

Spain Autumn Market View

The shadow of stagflation

Introduction

The outlook for construction has changed dramatically in 2022 as markets for materials continue to be severely disrupted by high energy prices and disrupted supply chains. There are early warnings that the ongoing energy crisis could curtail global growth and a number of sources are predicting impending recessions in many countries.



Spain's rebound from Covid-19 has been impacted in 2022, as shockwaves from the Ukraine War and the wider cost of living crisis combined to threaten the return of stagflation. The potential implications for construction clients are significant, as construction is a growth-driven sector, that is sensitive to inflation in domestic manufacturing. How clients and contractors should work together in a cooling market is the key theme of this Market View.

Whilst the industry currently looks in a healthy state, the foundations for future prosperity are still uncertain. In the short-term, we are seeing that some stabilisation in material prices is enabling the agreement of fixed price contracts and the level of workload is stable if not increasing. However, we are also seeing several projects delayed due to the increased costs, extended negotiations and long lead ins for key materials. In the future it is possible that order books could shrink because costs are too high, and clients and their contractors cannot agree terms. Input costs are unlikely to fall significantly in the immediate future, so future workload levels depend increasingly on clients and their project teams finding commercial solutions, with contractors less willing to sign fixed price contracts, to make their projects deliverable.

The construction sector is not known for being nimble, but sometimes it can turn on a sixpence – quite often in response to bad news. The level of disruption seen in 2022 has been significant, and there are many threats to the forward pipeline. Collaboration in the shadow of stagflation will be the key to delivering essential projects in difficult market conditions.

Economic growth

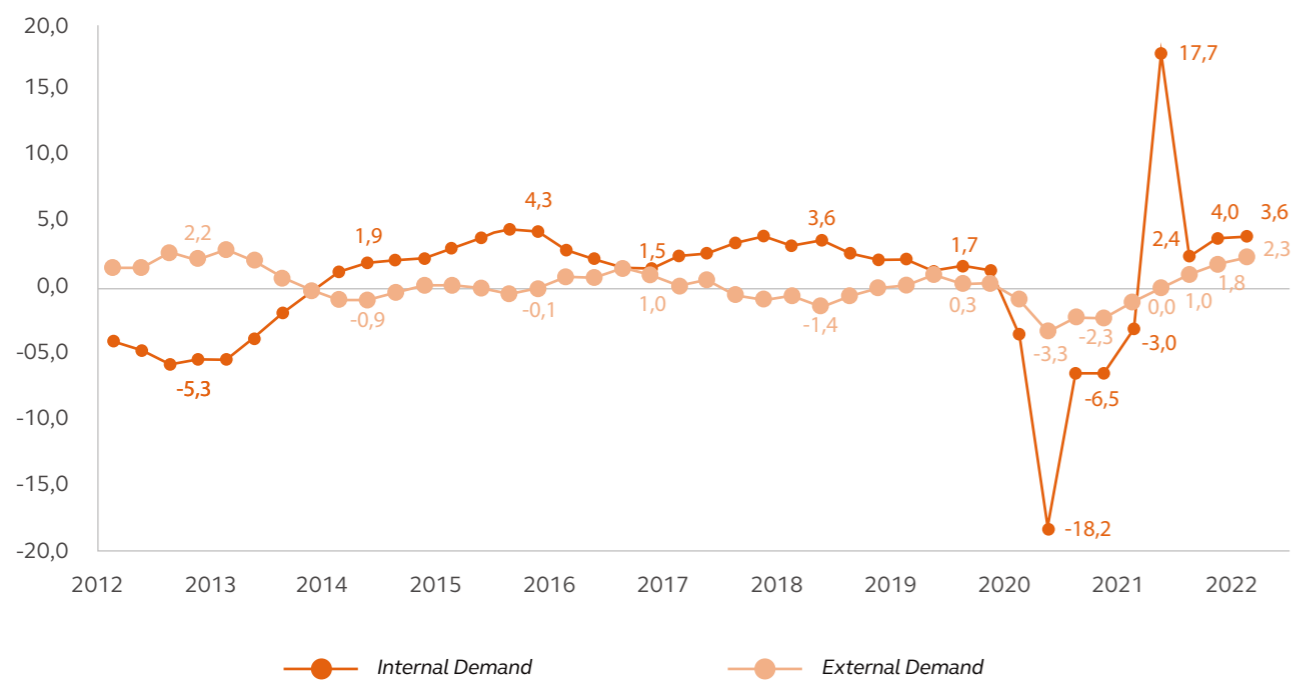
The ongoing energy crisis has overturned many of the assumptions in our last Forecast. The combination of steep price hikes and disrupted supply chains has resulted in delayed and cancelled projects, even though demand remains strong. In our update, we look beyond the current crisis to the state of markets in 2023 and beyond.

Currently available data shows that, with plunging consumer confidence and rapidly rising prices, the Spanish economy is starting to show signs of slower growth. The contribution of a booming service sector following the lifting of most COVID restrictions has been a large contributor to this (as seen in Fig. 2). As shown in Fig. 1 year on year Spanish external demand GDP grew by a total of 2.6% in 2Q2022 compared with 2.3% in 1Q2022 and for internal demand shows 4% for 2Q2022 vs 3.6% for 1Q2022, showing only a minor impact in the latter stages of the Ukraine war.

Figure 1. – Internal and External contributions to GDP – Year on Year growth

Source – Insituto Nacional de Estadística

Internal and External contributions to GDP – Year on Year growth



As seen by Fig. 2 the service industry has a large impact in the growth of the Spanish GDP. We can see that the construction industry has been a significant part of the change and that, as shown in Fig. 3, (see next page for graph), in the latter half of 2021 construction was starting to show a trend of increasing growth until 1Q2022 when the Ukraine War has stunted that trend but 2Q2022 is now showing signs of increasing growth once again.

