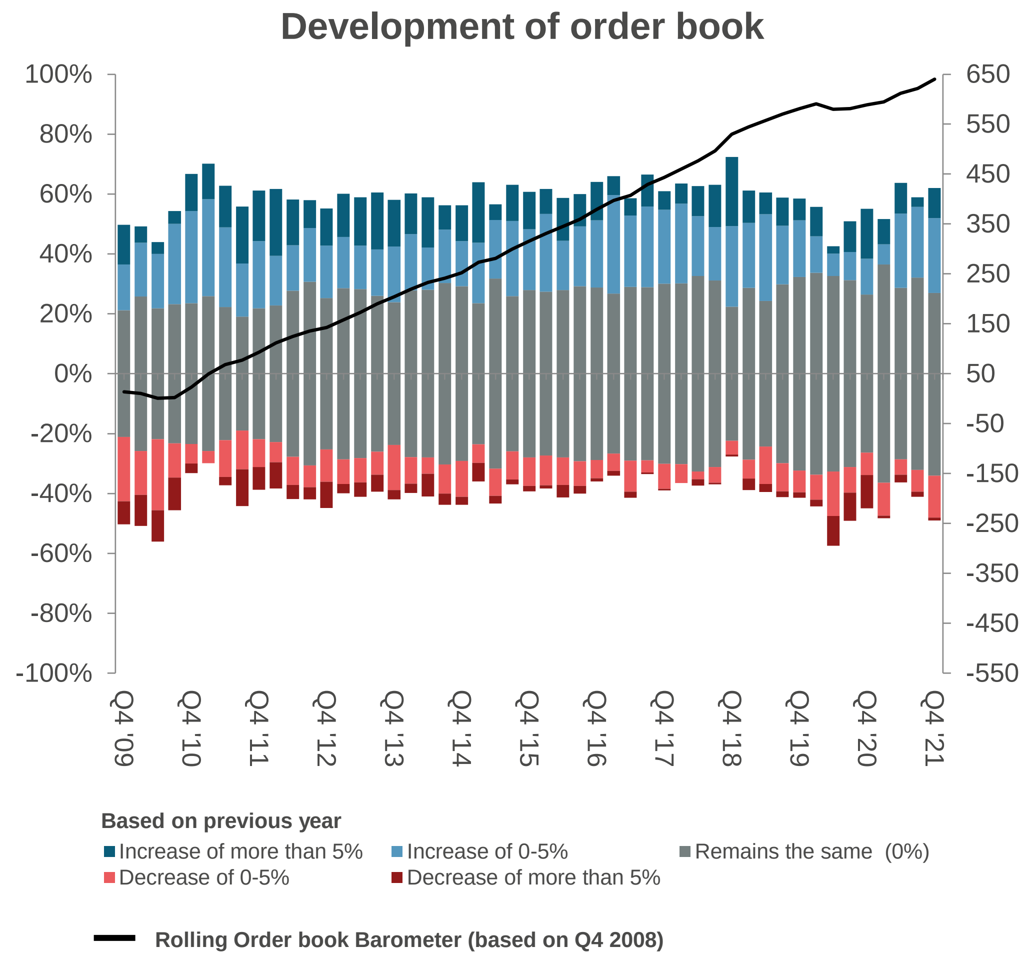
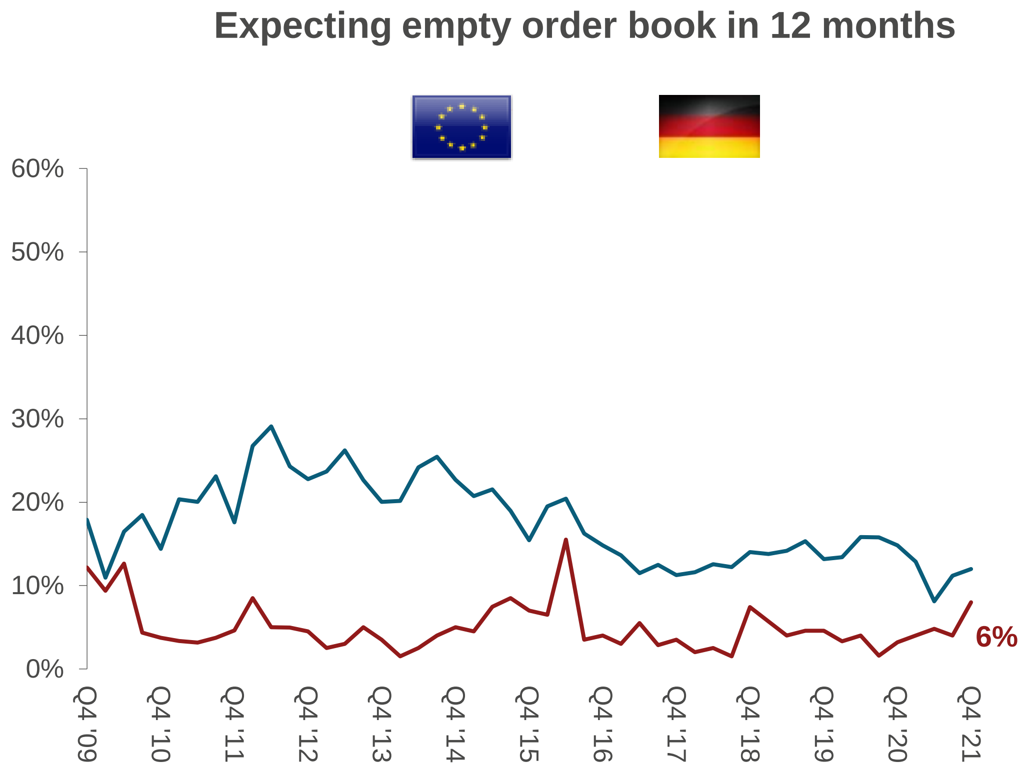
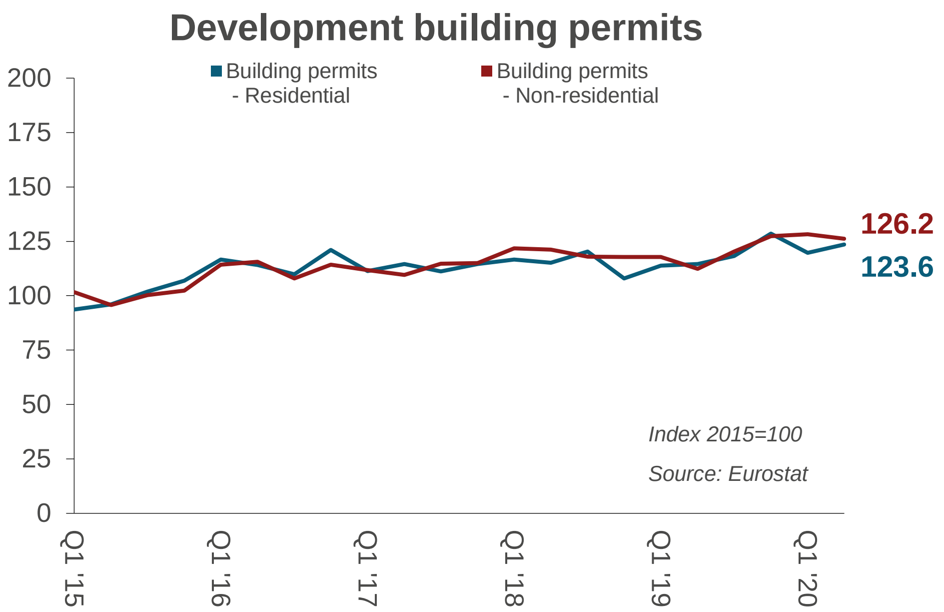


Development of order book
100%
80%
60%
40%
20%
0%
-20%
-40%
-60%
-80%
-100%
650
550
450
350
250
150
50
-50
-150
-250
-350
-450
-550
Q4 '09
Q4 '10
Q4 '11
Q4 '12
Q4 '13
Q4 '14
Q4 '15
Q4 '16
Q4 '17
Q4 '18
Q4 '19
Q4 '20
Q4 '21
Based on previous year
Increase of more than 5%
Increase of 0-5%
Remains the same (0%)
Decrease of 0-5%
Decrease of more than 5%
Rolling Order book Barometer (based on Q4 2008)



Expecting empty order book in 12 months
60%
50%
40%
30%
20%
10%
0%
6%
Q4 '09
Q4 '10
Q4 '11
Q4 '12
Q4 '13
Q4 '14
Q4 '15
Q4 '16
Q4 '17
Q4 '18
Q4 '19
Q4 '20
Q4 '21

XXX

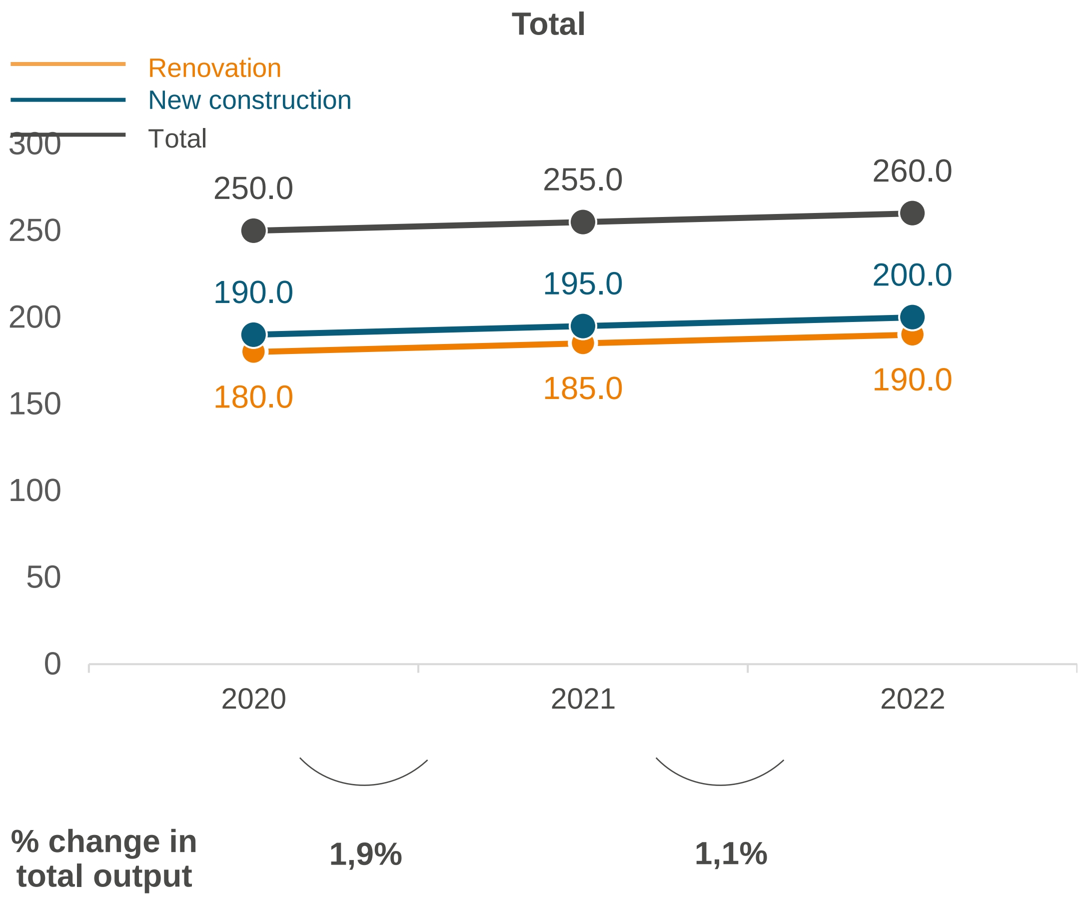


Economic and construction related indicators	Value Q3 2020	Value Q2 2021	Value Q3 2021	Q-2-Q development
GDP (quarterly growth rate) (%)*	0.1	-2.0	n/a	Positive
Consumer confidence indicator**	-3.1	-14.0	-9.0	Positive
Industrial confidence indicator**	-13.3	-28.6	-13.6	Positive
Construction confidence indicator**	14.8	-1.1	0.7	Neutral
Production value buildings (index 2015=100)**	110.6	111.9	108.5	Negative
Architects with postponed projects (%)***	36	32	33	Neutral
Architects with cancelled projects (%)***	23	14	19	Negative
Building permits residential (index 2015=100)**	118.0	123.6	n/a	Positive
Building permits non-residential (index 2015=100)**	120.3	126.2	n/a	Neutral

*Source: * Country statistical office; ** Eurostat, *** Arch-Vision*

Forecast of building volumes in billion euros

(% change year over year)



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The European Green Deal

The construction industry is contributing to climate change heavily and is therefore at the forefront to change the way of working. 40% of the annual global CO2 emissions are generated by buildings and the construction sector generates approximately 35% of worldwide waste.