Figure 2. – Year on Year Change in GDP by sector

Source – Insituto Nacional de Estadística

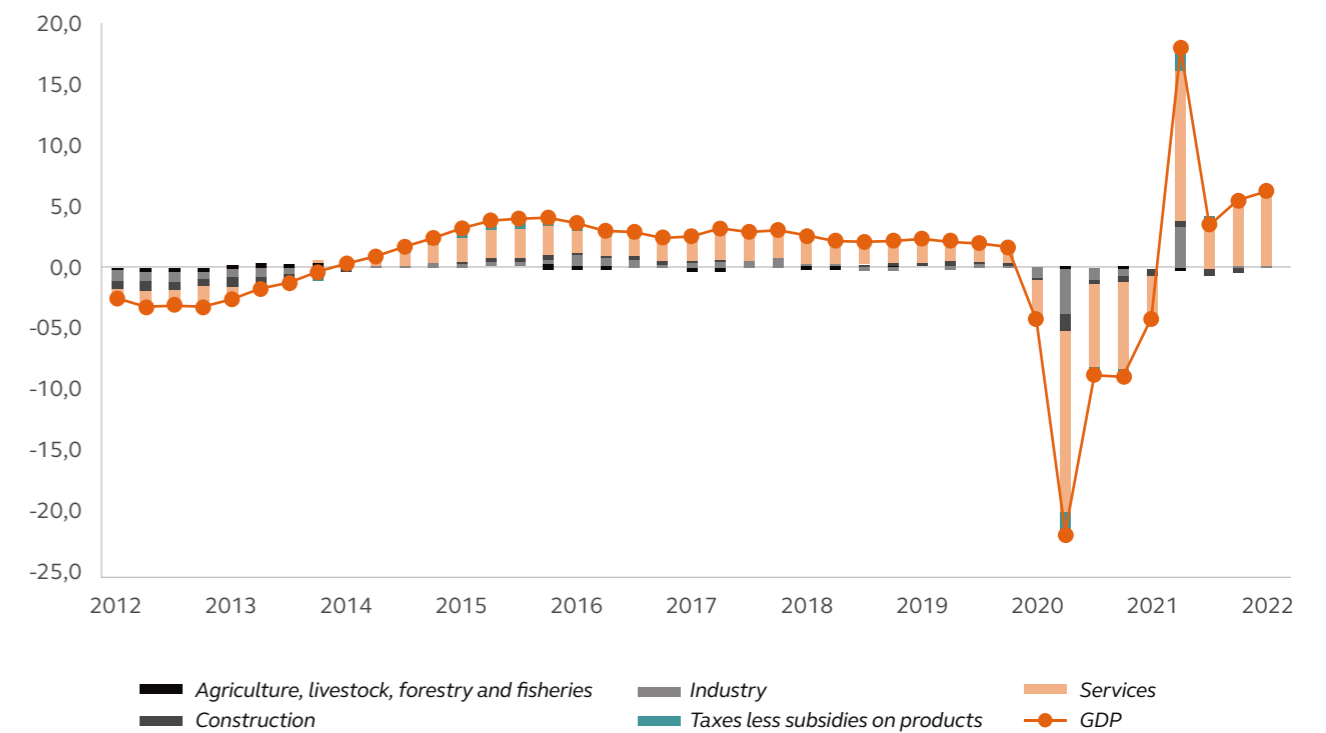


Figure 3. – Quarter by quarter change in GDP in construction

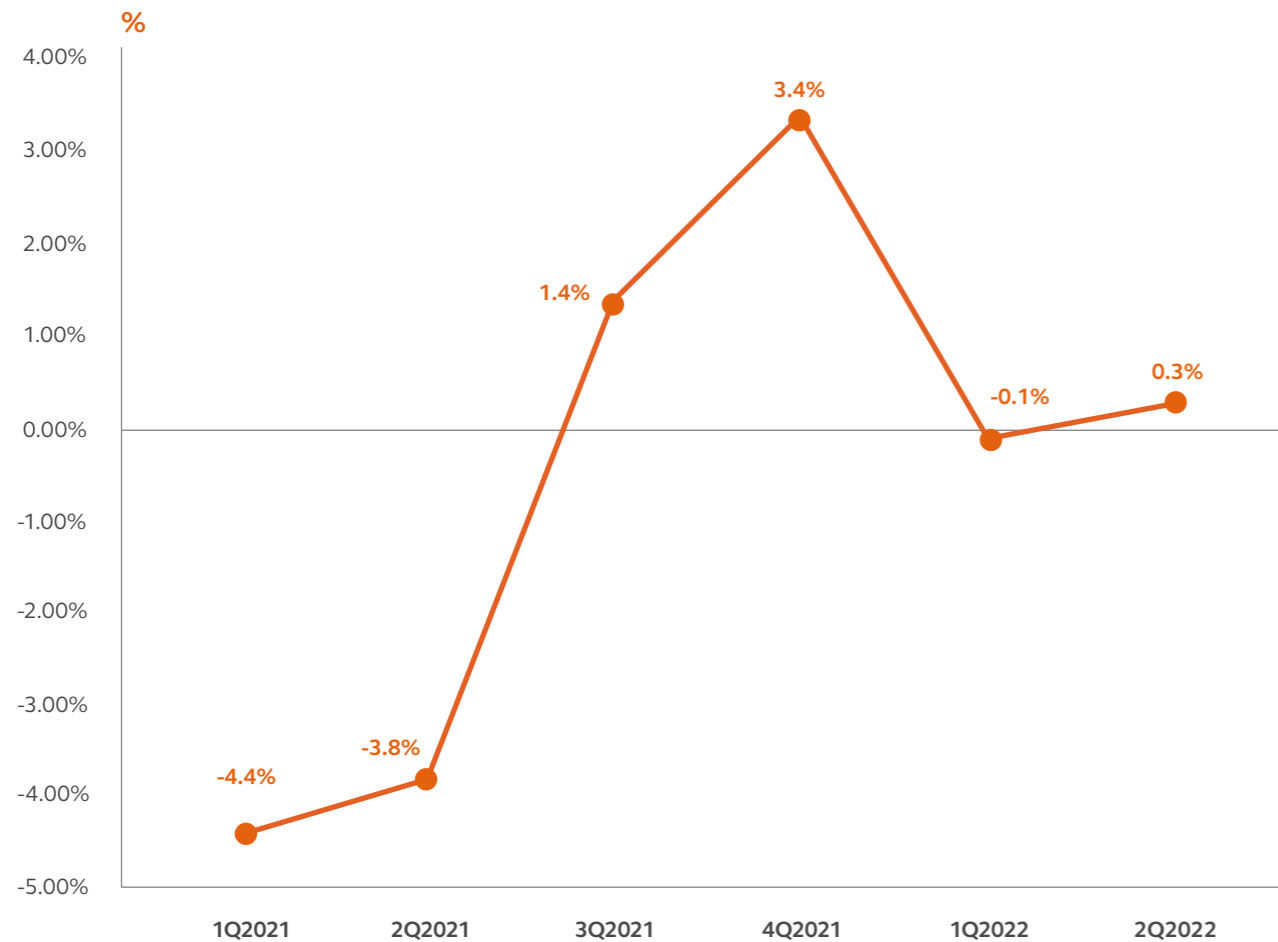


Figure 4. – Forecast of GDP (PIB), CPI (IAPC), CPI without energy and food and unemployment statistics (Tasa de paro)

Source – Banco de España

	GDP				CPI				CPI without energy and food				Unemployment Status			
	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024
June 2022	5.1	4.1	2.8	2.6	3.0	7.2	2.6	1.8	0.6	3.2	2.2	2.0	14.8	13.0	12.8	12.7
April 2022	5.1	4.5	2.9	2.5	3.0	7.5	2.0	1.6	0.6	2.8	1.8	1.7	14.8	13.5	13.2	12.8

We can see that their forecast of PIB (Gross Domestic Product) has been reduced by 0.1% for 2023 but increased by 0.1% in 2024. The forecast of general inflation (IAPC – Consumer Price Index) has been increased showing 2.6% in 2023 and 1.8% in 2024 showing the official sources believe that inflation will soon stabilise pending any other significant geopolitical changes. Unemployment (Tasa de paro) is forecast to continue to reduce but at an accelerated pace compared with the last forecast.