We do see several actions are being taken on the European level regarding the increasing issue the greenhouse effect is posing as a product of global waste and uncontrollable gas emissions. The biggest initiative to tackle these issues comes from the European Green Deal policy.

The European Green deal is a policy created by the European Union to tackle one of the world's biggest threats – climate change and environmental degradation. As such, the goal is to enable the creation of an environment which is to improve the well-being and health of citizens and future generations.

The European Union wants to achieve the goals by providing:

Source: https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

Sources: Global ABC Global Status Report 2018, EIA; The European Union (2022), https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

The European Green Deal and architects

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Even though a majority of European architects heard of the European Green Deal, only a small share has knowledge about it. The ones who do know what it is about, see the policy containing the goals (1) XXX, (2) XXX and, (3) XXX. The official aim of the EU is to reduce 55% of the greenhouse emissions by 2030 and will become completely neutral by 2050. On a total level, architects think the goal for 2030 is around XXX% of reduction.

XXX

Architects are XXX that the European Green Deal policy XXX impact on the design of buildings. It will entail single-family and XXX, and also XXX in XXX projects. However, they do see it as a XXX thing, XXX.

XXX

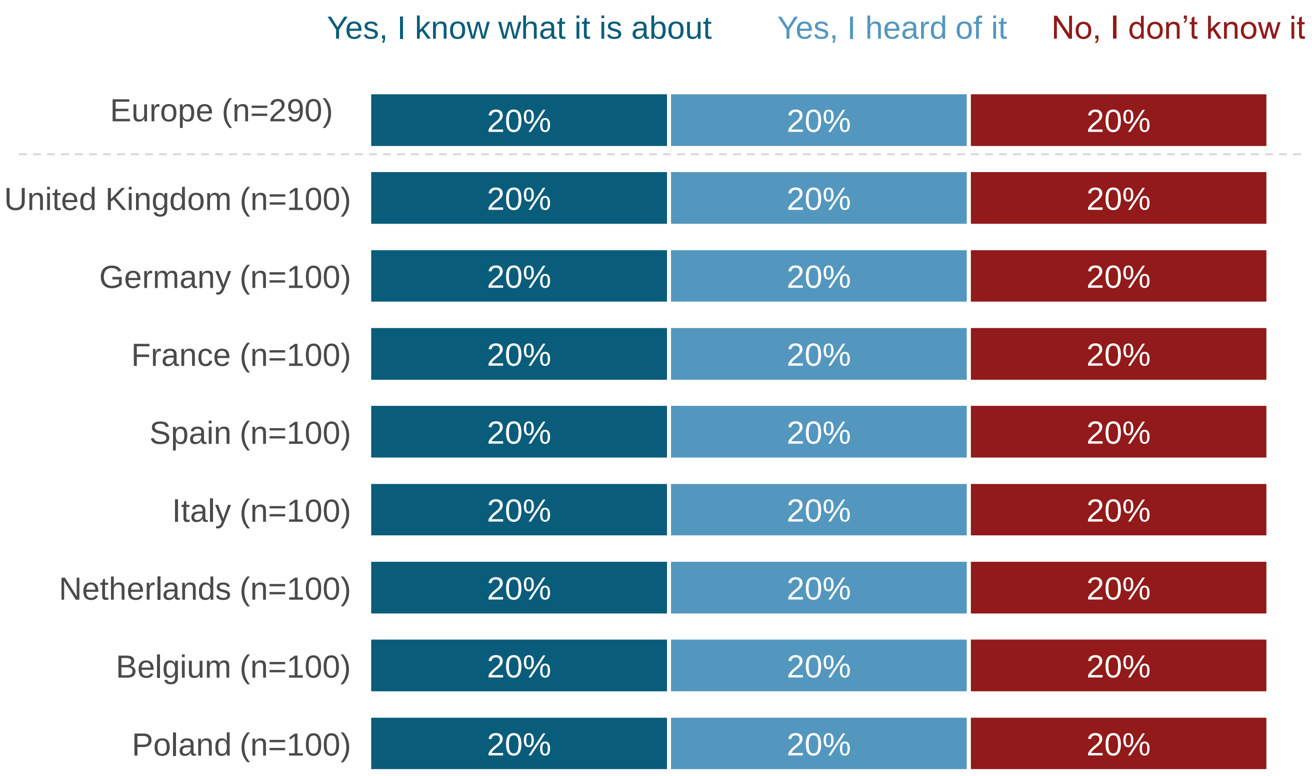
In order to reach the goals of the policy, it is important to adhere to certain rules which involves having the right XXX. XXX

XXX

XXX

European Green Deal

Have you heard of the European Green Deal?



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Base: n=500, architects

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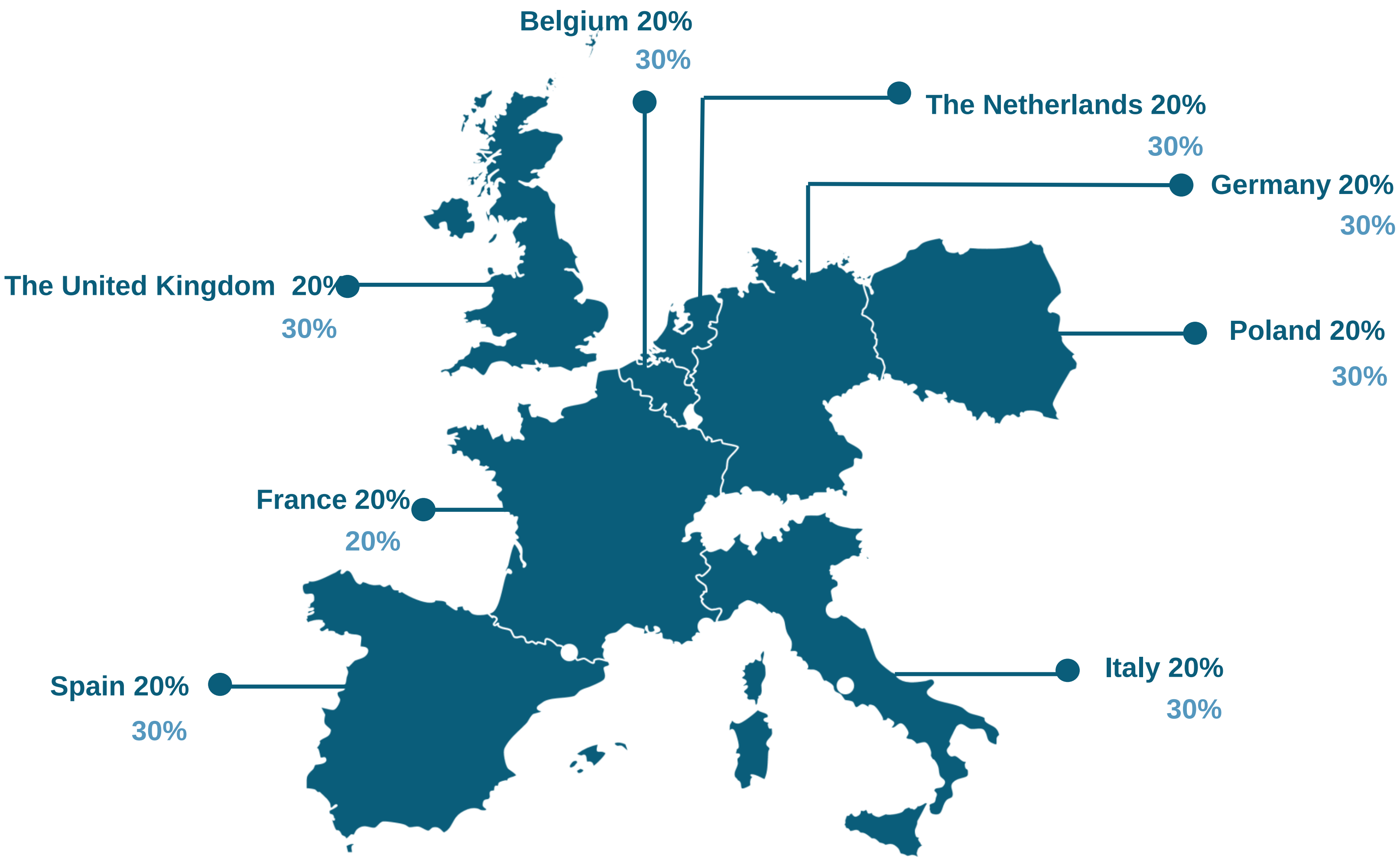
European Green Deal

Have you heard of the European Green Deal? – "Yes, I know what is it about" and *"Yes, I heard of it"* answers



Country	EU Green Deal ranking*
Belgium	20%
Netherlands	20%
Germany	20%
Italy	20%
Poland	20%
Spain	20%
France	20%
United Kingdom	20%

* "Yes I know what is it about" answers

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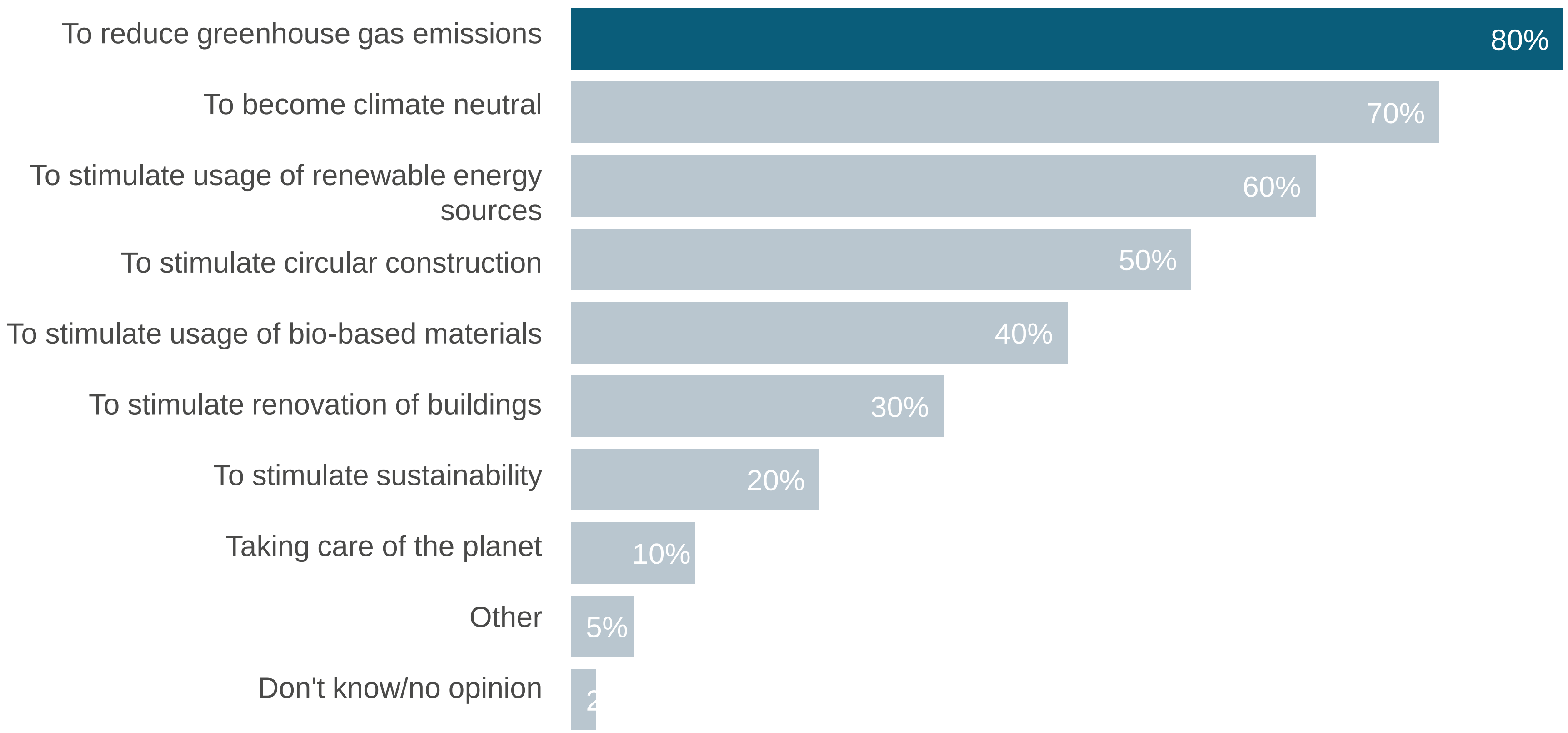
European Green Deal - goals

Can you explain what the goals of the European Green Deal are according to you?