Inflation

The Consumer Price Index year on year rate was recorded at 10.8% by the Instituto Nacional de España in July 2022, when June was the first time since 1985 that levels have exceeded 10%. However, the government has been putting plans in place to subsidise fuel costs to control this spike.

Experts are largely placing this larger than expected spike down to the contribution of higher than expected income and demand from tourism (as shown by the service sector growth in Fig. 2) which has further increased prices.

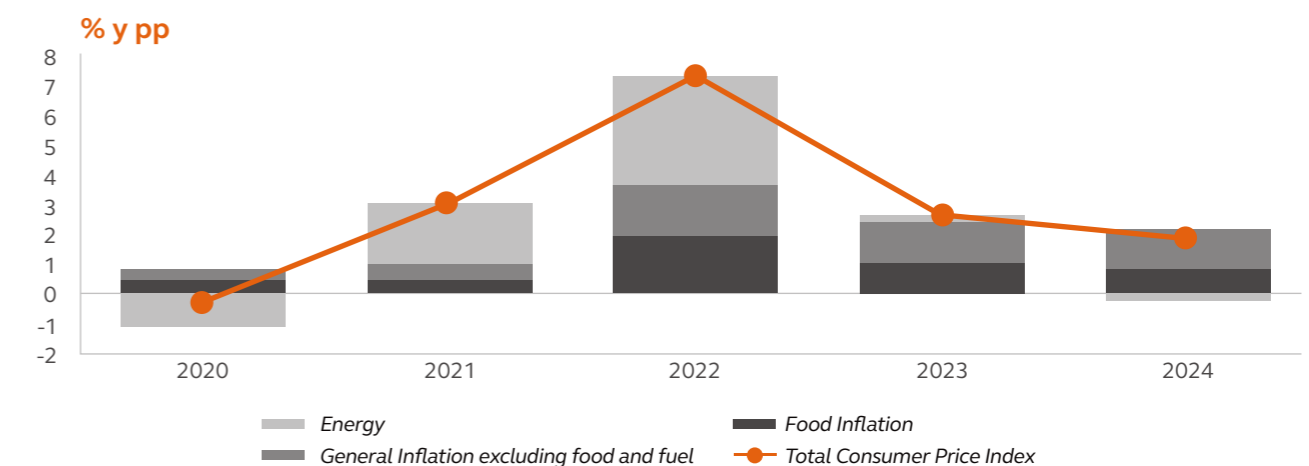
The government is forecasting an average year on year rate of 6% general inflation across 2022 but some experts are now suggesting that this should be closer to 8-9%.

Eurozone Inflation reached a year-on-year rate increase of 8.9% in July 2022. In June the rate had been 8.4%, which shows costs are currently continuing to escalate. The European Central Bank is reviewing interest rates increases to reduce this inflation which could reduce the economic recovery and create a contraction in European GDP overall.

Looking outside of Spain, indicators similarly point in different directions. The IMF downgraded its short-term and long-term growth forecasts in response to the Ukraine crisis and spiralling inflation. Global growth is forecast at 3.6% for 2022 and 2023, down by 1% over the period. However, commodity prices for metals that are sensitive to levels of demand including iron ore and copper remain at or near record levels, spreading the stagflation pressure.

Figure 5. – Forecast split of Year on Year Inflation (not accumulated)

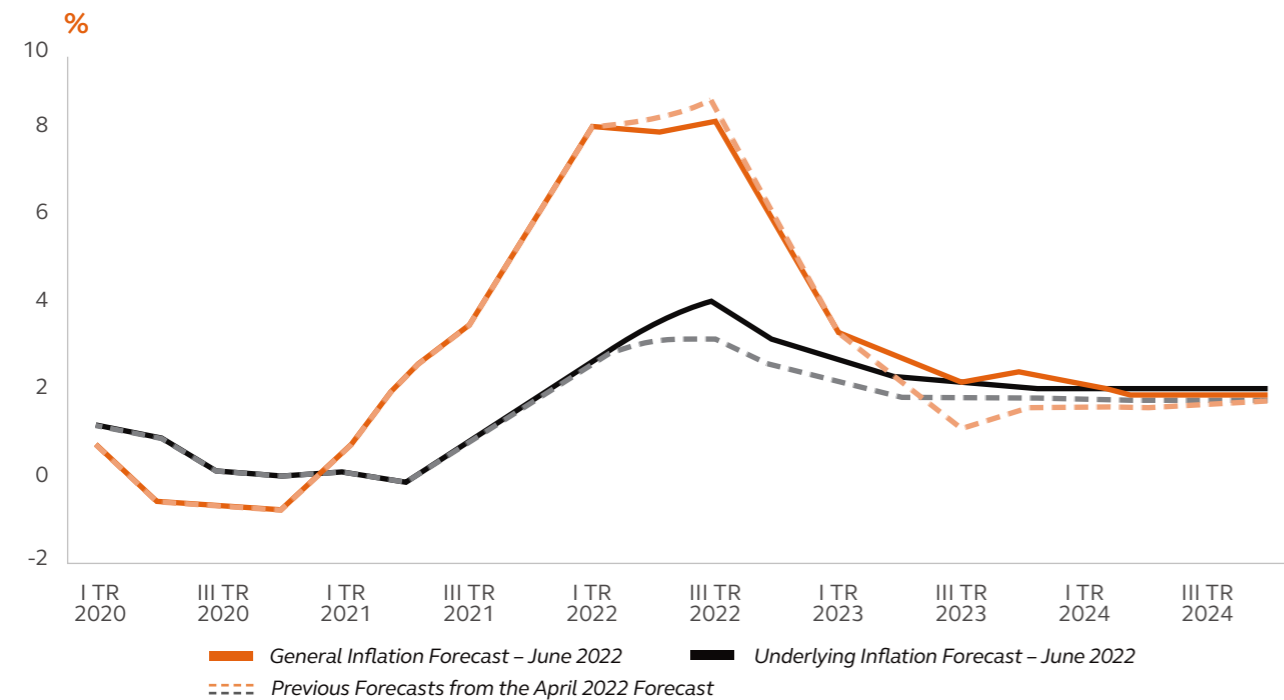
Source – Banco de España



In the officially published economic reports from the Banco de España in collaboration with the Instituto Nacional de Estadística we can see experts are expecting inflation rates to reduce largely due to a more stabilised energy market. These reductions that are forecasted in 2023 and 2024 are shown in Fig.5 and Fig.6 and are expected to bring the industry back to more typically experienced inflationary increases.

Figure 6. – Forecast of General Inflation

Source – Banco de España



When focusing on construction we can see that the industry has been one of the hardest hit sectors due to the manufacturing reliance on energy. Year on year increases in the general construction index show at 14.57% increase between June 2021 and June 2022. Fig. 7 shows this increase across the General, Building and Civil Engineering indices with the data shown in Fig. 8. Most notably however, the data for June has shown that prices have come down for the first time in some time which is the first sign of post COVID and Ukraine war price stabilisation.

Figure 7. – Construction Cost Indices (Jan 2015 Base = 100)

Source – Ministerio de Transportes, Movilidad y Agenda Urbana

Construction Indices

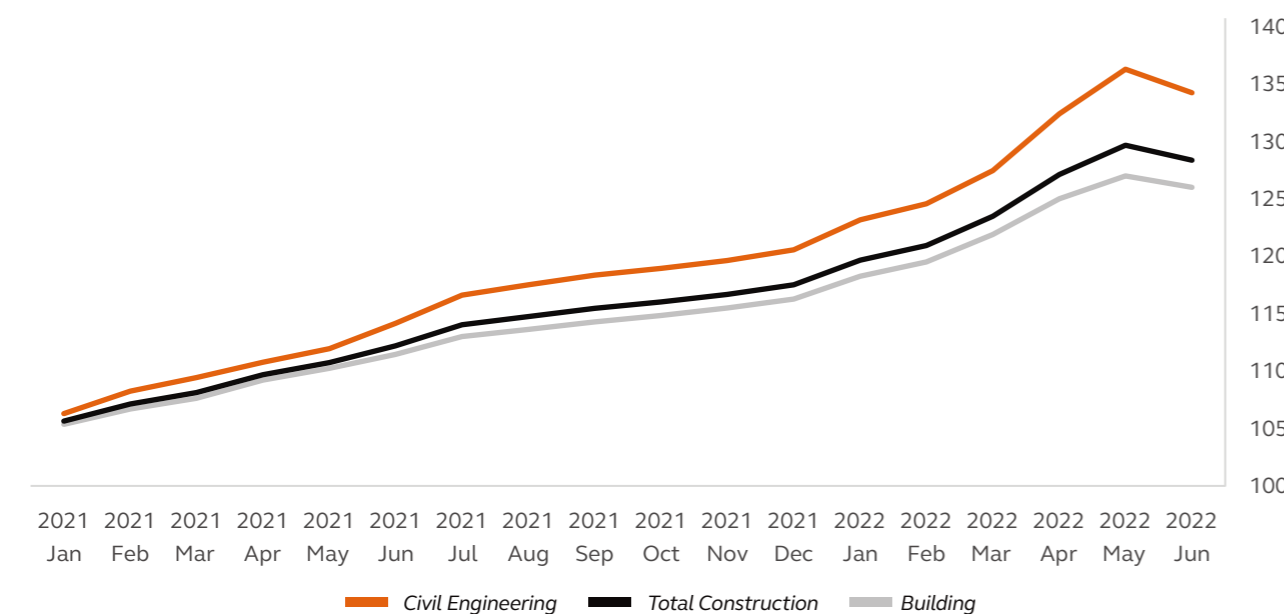


Figure 8. – Construction Cost Indices

Source – Ministerio de Transportes, Movilidad y Agenda Urbana

	Year on Year Change Jun 2021 to Jun 2022	Latest Quarter 2Q 2022 Mar 2022 to Jun 2022
	Year on Year	Quarterly Change
General Construction Index	14.57 %	4.03%
Building Construction Index	13.19%	3.44%
Civil Engineering Construction Index	17.92%	5.42%

Workload – could high prices be the cure to high prices?

There is little doubt that the disruption caused by the Ukraine War has created ripples in the Spanish construction market. We are seeing several projects being pushed back due to higher prices, extended negotiations, and long lead ins for key materials. This means that the market is likely to become more competitive, but it does not mean that prices will fall, due to continuing high energy prices. However, we do anticipate that there will be some scope for more competitive pricing of on-costs and risk allowances, particularly if clients are more flexible in their approach to risk transfer through well-established means such as price fluctuations and early materials procurement. We are already starting to see more openness from our clients to including these provisions.

Labour

Employment has been steadily increasing since the COVID pandemic and especially with full time contracts and the number of people in work has increase by 383,300 or 1.91% in 2Q2022. The total number of people out of work and registered with job seekers support has reduced from 3,174,800 to 2,919,400 in 2Q2022.



In this quarter unemployment has increased in construction by 400 people. Over the total year unemployment in construction has reduced by 2,800 people.

Although material prices have been moving the markets in 1st and 2nd quarter 2022, labour sourcing will remain construction's long-term headache as shown by the inflationary increases post COVID in Figure 11. Spain has traditionally had high levels of unemployment at a structural level and it is unlikely that a number of this pool will be available to cover the requirements in construction. Contractors in Spain rely on freelance labour and crews, and we are seeing a slight shortage in these resources which is causing cost volatility due to their preference for higher earnings in place of long-term security.

There are few signs that the industry's labour crisis is being addressed and there are few short-term solutions to the workforce challenge. However, an increase of 21,900 employed in the period as well as an increase in construction unemployed of 400 people also shows that there are people entering the construction industry.

Figure 9.
Source – Instituto Nacional de Estadística

	Total (000s)	Variation in 2Q2022 (000s)	As a %	Variation in the year 2Q2021 to 2Q2022 (000s)	As a %
Construction Employed	1,338.2	21.9	1.67%	13.4	1.01%
Construction Unemployed	116.2	0.4	0.37%	(2.8)	(2.36%)

Figure 10. – 000s of people in employment
Source – Insituto Nacional de Estadística