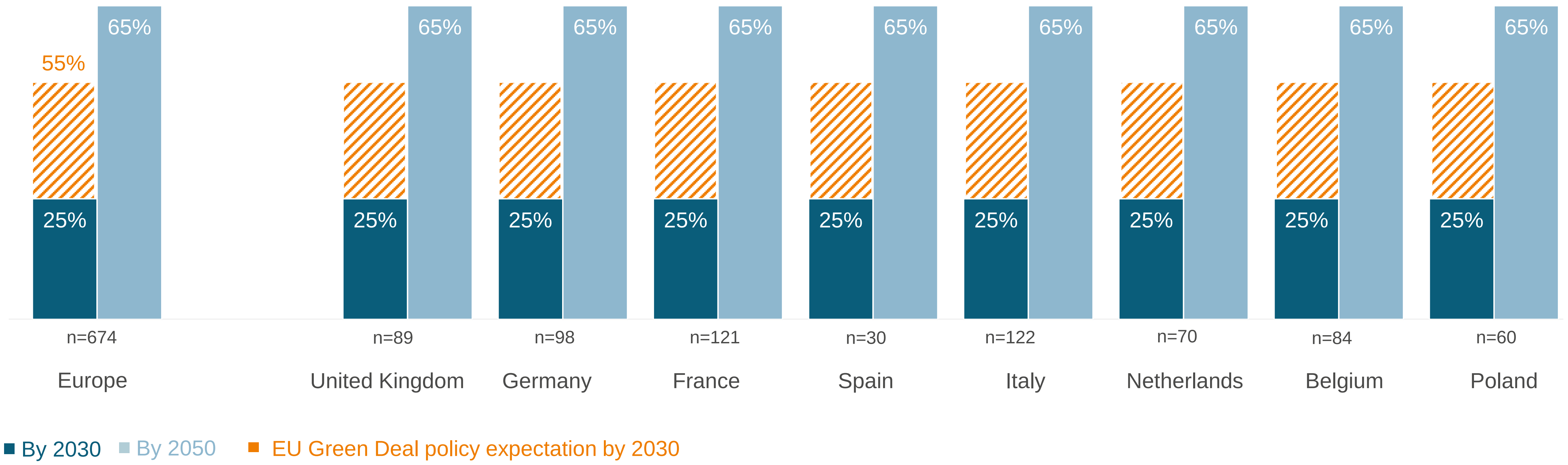


Base: n=100, if knowing what EU Green Deal is about

XXX

Greenhouse gas emission

Do you have an idea by what percentage the greenhouse gas emissions should be reduced by 2030? And by 2050?



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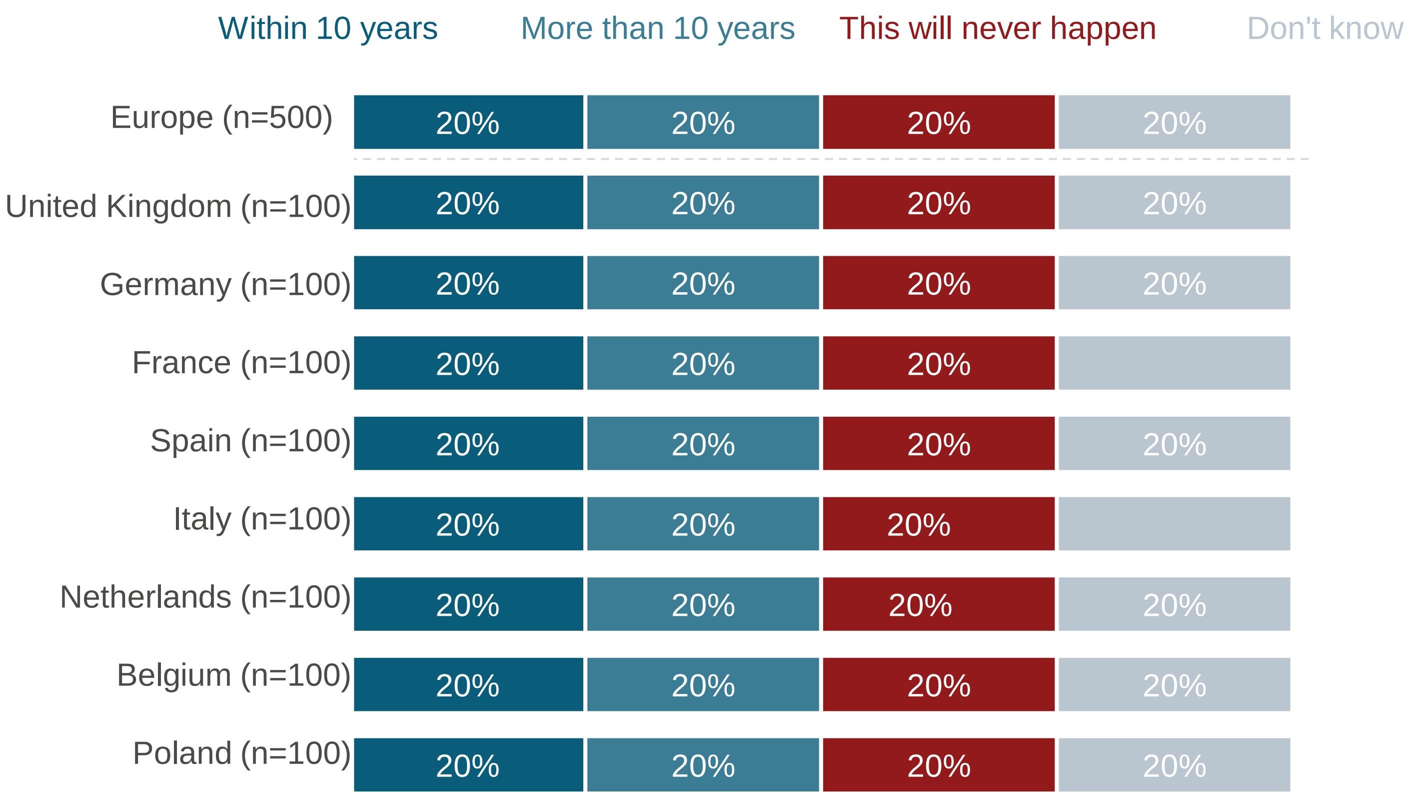
Climate neutral industry

How long will it take before the construction industry is able to be climate neutral?

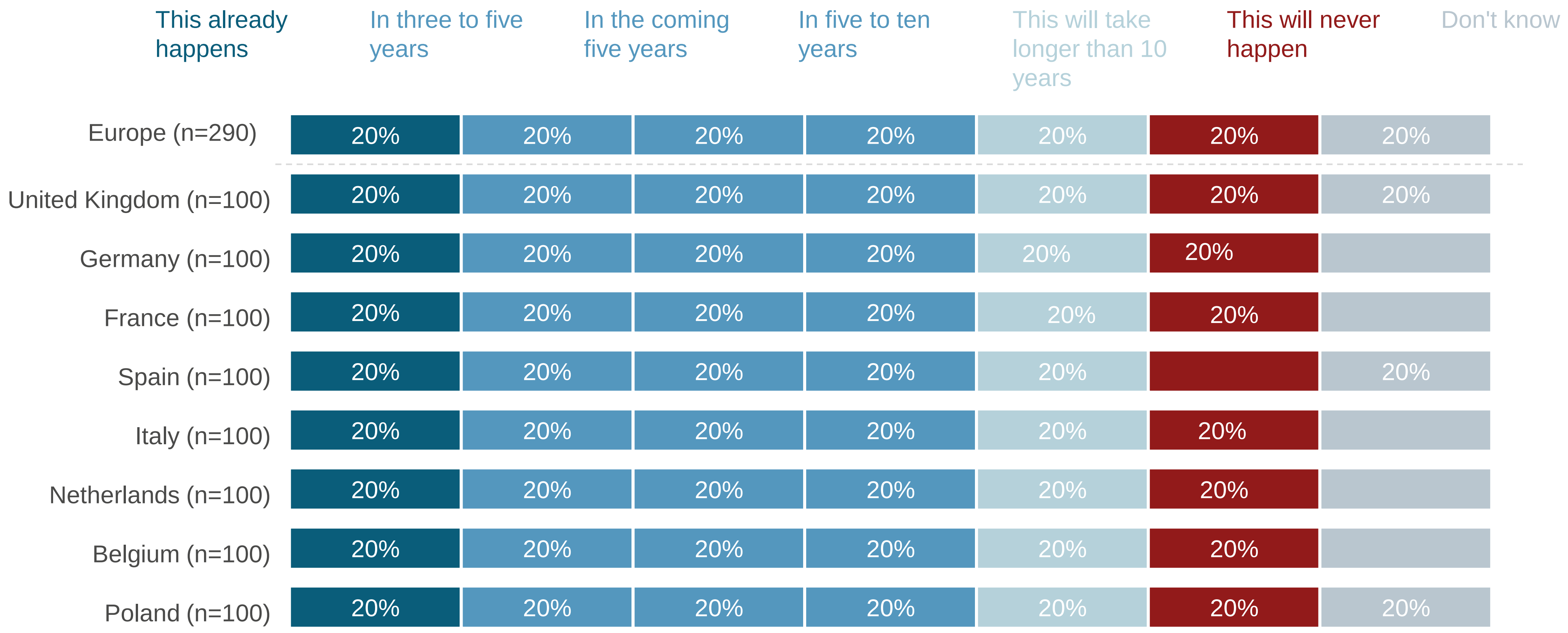


Base: n=500, architects

XXX

Climate neutral industry – government action

How long will it take before your government takes action that will impact the building permits and the construction industry?



Base: n=290, architects

XXX

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EU Green Deal affect on different types of buildings

By 2050 the European construction industry needs to be climate neutral. To what extent do you expect initiatives such as the EU Green Deal to positively affect the amount of work on the single-family housing (detached/ row houses); multi-family housing (apartments/ flats); non-residential buildings/ commercial buildings (offices/ industrial/ warehouses/ schools)?