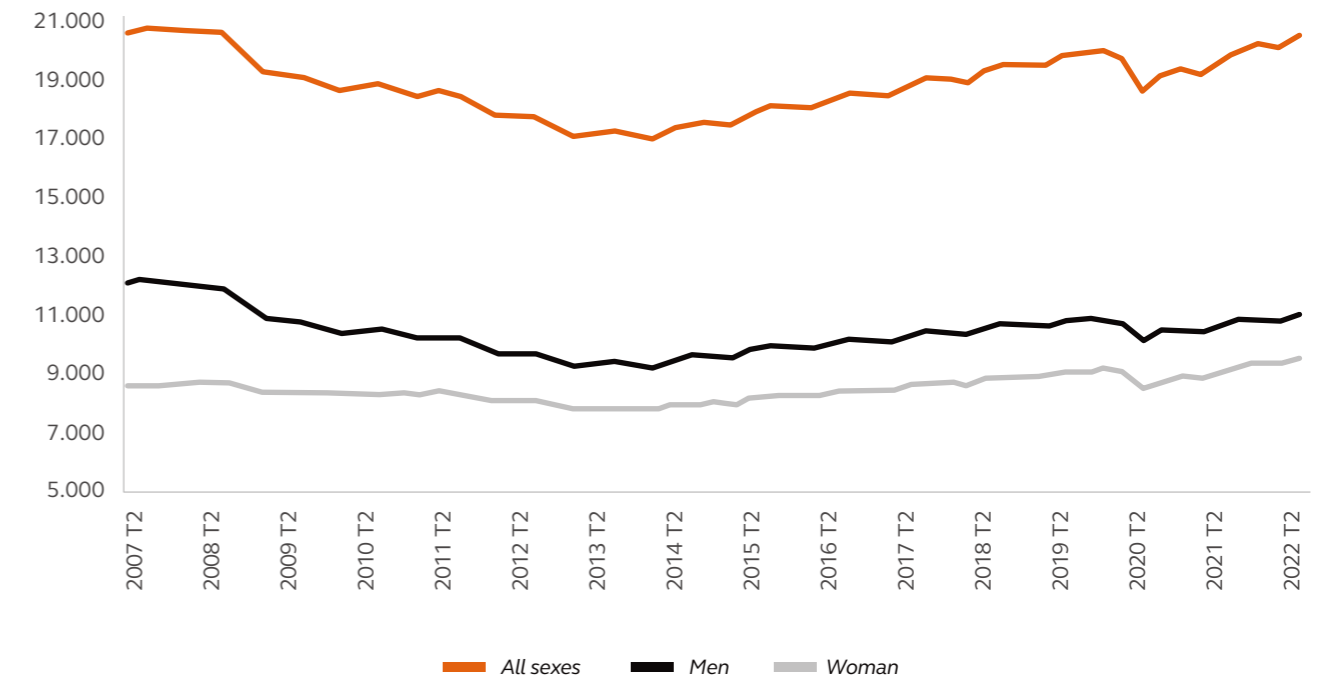
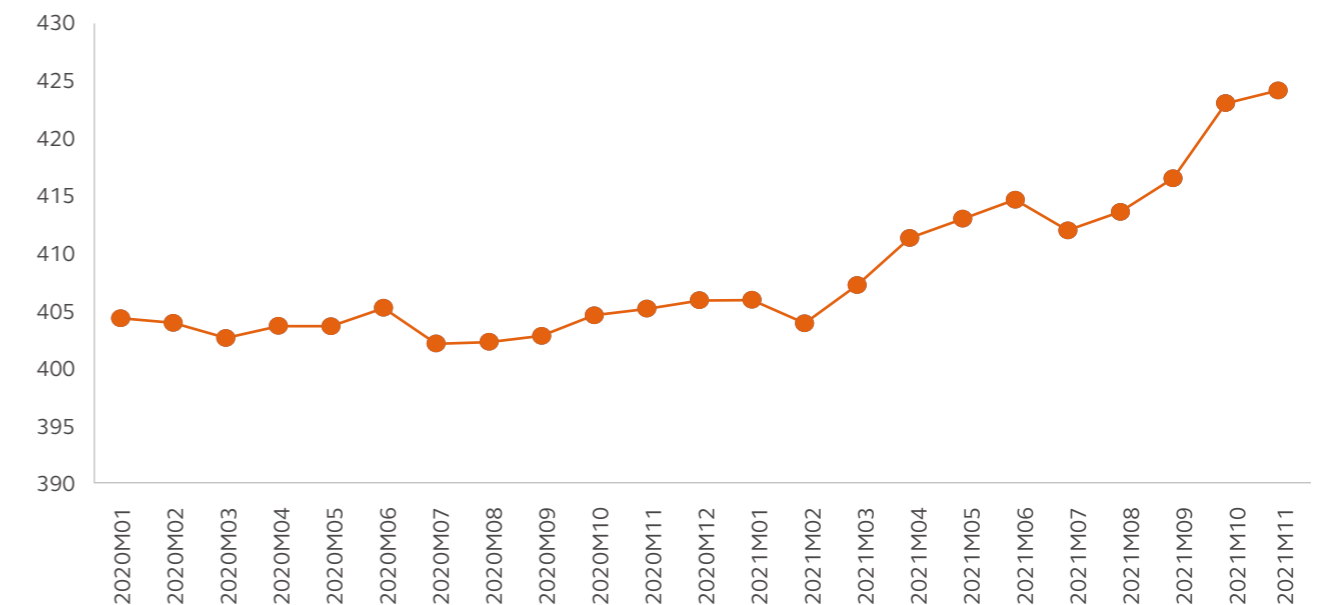


Figure 11. – Index – National Construction Labour Cost (July 1980 base of 100)
Source – Insituto Nacional de Estadística



Materials

Material price inflation has been a huge challenge for all industry over the past 18 months. Across all industries, input costs have increased on average by nearly 30%. The Ukraine war has come as a significant additional shock, as the prices of many material categories.

Data has yet to be published for specific material indices beyond June 2022 but we can see that there have already been significant rises being experienced due to the inflation.

However, over 2Q2022 we have started to see decreases in the costs of some materials.

Figure 12. - Indices for key materials showing key changes in 1Q2022 and 2Q2022. All materials baselined to an index of 100 in January to show key changes relatively

Source – Ministerio de Transportes, Movilidad y Agenda Urbana

Materials Cost Movements 1Q-2Q2022

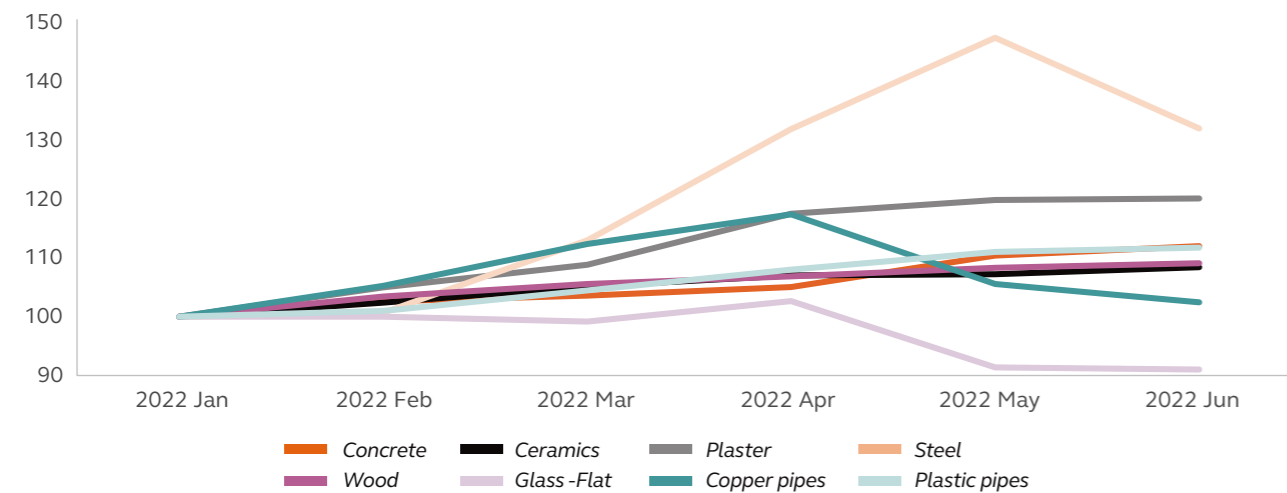
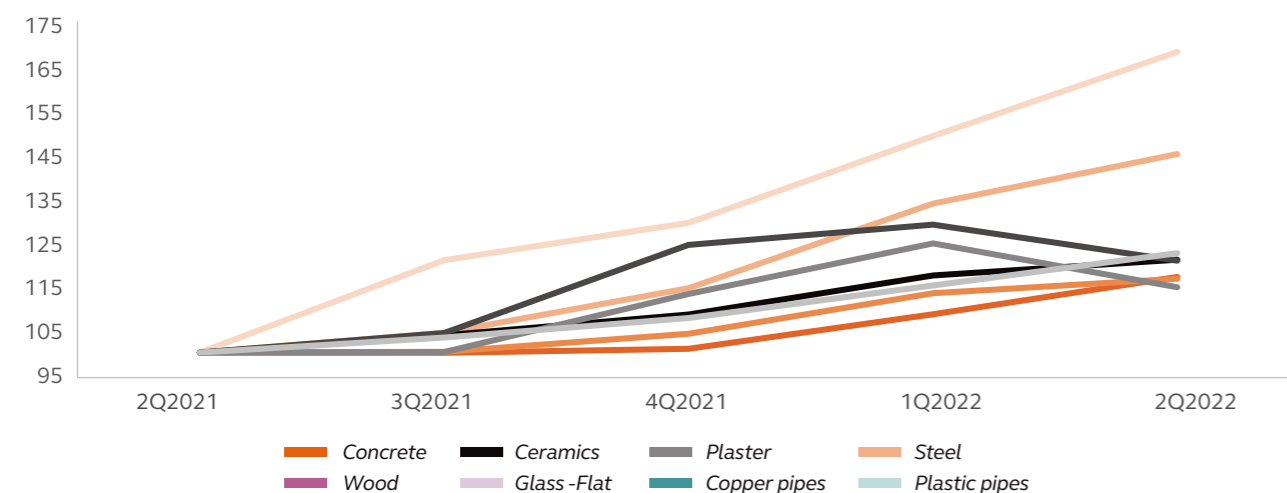


Figure 13. - Indices for key materials showing key changes between 2Q2021 and 2Q2022. All materials baselined to an index of 100 in 2Q2021 to show key changes relatively

Source – Gobierno de España Ministerio de Transportes, Movilidad y Agenda Urbana

Quarterly Increases in Material 2Q2021 to 2Q2022



Material	Year on Year - June 2021 to June 2022 % Movement	2Q 2022 % Movement
Glass - Hollow	23.5%	10.3%
Steel	45.1%	9.5%
Cement	16.6%	8.8%
Lime	43.4%	8.2%
Plaster	43.4%	8.2%
Concrete	16.0%	7.3%
Prefabricated	16.8%	6.6%
Fibre cement pipes	16.8%	6.6%
Radiators and Boilers	24.6%	6.6%
Paints, Varnishes and Putties	17.8%	5.9%
Carpentry - Metal	17.5%	5.7%
Synthetics	19.3%	5.5%
Plastic pipes	19.3%	5.5%
Aggregates	11.4%	4.8%
Asphalts	15.0%	4.7%
Fibre Glass	15.0%	4.7%
Mortar	14.6%	4.4%
Valves and Taps	9.1%	3.9%
Rubber	9.6%	3.8%
Plaster Derivatives	16.9%	3.2%
Explosives	13.2%	3.1%
Ceramics	16.8%	2.9%
Ceramic tiles	16.8%	2.9%
Wood	19.1%	2.8%
Carpentry Wood	19.1%	2.8%
Kitchen and Bathroom Furniture	8.6%	2.3%
Lighting Appliances	4.3%	2.3%
Electric Switchgear	5.2%	2.1%
Alarms and Detectors	32.6%	1.8%
Ornamental Stone	4.4%	1.6%
Non Electrical Appliances	6.5%	1.5%
Lifts	6.7%	1.4%
Electrical Cables	7.4%	1.4%
Fibre Optic	7.4%	1.4%
Fire Extinguishers Hoses	7.4%	1.0%
Electronics	2.1%	0.8%
Air Conditioning and Ventilation	5.3%	0.6%
Electric Appliances	7.9%	0.6%
Antennas, Public Address System	1.4%	0.0%
Ceramic Toilets	0.0%	0.0%
Hardware	14.2%	-0.5%
Glass - Flat	17.1%	-5.4%
Copper pipes	9.8%	-5.6%

Figure 14. - % Changes in materials in the last year June 2021 to June 2022 and in 2Q2022

Source – Gobierno de España Ministerio de Transportes, Movilidad y Agenda Urbana



Aluminium and steel

In line with the data, recently we have seen on some projects that aluminium and steel prices have fallen, however April and June 2022 are the first months to show this drop in materials and we will need to continue to monitor this trend.

At the end of 2021, according to data from the Ministry of Industry, Commerce and Tourism, Spain had imported 28.5 tons of aluminum from Russia, for 57.4 million euros.

Clays and neon

85% of imported clays come from Ukraine, and clay imports from Ukraine in January 2022 compared to the same month in 2021 have increased by 74% in the main port of the sector (Castellón).

About 90% of the neon, which is used for chip lithography, comes from Russia, and Ukraine is also one the biggest country of neon's production.

MEP installations

For buildings in particular, MEP installations and fit out elements are exposed to this supply chain issue. The limited availability and long lead-in times for key elements such as boilers, white goods, lighting system, fire detection, alarms, smart sensors and controls, are also at risk potentially delaying projects. Energy costs

With energy prices soaring, there is no immediate prospect of relief from high construction inflation. However, as the market turns downward, competitive pressure is likely to take the edge off future price rises

Energy costs

The impact of the war has added 3 to 5% to the cost of typical projects. High energy costs disproportionately affect the construction materials supply chain, so prices are expected to remain high until the Spanish and European energy markets are retooled to be less dependent on Russian gas and oil.

The rise in the price of energy will especially affect the production of cement and ceramics.