Very strongly · Strongly · Slightly · Not at all · Don't know

	Single-family housing					Multi-family housing					Non-residential buildings				
	Very strongly	Strongly	Slightly	Not at all	Don't know	Very strongly	Strongly	Slightly	Not at all	Don't know	Very strongly	Strongly	Slightly	Not at all	Don't know
Europe (n=290)	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
United Kingdom (n=100)	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Germany (n=100)	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
France (n=100)	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Spain (n=100)	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Italy (n=100)	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Netherlands (n=100)	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Belgium (n=100)	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Poland (n=100)	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%

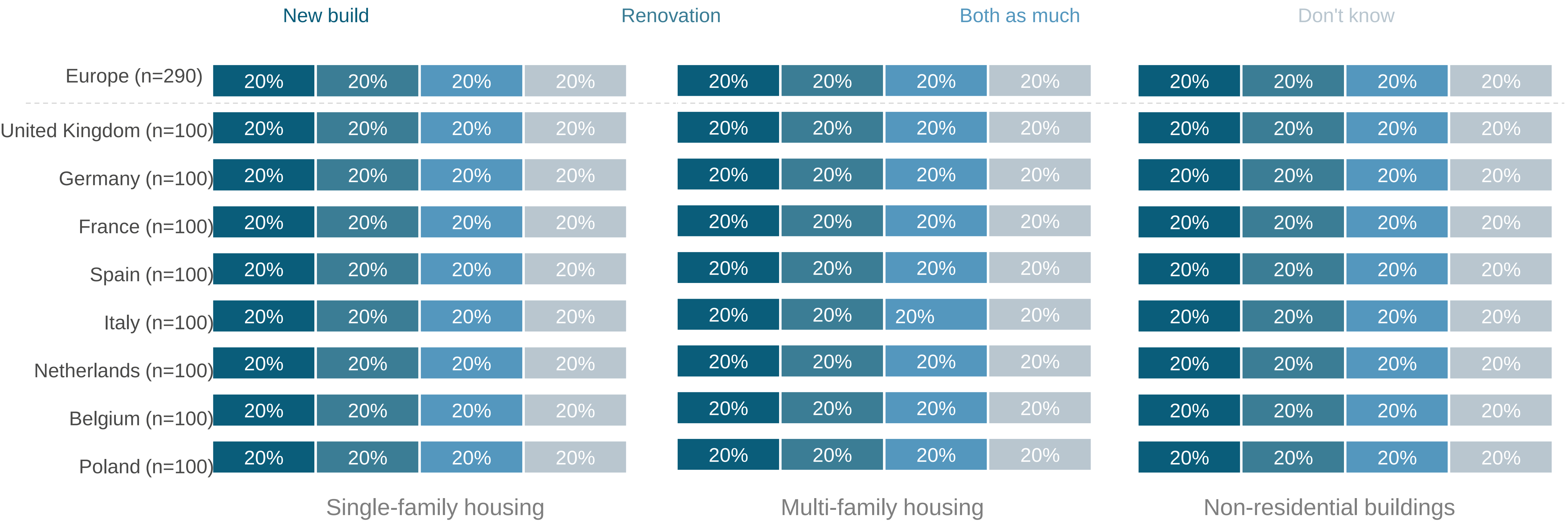
Base: n=290, architects

XXX

XXX

Initiatives affect on new build/renovation projects

Do you think initiatives will drive more new build projects, renovation projects or both as much in the single-family housing (detached/ row houses); multi-family housing (apartments/ flats); non-residential buildings/ commercial buildings (offices/ industrial/ warehouses/ schools)?



Base: n=290, architects

XXX

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Impact on non-residential buildings

On which type of non-residential buildings do you think these initiatives have the highest impact?

	Total	UK	Germany	France	Spain	Italy	Netherlands	Belgium	Poland
	n=200	n=100	n=100	n=100	n=100	n=100	n=100	n=100	n=100
Offices	40%	25%	25%	25%	25%	25%	25%	25%	25%
Industrial buildings	30%	20%	20%	20%	20%	20%	20%	20%	20%
Educational buildings	30%	25%	25%	25%	25%	25%	25%	25%	25%
Healthcare	30%	20%	20%	20%	20%	20%	20%	20%	20%
Hotels	20%	25%	25%	25%	25%	25%	25%	25%	25%
Retail	20%	20%	20%	20%	20%	20%	20%	20%	20%
Warehouses	10%	25%	25%	25%	25%	25%	25%	25%	25%
Public buildings	10%	20%	20%	20%	20%	20%	20%	20%	20%
Other	5%	25%	25%	25%	25%	25%	25%	25%	25%
Don't know	5%	20%	20%	20%	20%	20%	20%	20%	20%

Base: n=200, if expected some kind of positive affect from initiatives such as the EU Green Deal to the amount of work on the following building segments

XXX

XXX

Impact on part of buildings

On which part of buildings do you think these initiatives have the highest impact?

	Total	UK	Germany	France	Spain	Italy	Netherlands	Belgium	Poland
	n=200	n=100	n=100	n=100	n=100	n=100	n=100	n=100	n=100
Building technology	40%	25%	25%	25%	25%	25%	25%	25%	25%
Facades	30%	20%	20%	20%	20%	20%	20%	20%	20%
Roofs	30%	25%	25%	25%	25%	25%	25%	25%	25%
Internal walls	30%	20%	20%	20%	20%	20%	20%	20%	20%
Structural floors	20%	25%	25%	25%	25%	25%	25%	25%	25%
Internal floors	20%	20%	20%	20%	20%	20%	20%	20%	20%
Building envelope	10%	25%	25%	25%	25%	25%	25%	25%	25%
Building fabric	10%	20%	20%	20%	20%	20%	20%	20%	20%
Other	5%	25%	25%	25%	25%	25%	25%	25%	25%
Don't know/no opinion	5%	20%	20%	20%	20%	20%	20%	20%	20%

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Impact on design of buildings

To what extent do you think the European Green Deal will influence your design of buildings?

	Very strongly	Strongly	Slightly	Not at all	Don't know
Europe (n=290)	20%	20%	20%	20%	20%
United Kingdom (n=100)	20%	20%	20%	20%	20%
Germany (n=100)	20%	20%	20%	20%	20%
France (n=100)	20%	20%	20%	20%	20%
Spain (n=100)	20%	20%	20%	20%	20%
Italy (n=100)	20%	20%	20%	20%	
Netherlands (n=100)	20%	20%	20%	20%	20%
Belgium (n=100)	20%	20%	20%	20%	20%
Poland (n=100)	20%	20%	20%	20%	20%

Base: n=290, architects

USP

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Impact on specification

How will it influence your specification?

	Total	UK	Germany	France	Spain	Italy	Netherlands	Belgium	Poland
	n=200	n=100	n=100	n=100	n=100	n=100	n=100	n=100	n=100
Focus more on technical installations in buildings	40%	25%	25%	25%	25%	25%	25%	25%	25%
Focus more on insulation of buildings	30%	20%	20%	20%	20%	20%	20%	20%	20%
Use more recycled materials	30%	25%	25%	25%	25%	25%	25%	25%	25%
Use more bio-based materials	30%	20%	20%	20%	20%	20%	20%	20%	20%
Use more certified materials	20%	25%	25%	25%	25%	25%	25%	25%	25%
Integrate circularity in design	20%	20%	20%	20%	20%	20%	20%	20%	20%
Use more materials based on circular ownership model	10%	25%	25%	25%	25%	25%	25%	25%	25%
Achieve a higher u-value with the insulation layer	10%	20%	20%	20%	20%	20%	20%	20%	20%
Other	5%	25%	25%	25%	25%	25%	25%	25%	25%
Don't know/no opinion	5%	20%	20%	20%	20%	20%	20%	20%	20%

Base: n=200, if expected some kind of influence of the European Green Deal on their design of buildings

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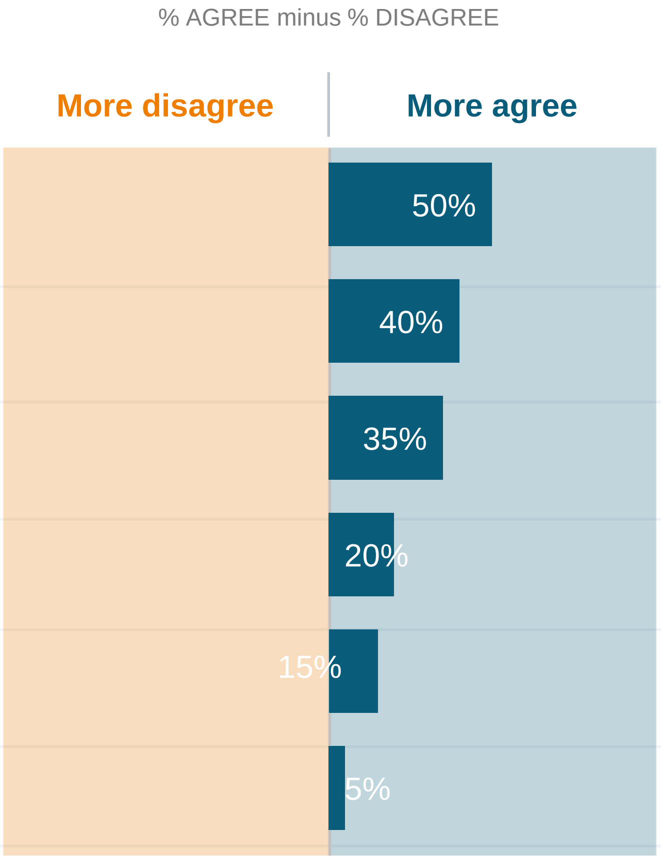
Information criteria when selecting materials and design

How important is information on the following aspects when selecting materials and solutions for your design?



	UK	Germany	France	Spain	Italy	Netherlands	Belgium	Poland
	n=100	n=100	n=100	n=100	n=100	n=100	n=100	n=100
Locally sources materials	25%	25%	25%	25%	25%	25%	25%	25%
Low CO2 footprint	20%	20%	20%	20%	20%	20%	20%	20%
Usage of alternative energy sources during production	25%	25%	25%	25%	25%	25%	25%	25%
Availability of circular solutions	20%	20%	20%	20%	20%	20%	20%	20%
Low gas emission during production	25%	25%	25%	25%	25%	25%	25%	25%
Biobased materials	20%	20%	20%	20%	20%	20%	20%	20%

Base: n=200, architects

*the results are shown in saldo

XXX

Documentation impact on selection of construction products

What kind of documentation or certification influences your selection of construction products in a specification?

	Total	UK	Germany	France	Spain	Italy	Netherlands	Belgium	Poland
	n=200	n=100	n=100	n=100	n=100	n=100	n=100	n=100	n=100
Environmental Product Declarations	33%	25%	25%	25%	25%	25%	25%	25%	25%
Product Efficiency certificates	28%	20%	20%	20%	20%	20%	20%	20%	20%
Cradle to cradle certification	13%	25%	25%	25%	25%	25%	25%	25%	25%
Packaging claims like FSC, Green Dot etc.	13%	20%	20%	20%	20%	20%	20%	20%	20%
Other	6%	25%	25%	25%	25%	25%	25%	25%	25%
Don't know	22%	25%	25%	25%	25%	25%	25%	25%	25%

XXX

XXX

Most important sources

What are for you the most important sources to inform yourself on a topic such as the EU Green Deal?

	Total	UK	Germany	France	Spain	Italy	Netherlands	Belgium	Poland
	n=200	n=100	n=100	n=100	n=100	n=100	n=100	n=100	n=100
Internet in general/ search engines	60%	25%	25%	25%	25%	25%	25%	25%	25%
Professional journals/ magazines	40%	20%	20%	20%	20%	20%	20%	20%	20%
Websites of manufacturers	30%	25%	25%	25%	25%	25%	25%	25%	25%
Other	20%	20%	20%	20%	20%	20%	20%	20%	20%
Don't know/no opinion	1	25%	25%	25%	25%	25%	25%	25%	25%

XXX

Search engines as a source of information

Where do you in the end find the information via search engines?