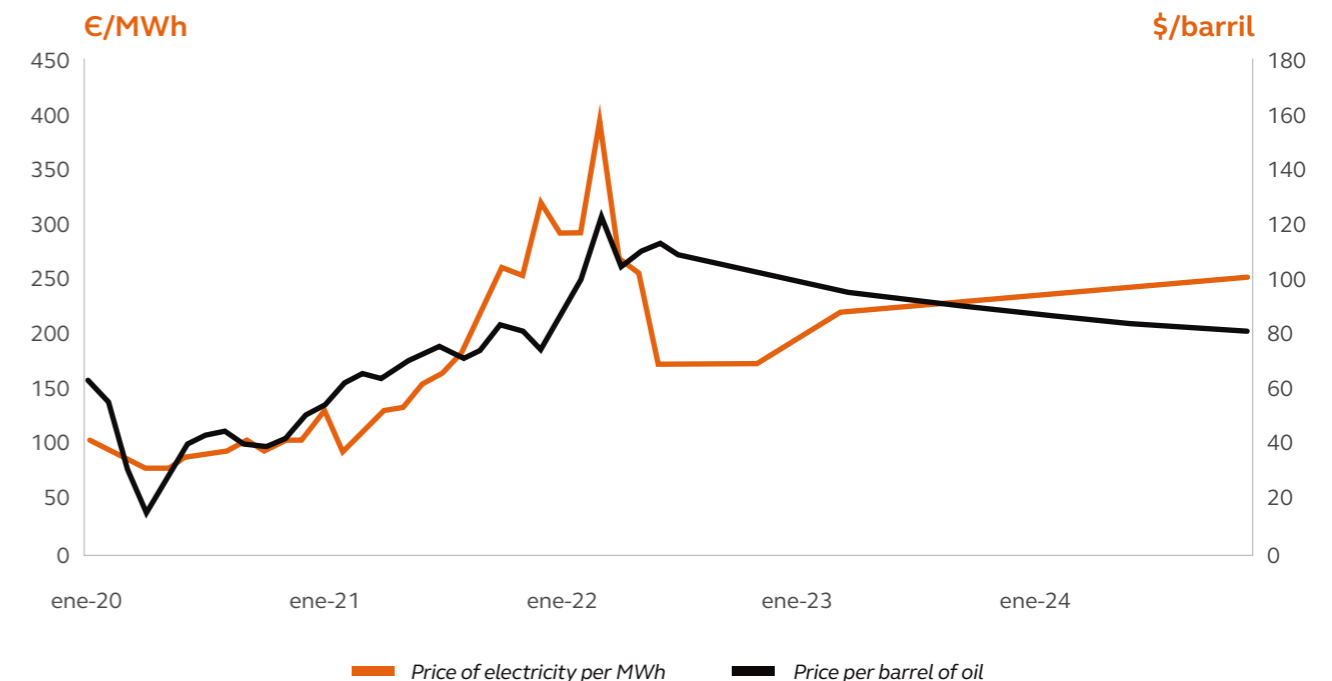
We have also seen that Spain has a supply risk with Algeria, who is Spain's largest supplier of gas (178 terawatt hours vs 2nd placed USA at 60 terawatt hours).

This is due to tensions between Algeria and Morocco, previously gas was pumped from Algeria to Spain via Morocco but in October 2021 Algeria decided to pump its gas directly to Spain leaving Morocco without the gas it needed.

Spain then supplied this Algerian gas to Morocco which has sparked threats of Algeria cutting off Spanish supplies if they are routing supplies to a third country.

Figure 15. – Changes in electricity and oil prices

Source – Banco de España



Further to the individual material inflationary data we see when reviewing energy costs that there has been a significant spike in energy costs following the war but the Banco de España is forecasting that this will start to come down in the 2nd half of the year.

In 2021 Spain bought 4.5% of its oil and 8.9% of its gas from Russia but despite these seemingly small numbers, the overall disruption to the global energy market has increased costs across the board. Further to the figures for materials inflation we have seen further increases that have coincided with the risk in energy because of the materials manufacturing reliance on energy and increases in transport costs.

Pre-pandemic, energy costs typically accounted for 20-30% of the total manufacturing costs of products including cement, bricks and glass. As new deals are struck, further price rises are likely to be passed on. Europe has few short-term options to increase the supply of gas and petroleum products from sources other than Russia. This means that construction material prices are likely to remain at or near record levels for some time to come.

Volatile energy and raw material markets, compounded by the Ukraine crisis, continue to add to levels of risk to construction contracts. High prices and difficulties in reaching terms that are acceptable to clients, contractors and funders are delaying projects. In time this will result in lower levels of demand that, all things being equal will create a more competitive market. How contractors will respond to a slowing market is the critical aspect of this forecast.

Spotlight on: Navigating turbulent markets

The Arcadis Autumn Market View focuses on the consequences of the extreme market gyrations that have followed the Ukraine invasion.

Although our focus is mostly on the direct and hopefully short-term disruptions to the materials supply chain, the impacts of recent events are likely to be felt for much longer. Whilst prices remain at current high levels, and whilst contractors struggle to obtain price and delivery guarantees from their supply chain, contracted projects will be challenging to deliver.

Clients and their project teams will face similar barriers to reaching commercial close in connection with new schemes. Stagflation is not only likely to be felt across the Spanish economy, but also in construction where order books are likely to contract as schemes are delayed pending improvements in market conditions.

Whilst clients and their teams want to be able to take forward new projects, they also need to be mindful of the unique circumstances that currently apply to construction markets. As part of the Arcadis International Construction Cost Report, **we developed a five-step** management plan to encourage clients to think about managing these unfamiliar new circumstances in a consistent way. In doing so, the five-point plan builds on existing best practice and gives teams the discretion to choose the measures that work for them rather than introducing completely new ways of working.

This 5-point plan does not offer a magic bullet to solve the problems faced by clients and their teams. The plan needs to be adapted to project circumstance and opportunities. Nevertheless, great quality information will support better decisions, doing more with less will save money, and leveraging the problem-solving talent of teams will prepare projects for the challenges ahead, focusing effort on problems over which the project team has some control. These are all well-established approaches that can be glued together by great relationships and great leadership.

Some consequences of the Ukraine war will persist. It will be a long time before European energy markets, steel manufacturing capacity or other critical supply chains return to their pre-war state. This means that the current 'unprecedented' unstable market conditions will become very familiar indeed. To make projects work under these new circumstances, we need to review how we collaborate and share risk from a new perspective. The five-point plan is the first step towards managing that volatility in a positive way.

The key parts of the plan are:

→ Step 1 - Supply chain resilience.

In addition to urgent concerns around financial health and exposure to financial risk beyond the scope of a specific contract, supply chain resilience will increasingly involve navigating the impacts of sanctions, product sourcing and supply-chain disruption. Some risks associated with price escalation are likely to be affecting suppliers across multiple projects, so due diligence during the procurement process will be even more important than usual.

→ Step 2 - Project resilience.

Project resilience is about the identification and mitigation of showstopper risks, which are multiplying as the impacts of the Ukraine crisis grow. Single points of failure are probably the greatest concern given the extent to which disruption to a complex system like a bathroom pod could trigger wider knock-on impacts. Projects can be made more resilient through the design of additional risk-sharing provisions including price adjustment clauses.