	Total	UK	Germany	France	Spain	Italy	Netherlands	Belgium	Poland
	n=200	n=100	n=100	n=100	n=100	n=100	n=100	n=100	n=100
Websites of manufacturers	50%	25%	25%	25%	25%	25%	25%	25%	25%
Professional journals/ magazines	45%	20%	20%	20%	20%	20%	20%	20%	20%
Newsletters	35%	25%	25%	25%	25%	25%	25%	25%	25%
Blogs	30%	20%	20%	20%	20%	20%	20%	20%	20%
Government websites	15%	25%	25%	25%	25%	25%	25%	25%	25%
Trade fairs	5%	20%	20%	20%	20%	20%	20%	20%	20%
Other	5%	25%	25%	25%	25%	25%	25%	25%	25%
Don't know/no opinion	2	20%	20%	20%	20%	20%	20%	20%	20%

Base: n=200, if the most important source of information is Internet

XXX

XXX

Expectations from manufacturers

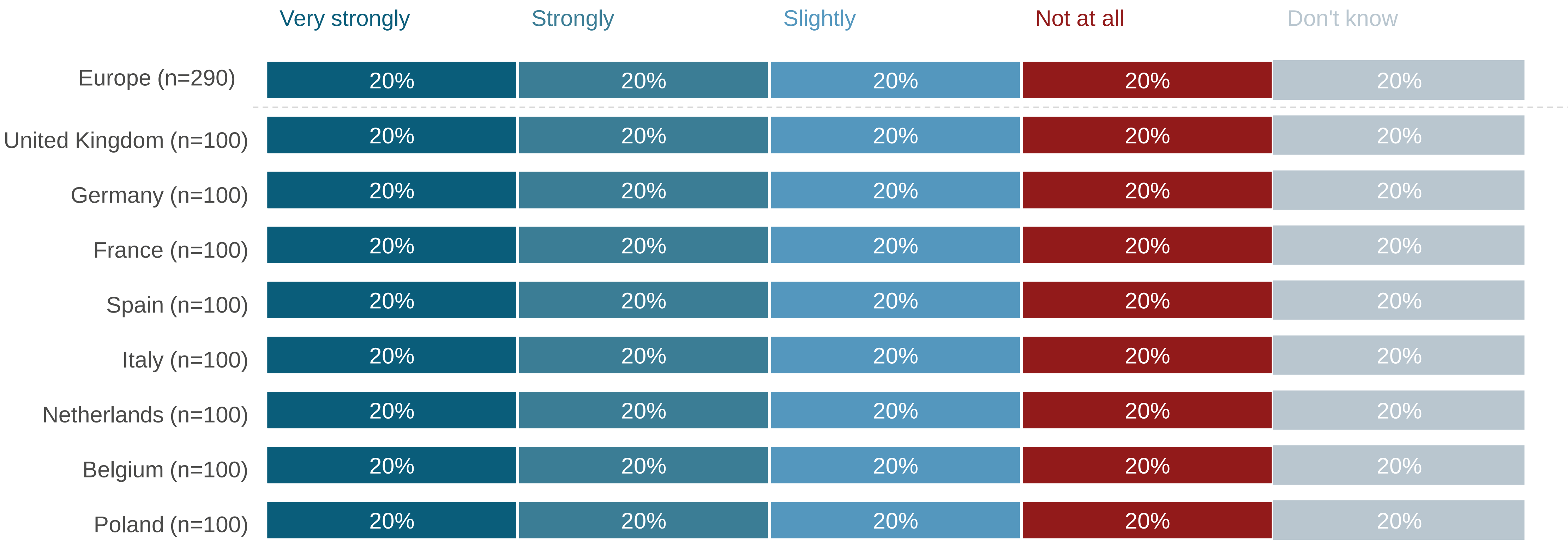
What do you expect from manufacturers of building materials when it comes to the goal of becoming a climate neutral industry?

	Total	UK	Germany	France	Spain	Italy	Netherlands	Belgium	Poland
	n=200	n=100	n=100	n=100	n=100	n=100	n=100	n=100	n=100
More biobased materials	25%	25%	25%	25%	25%	25%	25%	25%	25%
Certified materials	25%	20%	20%	20%	20%	20%	20%	20%	20%
Investments in new products	25%	25%	25%	25%	25%	25%	25%	25%	25%
Circular materials	25%	20%	20%	20%	20%	20%	20%	20%	20%
Offer information about product usage	20%	25%	25%	25%	25%	25%	25%	25%	25%
Information on EU Green Deal	20%	20%	20%	20%	20%	20%	20%	20%	20%
Offer trainings	15%	25%	25%	25%	25%	25%	25%	25%	25%
Help in design phase	15%	20%	20%	20%	20%	20%	20%	20%	20%
Other	10%	25%	25%	25%	25%	25%	25%	25%	25%
Don't know/no opinion	10%	20%	20%	20%	20%	20%	20%	20%	20%

XXX

Green building certifications

To what extent will green building certifications like Breeam, Well and Leed support help for reaching the Green Deal ambitions?

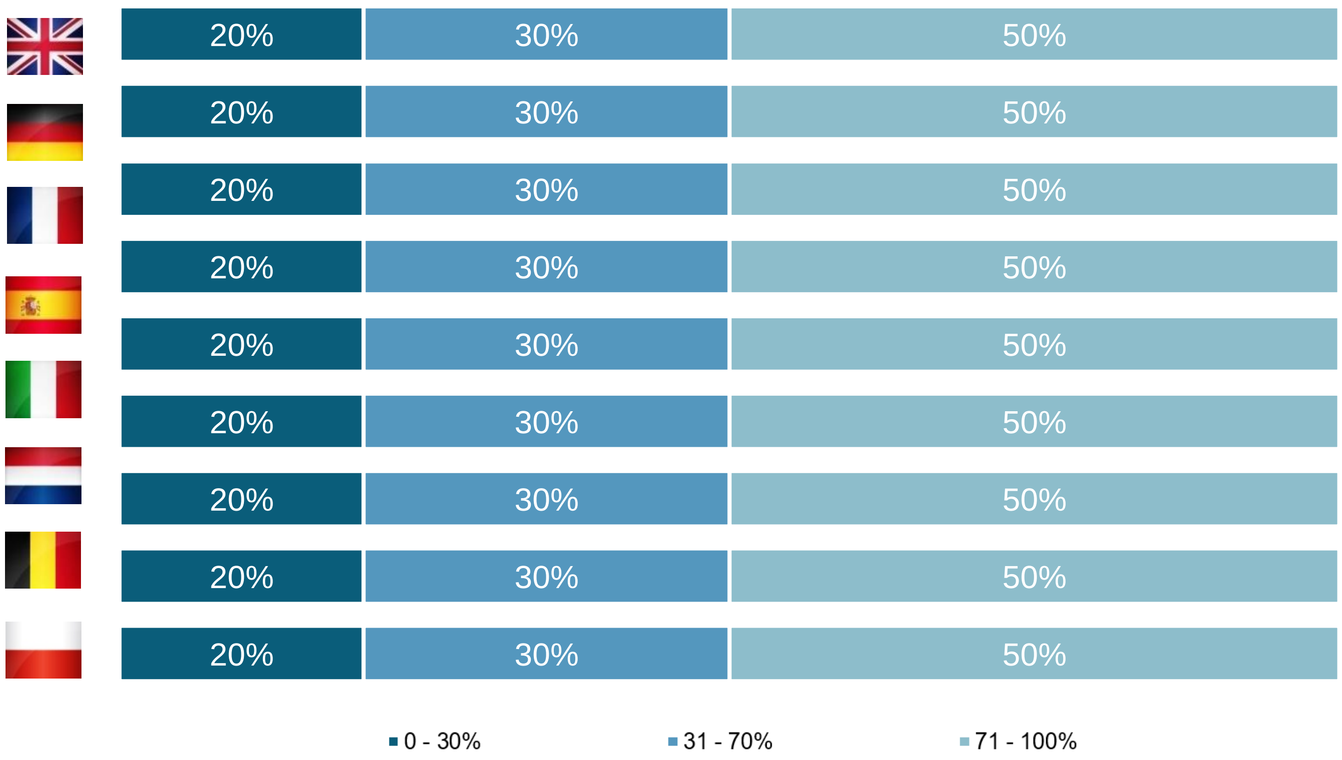


Base: n=290, architects

Results per segment

For three key questions from the current measurement of the European Architectural Barometer, the results are divided by architects that realise most of their sales in the residential segment (0% – 30% non-residential), by architects that realise sales in both segments (31% - 70% non-residential), and by architects that realise most of their sales in the non-residential segment (71% - 100% non-residential).

Segment most active



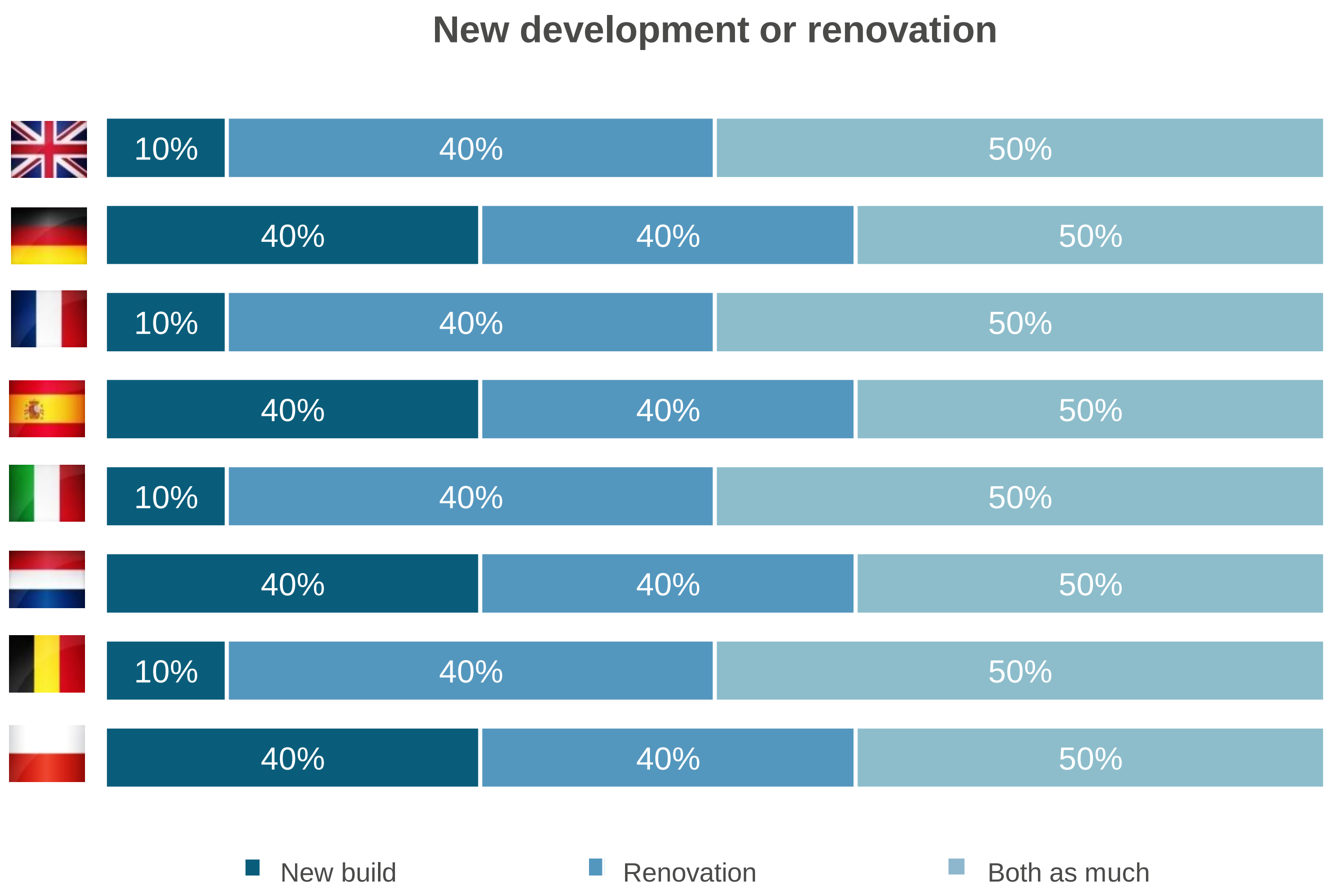
The tables on the following pages show the above-mentioned split about the following questions:

- **How did the turnover develop in this quarter compared to the previous quarter?**
- **How did your order book develop in this quarter compared to the same quarter last year?**
- **Do you expect that your order book might be empty these coming 12 months?**

Index

Background of the architects

The figure below shows the split in activities in new build and renovation. Italy has the smallest new build market with merely 12% claiming to be mainly active in new build. You can clearly see that most architects are active in the renovation segment. Almost half of the Polish architects do more new build, which is more than their colleagues from other European countries.



About Arch-Vision

European Architectural Barometer

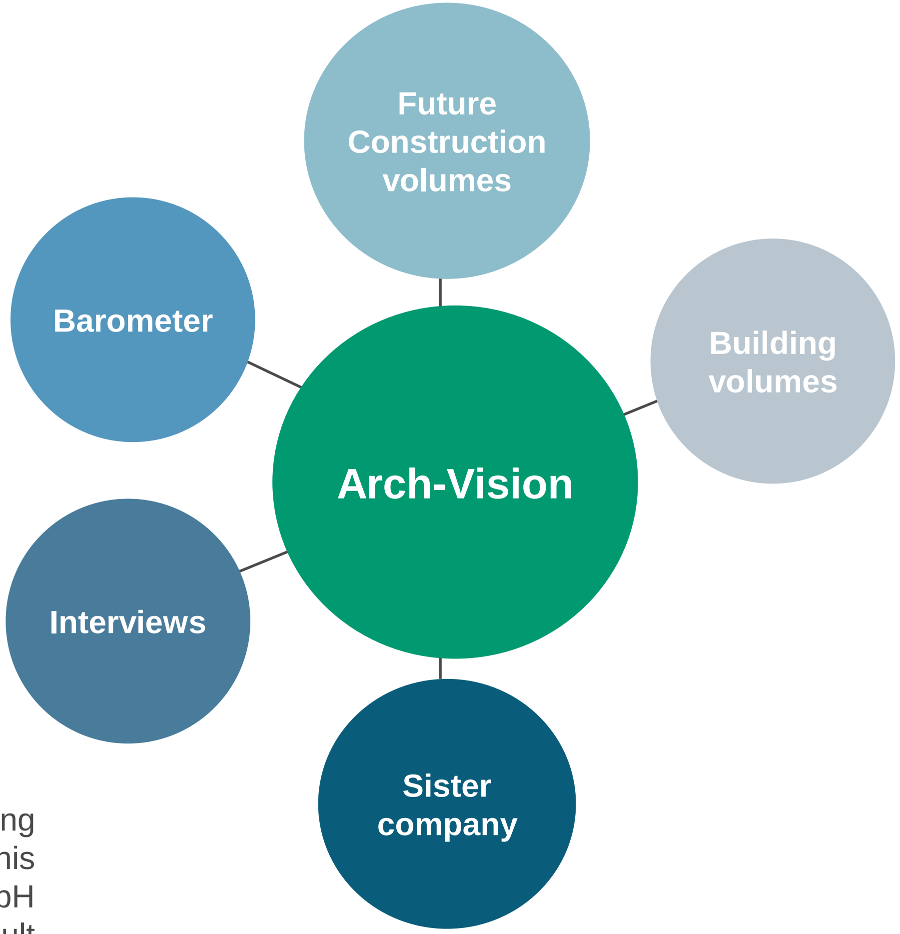
Architects have already been monitored by several institutes in quite diverging ways in the different countries. Arch-Vision launched this European Architectural Barometer for a more cohesive view. The European Architectural Barometer is extremely useful for organisations with a focus on Europe that also want to compare the activities of architects in different countries.

Interviews

All interviews are conducted by native speakers. From the third measurement onwards, two hundred interviews per country have been completed per measurement. The first two measurements were based on one hundred interviews per country. Later, for the Netherlands and Belgium, the measurements returned to one hundred interviews.

Sister company

Arch-Vision is a sister company of USP Marketing Consultancy (www.usp-mc.eu), BouwKennis (www.bouwkennis.nl), BauInfoConsult GmbH (www.bauinfoconsult.de) and BuildInfoConsult (www.buildinfoconsult.com). These are major agencies each providing full-service research support and specialised in the construction and real estate markets.



Future construction volumes

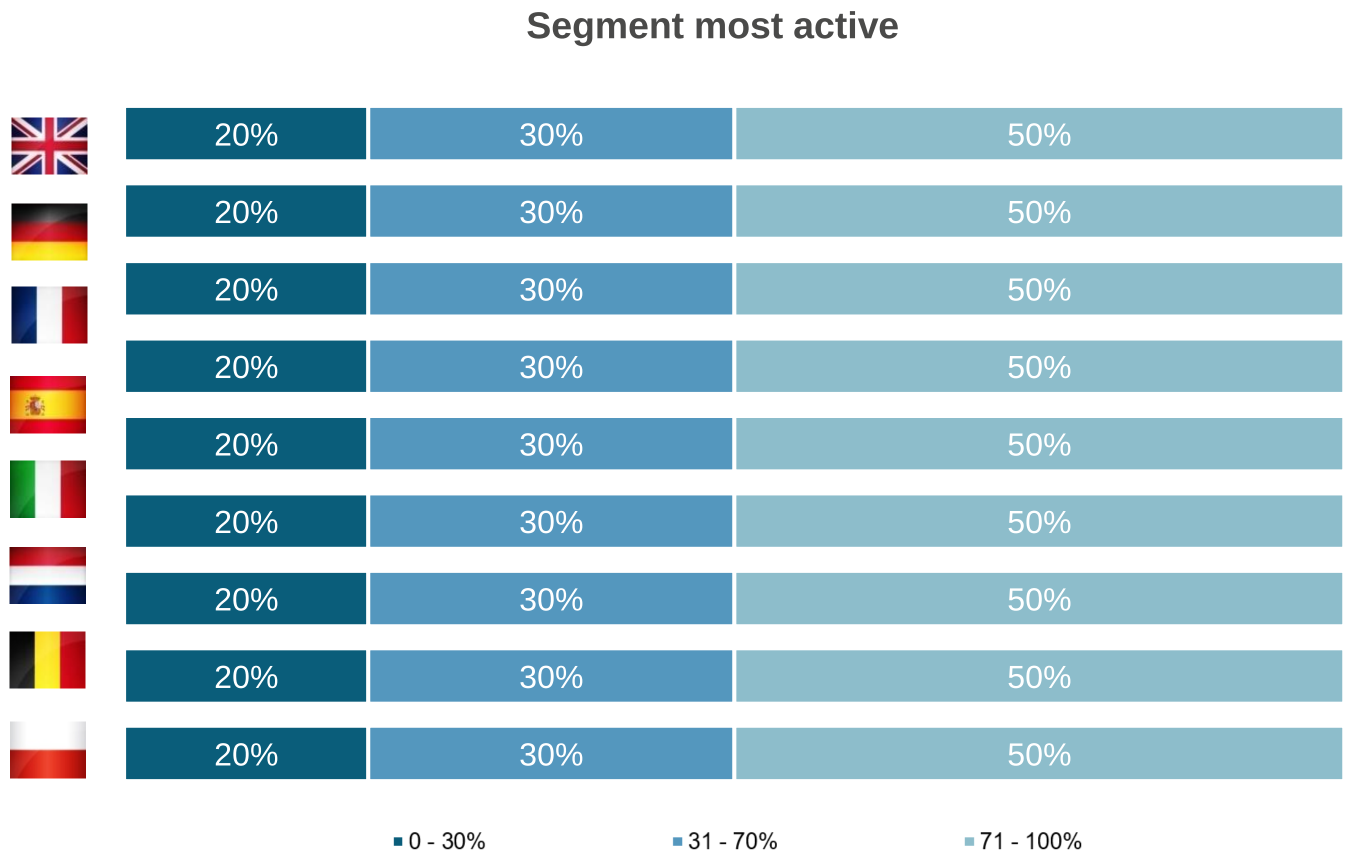
For decision makers charged with considerations of company resources, staffing and marketing strategy, a clear insight into future construction volumes is essential. However, economic indicators seldom provide an adequate picture of these volumes.

Building volumes

The construction industry operates in a delayed cyclical market, which means that buildings designed today will not be ready until at least two years from now. The economic activities of architectural firms provide a strong indication of the direction in which the construction sector will develop in terms of both building volumes and the way in which building volumes will be realised.

Results per segment

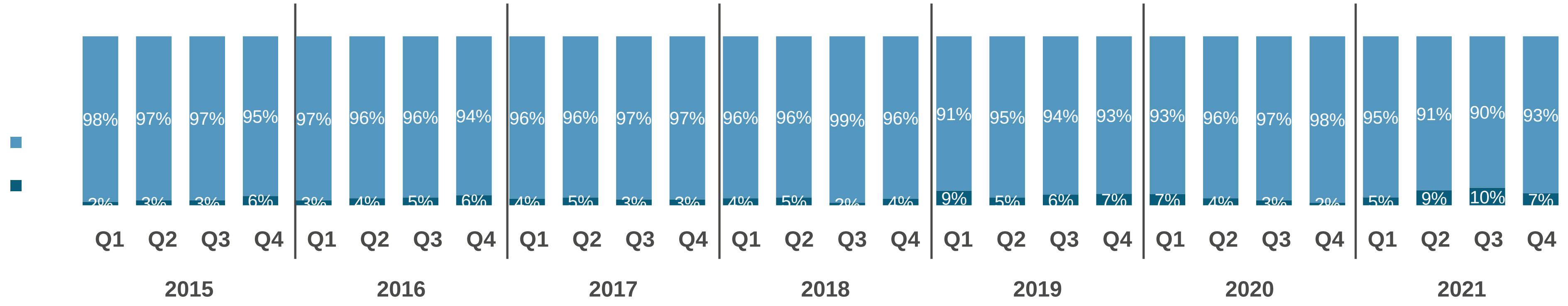
For three key questions from the current measurement of the European Architectural Barometer, the results are divided by architects that realise most of their sales in the residential segment (0% – 30% non-residential), by architects that realise sales in both segments (31% - 70% non-residential), and by architects that realise most of their sales in the non-residential segment (71% - 100% non-residential).

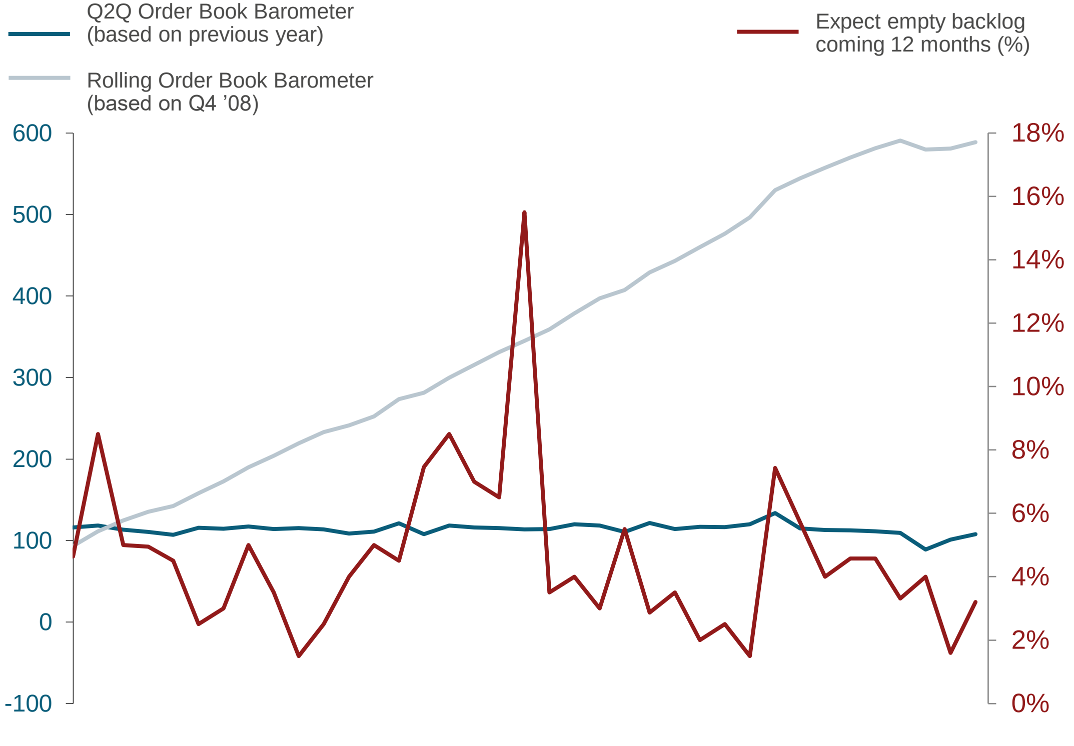


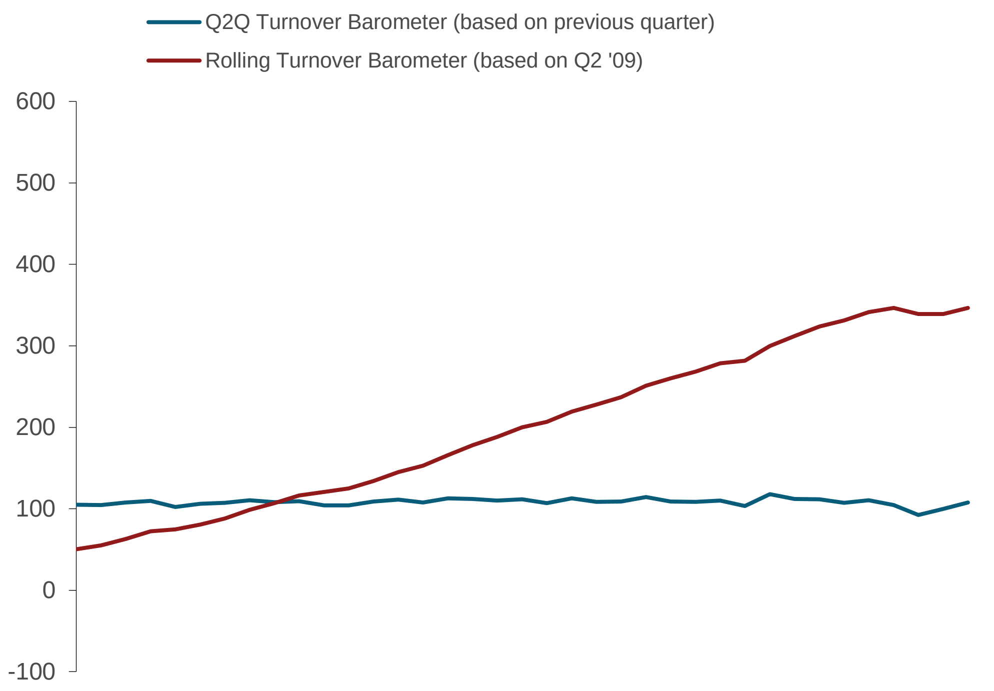
The tables on the following pages show the above-mentioned split about the following questions:

- **How did the turnover develop in this quarter compared to the previous quarter?**
- **How did your order book develop in this quarter compared to the same quarter last year?**
- **Do you expect that your order book might be empty these coming 12 months?**

Short-term outlook among German architects







Development turnover and order book

Development turnover (based on previous quarter)

% sales in non-residential	0 - 30	31 - 70	71 - 100	0 - 30	31 - 70	71 - 100	0 - 30	31 - 70	71 - 100	0 - 30	31 - 70	71 - 100	0 - 30	31 - 70	71 - 100	0 - 30	31 - 70	71 - 100	0 - 30	31 - 70	71 - 100	0 - 30	31 - 70	71 - 100
Strongly increased (>5%)																								
Slightly increased (0-5%)																								
Stayed the same (0%)																								
Slightly decreased (0-5%)																								
Strongly decreased (>5%)																								
Barometer turnover																								

Development order book (based on previous year)

% sales in non-residential	0 - 30	31 - 70	71 - 100	0 - 30	31 - 70	71 - 100	0 - 30	31 - 70	71 - 100	0 - 30	31 - 70	71 - 100	0 - 30	31 - 70	71 - 100	0 - 30	31 - 70	71 - 100	0 - 30	31 - 70	71 - 100	0 - 30	31 - 70	71 - 100
Strongly increased (>5%)																								
Slightly increased (0-5%)																								
Stayed the same (0%)																								
Slightly decreased (0-5%)																								
Strongly decreased (>5%)																								
Barometer order book																								

Expectation empty order book in the next 12 months

Expectation empty order book in the next 12 months

% sales in non-residential	0 - 30	31 - 70	71 - 100	0 - 30	31 - 70	71 - 100	0 - 30	31 - 70	71 - 100	0 - 30	31 - 70	71 - 100	0 - 30	31 - 70	71 - 100	0 - 30	31 - 70	71 - 100	0 - 30	31 - 70	71 - 100	0 - 30	31 - 70	71 - 100
Yes																								
No																								
Do not know																								

Methodology calculation of the Q2Q Saldo and Barometer

The European Architectural Barometer for the order book development and turnover development is calculated in the following way:

1. Respondents with a strong increase (>5%) are multiplied by 100
2. Respondents with a slight increase are multiplied by 50
3. Respondents that remained the same are multiplied by 0
4. Respondents with a slight decrease are multiplied by –50
5. Respondents with a strong decrease (>5%) are multiplied by –100
6. The sum of these values divided by 100, results in the Q2Q saldo.
7. Adding 100 to this saldo results in the Barometer figures, where 0 is the strongest possible decrease, 100 is stabilisation and 200 is the strongest possible increase.

The Barometer values calculated this way are presented in the report as Quarter to Quarter Turnover and Order book Barometer.

Example of calculation Q2Q Barometer value:

Development Turnover Spain	Q2 '15		Calculated Values
Increased by more than 5%	25%	x 100	2500
Slightly increased (0-5%)	28%	x 50	1400
Stayed the same (0%)	36%	x 0	0
Slightly decreased (0-5%)	3%	x -50	-150
Decreased by more than 5%	8%	x -100	-800

Q2Q Saldo = (2500 + 1400 – 150 – 800) / 100 = 30

Q2Q Barometer value = 100 + 30 = **130**

Methodology calculation of the Q2Q Saldo and Barometer

To calculate the developments in the turnover and the order book with regard to the first measurement in 2009, Arch-Vision has developed the so-called Rolling Barometer. The Rolling Barometer is calculated as the cumulative sum of the Q2Q saldos of every quarter. The Rolling Barometer can drop or rise by 100 points per quarter at maximum.

Example: The Rolling Order Book Barometer is -66 after twelve quarters. In the worst case (all architects reporting a decrease of over 5% every quarter) the Rolling Barometer would be -1200. In the best case it would be 1200. Therefore a score of -66 in Q4 2011 means a slightly worse situation than in Q4 2008.

Barometer order book

	Q1'09	Q2'09	Q3'09	Q4'09	Q1'10	Q2'10	Q3'10	Q4 '10	Q1 '11	Q2 '11	Q3 '11	Q4 '11
Q2Q Barometer values	71	75	100	85	100	110	94	94	111	102	94	99
Saldo Q2Q Values	-29	-25	0	-15	0	10	-6	-6	11	2	-6	-1
Rolling Barometer Values	-29	-54	-54	-69	-69	-59	-65	-71	-60	-59	-65	**-66**

+ (-25) + (0) + (-15) + etc.

Future building volumes: building a model for prediction

Building volumes

Architects are at the front of the construction sector. They are the first to perceive positive and negative changes. The current developments of architectural firms have a strong predictive impact on the total market. Arch-Vision publishes its predictions for the building volumes based on the developments experienced by architects.

The model

Arch-Vision uses a model based on eleven market indicators and Arch-Vision's own results. The model combines information about the economy, like construction requests and confidence figures, with data about the developments within architects' experience, such as changes in the turnover and the number of active architects. Only information that proved to have a strong correlative value on the building volume is used. Subsequently, every kind of data is weighed based on the predictive value.

High predictive value

To ensure the correctness of the predictive value, the model has been – with retroactive effects – compared to the actual growth and shrinkage of the construction volume since 2003 for the Dutch* market and since Q3 2009 for the remaining countries. The model turns out to possess a very high predictive value. Nevertheless, the forecast has to be interpreted with caution, as it remains a calculation. As with all predictions, the margin of error can be larger, comparable to the weather forecast: sometimes the Arch-Vision model can be inaccurate.

Calculation predictive value

The predictive value is calculated based on the consistency of the market indicators with construction volumes, for the renovation, maintenance and the new build markets. The correlation is determined by a regression analysis, i.e. a statistical technique for analysing data in which there is a (possible) specific connection, known as regression.

** Since 2003, the developments of architects in the Netherlands have been monitored by Arch-Visions' sister organisation BouwKennis. Therefore, it is possible for the Netherlands to calculate the connection between the architects and the building volume based on 10 years of data.*

Future building volumes: Calculation

The Dutch market has been taken as a basis. The correlation between market volume regarding new build, maintenance and renovation on the one hand, and possible explanatory factors on the other hand, serves as a starting point.

The correlation with building volumes is tested for a total of eleven market indicators together with two outcomes of the European Architectural Barometer. The correlation of the following four indicators appeared to be strongest:

- Building permits – m² of useful floor area in non-residential buildings
- Building permits, number of dwellings
- Development of Turnover Barometer (European Architectural Barometer figures)
- Number of FTE working at architectural companies (European Architectural Barometer figures)

The predicting value of these indicators is between 54% and 91%. Because a longer history of data was not available for most countries, the development of these four indicators in the last four quarters and the four quarters before served as a guidance for this measurement. The used range of five indicators is not static and can be adjusted for future calculations. With the database becoming more complete, more reliable correlations can adjust the mix of indicators. A longer range of regression measurements shall replace the comparison of the last four quarters with the four quarters before.

The forecast is based on the market knowledge of USP Marketing Consultancy together with the market figures available, such as building permits and the developments among architects who are mainly active in renovation or new build as well as mainly active in residential or non-residential. Due to the limited number of quarters, a forecast based on a statistical model is not possible for now. The model that was used has a lower prediction value for this period. However, USP Marketing Consultancy aims at clarifying the general direction of the construction market development by publishing these data and the predictions will be updated in the coming reports.

Questionnaire – Standard

These questions are asked every measurement

1. How many employees (in FTE) does your company currently have, including yourself? [if less than 2 FTE, end of research]
2. What is your position?
3. As an architectural firm, are you mostly active in the segment housing, non-residential building, interior, or landscaping? [If interior or landscaping, end of research]
4. How many employees in FTE did your company have at the end of 2019?
5. How many employees in FTE did your company have at the end of 2018?
6. How many employees in FTE did your company have at the end of 2017?
7. If your turnover should relate to housing and non-housing, what percentage of your revenue do you get from housing-related jobs?
8. Are you mostly active in new build or renovation?
9. How did the turnover develop this quarter compared to the previous quarter? Decreased by more than 5%; slightly decreased (0-5%); stayed the same (0%); slightly increased (0-5%); strongly increased (more than 5%)
10. How did your order book develop in this quarter compared to the same quarter previous year? Decreased by more than 5%; slightly decreased (0-5%); stayed the same (0%); slightly increased (0-5%); strongly increased (more than 5%)
11. How many projects have been postponed in this quarter?
12. How many projects were not started and cancelled in this quarter?
13. Do you expect that your order book might be empty these coming 12 months?

Questionnaire – Theme questions

1. Have you heard of the European Green Deal?
- Yes, I know what it is about
- Yes, I heard of it
- No, I don't know the EU Green Deal

2. Can you explain what the goals of the European Green Deal are according to you?

3. Do you have an idea by what percentage the greenhouse gas emissions should be reduced by 2030? And by 2050?
    - % reduction by 2030
    - % reduction by 2050

4. How long will it take before the construction industry is able to be climate neutral?
- Within 10 years
- In 10 to 20 years
- This will take more than 20 years
- This will never happen
- Don't know/ no opinion

5. How long will it take before your government takes action that will impact the building permits and the construction industry?
- This already happens
- In the coming three years
- In the coming five years
- In five to ten years
- This will take longer than 10 years
- This will never happen
- Don't know/ no opinion

6. By 2050 the European construction industry needs to be climate neutral. To what extent do you expect initiatives such as the EU Green Deal to positively affect the amount of work on the following building segments? (Single-family housing (detached/ row houses etc.); Multi-family housing (apartments/ flats etc.); Non-residential buildings/ commercial buildings [such as (offices/ industrial/ warehouses/ schools etc.)])
- Very strongly
- Strongly
- Slightly
- Not at all
- Don't know/ no opinion

Questionnaire – Theme questions

7. Do you think initiatives will drive more new build projects, renovation projects or both as much in the following building segments? (Single-family housing (detached/ row houses etc.); Multi-family housing (apartments/ flats etc.); Non-residential buildings/ commercial buildings [such as (offices/ industrial/ warehouses/ schools etc.)])

- New build
- Renovation
- Both as much
- Don't know/ no opinion

8. On which type of buildings do you these initiatives have the highest impact?
9. On which part of buildings do you think these initiatives have the highest impact?
10. To what extent do you think the European Green Deal will influence your design of buildings?

- Very strongly
- Strongly
- Slightly
- Not at all
- Other
- Don't know/ no opinion

11. How will it influence your specification?
12. How important is information on the following aspects when selecting materials and solutions for your design? (Usage of alternative energy sources during production; Low gas emission during production; Availability of circular solutions; Low CO2 footprint; Biobased materials; Locally sources materials [minimising transportation distances])
13. What kind of documentation or certification influences your selection of construction products in a specification?
14. What are for you the most important sources to inform yourself on a topic such as the EU Green Deal?
15. Where do you in the end find the information via search engines?
16. What do you expect from manufacturers of building materials when it comes to the goal of becoming a climate neutral industry?
17. To what extent will green building certifications as Breeam, Well and Leed support help for reaching the Green Deal ambitions?

- Very strongly
- Strongly
- Slightly
- Not at all
- Other
- Don't know/ no opinion

About USP

USP Marketing Consultancy

Head office — **Rotterdam**

Subsidiaries — **Düsseldorf**, **Zagreb**

Total
70

Research Analysts
Project managers
Consultants

Market specialist
installation, construction, home improvement and real estate

Dedicated and multi-client research

Active in the market for 28 years

250+ dedicated market research projects annually

Revenue distribution

80%
turnover coming from **international projects**

85%
turnover coming from **dedicated market research**, 15% from multi client

70%
turnover coming from **B2B**, 30% B2C

Research in
32
countries in 2020

68
focus groups

1,278
in-depth interviews

62,758
B2B CATI interviews

52,850
B2C online interviews

USPs of USP

Market specialist for the **construction, DIY** and **installation** market for over 25 years

Strong **network of partners** covering all major countries in the world

Ability to conduct **research in multiple countries** at the same time

Multi client reports covering installers, contractors, painters, consumers and architects

Dedicated market research both **B2B** and **B2C**

Ability to **target all** relevant **stakeholders** in the construction and DIY markets

Experienced in **qualitative** and **quantitative** market research

Dedication, honesty and **love** for the industry

Deep **knowledge** of the **industry**

Fact based consultancy

What we do

Examples

Segmentation

Customer journey

Branding

Concept/ product research

Customer satisfaction

Trends

Distribution research

Market exploration

Pricing

Market size

Dedicated market research

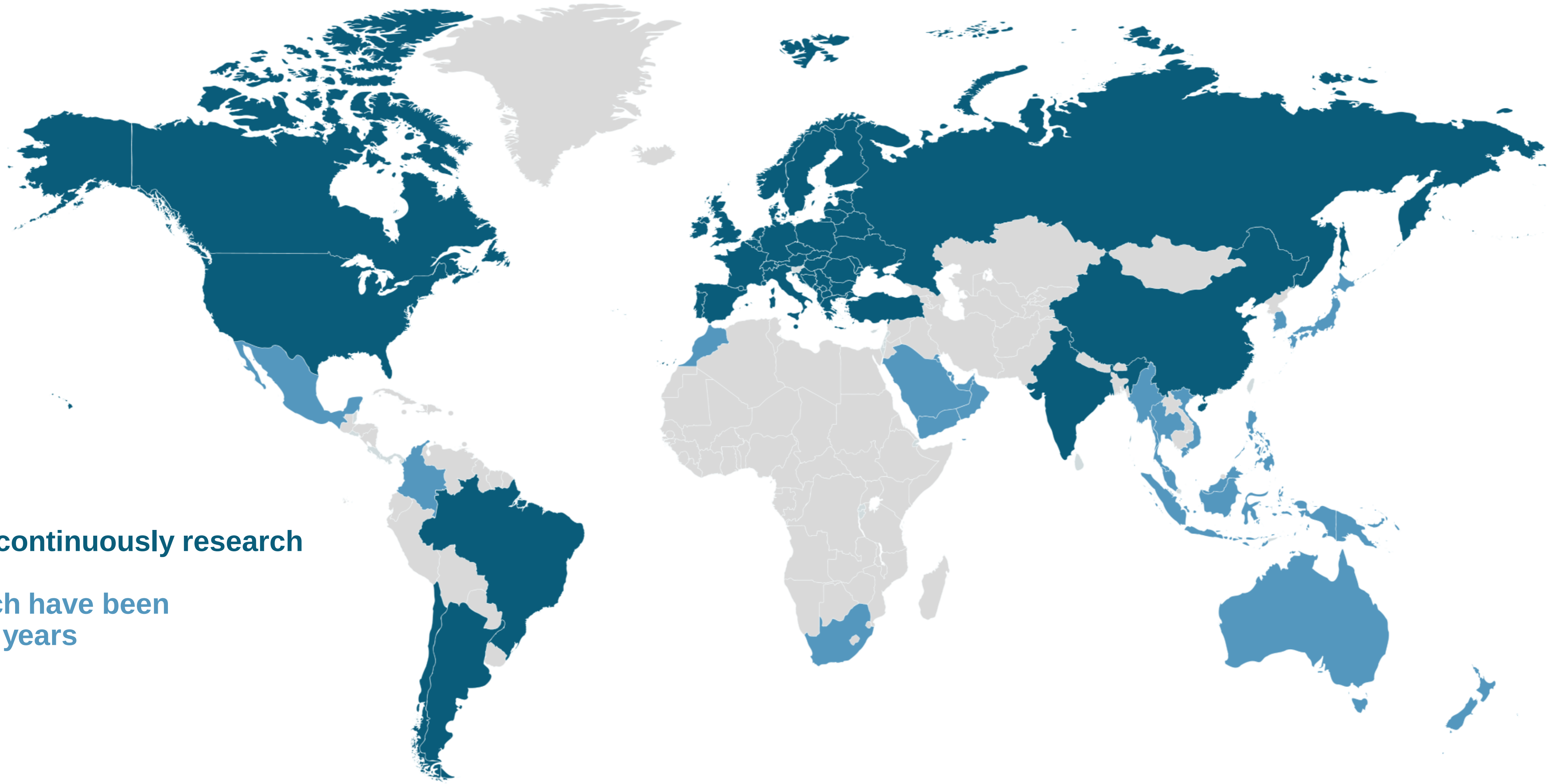
- Tailor made
- Driven by your information needs
- Advice & consultancy based on facts and over 25 years of experience in the industry
- Worldwide coverage
- B2B, B2C, qualitative and quantitative research or a combination of both
- Within our market specialism, all types of researches can be conducted
- Targeting the right audience, with the right questions at the right time.

Our multi-client research monitors

USP

	European **Architectural** Barometer	European **Contractor** Monitor	European **Mechanical Installation** Monitor	European **Electrical Installation** Monitor	European **Painter Insight** Monitor	European **Home Improvement** Monitor
Target group	Architects	Building contractors	HVAC installers	Electrical installers	Professional painters	Consumers
Methodology						
Annual sample size	3,400 interviews	2,050 interviews	2,600 interviews	3,000 interviews	2,300 interviews	26,400 interviews
Country scope	• Germany • United Kingdom • France • Netherlands • Belgium • Poland • Spain • Italy	• Germany • United Kingdom • France • Netherlands • Belgium • Poland • Spain • Italy	• Germany • United Kingdom • France • Netherlands • Belgium • Poland	• Germany • United Kingdom • France • Netherlands • Belgium • Poland • Spain	• Germany • United Kingdom • France • Netherlands • Belgium • Poland • Spain • Italy • Denmark • Sweden	• Germany • United Kingdom • France • Netherlands • Belgium • Poland • Spain • Italy • Denmark • Sweden • Austria
Way of reporting	Quarterly	Bi-annually	Quarterly	Quarterly	Annually	Quarterly
2021 Theme topics	• Q1: Media orientation • Q2: BIM • Q3: Prefab • Q4: Green deal (impact of EU stimuli)	• H1: Purchase channels • H2: Media orientation	• Q1: Training needs pre and post corona • Q2: Services in the installation market • Q3: Purchase channels • Q4: Challenges towards a sustainable future	• Q1: Media orientation • Q2: Training needs pre post corona • Q3: BIM • Q4: Purchase channels	• Trend tracking • Sustainability • Labour shortage • Online buying • Future expectations • Innovation needs	• Q1: Sustainability – Needs & requirements • Q2: Purchase Channels - online orientation • Q3: Brand health • Q4: DIY vs DIFM - Home improvement plans and expectations for next year

We are active globally



Countries which we continuously research

Other countries which have been researched in past 2 years

Principals of USP

Construction

ASSA ABLOY
AkzoNobel
Wienerberger
HILTI
ArcelorMittal
DAW
3M
SAINT-GOBAIN
etex inspiring ways of living
FESTOOL
Villeroy & Boch 1748
DSM
icopal
Interface
WD-40
Dulux
KNAUF
Owens Corning
UNILIN FOR SMART LIVING
PPG
ROCKWOOL
sto Building with conscience.
VELUX
stiho
Tarkett
TRESPA
tesa
DÖRKEN

DIY

OBI
adeo
ALLEGION
maxeda DIY Group
V33
Ideal STANDARD
BRIGGS & STRATTON
KOHLER
fischer innovative solutions
KÄRCHER
WAGNER
GROHE
Intergamma
Yale

Installation

ABB
BOSCH
GRUNDFOS
hager
Schneider Electric
LG Life's Good
MITSUBISHI ELECTRIC
Panasonic
VIESSMANN
Vaillant
signify
ShurTech Brands
sonepar
TTI

USP Marketing Consultancy