→ Step 3 - Project optimisation.

Project optimisation should use the energy generated by the crisis to focus even more on opportunities to rationalise design, minimise waste and assure design completeness and quality. These opportunities are examined in more detail in the Zoom into: Resourceful use of materials. Teams should always focus on optimisation, but the benefit of doing so in the current market is significant.

→ Step 4 - Team culture.

High performing teams can make a difference in the current crisis by collaborating to solve problems. Flexibility and willingness to navigate the project in a collaborative manner, remaining open to different approaches to adapt to the new industry challenges. Self-interest will potentially get in the way, and a project culture needs to be built to counter this. Getting the basics right around people care and commercial arrangements is the first step in setting the conditions for success, including the consideration of sub-contractor and supplier management as well as the client and tier 1.

→ Step 5 - Project leadership.

Leadership matters. The Ukraine war provides ample demonstration of not only how important leadership is but also how important it is to focus on the right issues. Looking forward to 2023, the key challenge will be to start projects onsite in anticipation of future demand. Leaders will need to take risk and share risk and will need to delegate authority so that teams can respond rapidly to issues as they emerge. Leaders may have less cover from their contracts than usual and will need to adapt to further, unpredictable events.

Zoom into: Resourceful use of materials

High energy costs in Europe are helping to focus attention on the need to reduce use of carbon intensive materials, encouraging construction clients and their teams to use scarce resources more responsibly.

Why focus on resources?

One of the unexpected impacts of the Ukraine War has been an interruption to industrial production in Europe. This is not simply because of a lack of raw materials and components, but also because when the cost of energy is too high, it is not profitable to manufacture. This is an early illustration of potential impact of resource scarcity.

Looking further ahead, the smart use of resources must become a critical viability driver. From an economic point of view, increasing carbon and energy costs will become an even greater barrier to in the use of carbon intense materials. The global energy transition will increase demand for materials such as copper and nickel by two-times and six-times respectively. With nickel already trading at \$33,000/tonne, two times higher than seen in 2021, scarcity is becoming a real problem. Simple economics is not the only concern. Resource depletion is an equally serious issue as highlighted in the 2021 Dasgupta Review. Wider considerations of resource use, including impacts on air quality and water supply, will also weigh down on efforts to increase materials production. Clearly more efficient use of existing and new materials will be necessary to ensure that projects are affordable and have a manageable environmental footprint.

Where to begin?

The level of resource intensity and waste associated with development will be determined long time before a project hits the construction site. The earlier that resource intensity is considered, the greater will be the opportunities to mitigate impacts. In many ways, the most important issue to be considered is “to build or not to build?”, as this will have the greatest impact on resource use and waste.

In the case of new build, the degree of freedom in applying creative solutions seems to be higher than in refurbishment. Increasingly the “go to” solution across Europe is to use cross laminated timber, which is a welcome step towards the reduction of embodied carbon but could be prone to raw material scarcity and ignores the potential of other alternative solutions.

..there's so much more than timber...

Material selection is not only about the types of materials that are selected, but also how we use and reuse them. Increasingly, resource-conscious design needs to consider not only the life, but also the afterlife of the asset. So, what are the options at our disposal? Below, we provide some examples.

- **Designing out waste** – this is a first step that should be standard on all projects. Waste management processes are well developed but more can be done to minimise volumes through waste profiling and segregation, as well as standardisation of components and the use of pre-fabrication.
- **Designing out carbon intense elements** – the concept of replacing steel, concrete and even aluminium with wood is gaining more and more attention, but in many cases will be limited by the fire safety regulations. Another alternative is to increase efficiency of materials use. This can be achieved in

some circumstances by maximising the structural efficiency through techniques including biomimicry. The lightweight steel canopy structure of Stuttgart's Airport Terminal 3 for example is inspired by the fractal geometry of trees.

- **Optimisation of materials use.** Digital tools have a key role in controlling material efficiency. The time saving potential of BIM in the design phase can also support efficient component manufacturers, particularly in the pre-fabrication space. For example, Carbon Dynamic, a Scottish producer of modular off-site timber buildings achieves a 15% materials savings and improved its production times by integrating BIM into its internal systems.
- **Adopting circular economy principles.** The circular economy not only promotes the recovery and reuse of existing construction materials but can also the creation of new products from waste streams. For example, research at the University of Bath has shown that waste plastic can partially replace sand in structural concrete. Large scale examples such as the Resource Rows development in Copenhagen's Ørestad reuses masonry panels from abandoned industrial buildings as part of a housing scheme, reducing embodied carbon emissions by 70%. The development of materials passports by architect ORMS is a further step that will increase the potential for materials reuse.
- **Use of natural or bio-based materials.** There is a wider range of bio-based materials beyond the default option of timber, including hemp and straw. Whilst they may not be applicable for structural elements in high or mid-rise, they have potential applications in housing or warehousing. Hempcrete has been used in the UK by Adnams Brewery and by Marks & Spencer for their Cheshire Oaks retail store. In France, Paris Habitat is developing social housing

using hemp as insulation. As innovation progresses, new bio-based materials will come into play too. In the Netherlands, in early 2020 a record-breaking 66m long pedestrian/cyclist bridge was completed, consisting of 80% bio-based materials. In accordance with the project's circular economy plan, in 100 years, the bridge will be repurposed as fertiliser.

Many challenges but is there an alternative?

Construction's resource use is a huge challenge, yet many of the opportunities on offer to utilise resources more responsibly are very small scale – a single warehouse, or a pedestrian bridge. This is due to a combination of challenges – including safety considerations, small production capacity, and even regulatory obstacles affecting industrial hemp cultivation. In time, very low-carbon steel, aluminium and concrete will make a big contribution to reducing embodied carbon emissions, but the industry needs a wider range of options such as these featured in this Zoom into.

Not every innovation will make it to the broader market, some may find a niche application and others may be shelved. What is needed is more opportunity to enable more innovation. The support of clients, designers, contractors, regulators and funders will be essential to create markets and enable the scaling up of these innovations. The Ukraine War is acting as a timely reminder that construction and other industries cannot rely for ever on existing resources to deliver base workload, let alone support the demands of the energy transition. Being more resourceful in our thinking about the use of materials will equip the industry better for a resource-constrained future.



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Our world is under threat – from climate change and rising sea levels to rapid urbanisation and pressure on natural resource. We're here to answer these challenges at Arcadis, whether it's clean water in Sao Paulo or flood defences in New York; rail systems in Doha or community homes in Nepal. We're a team of 27,000 and each of us is playing a part.

Contact us



Pedro Izquierdo

Head of Places

E pedro.izquierdo@arcadis.com



Emilio Garcia

Head of Cost Management

E Emilio.garcia@arcadis.com



Chris Hill

Senior Cost Manager

E chris.hill@arcadis.com

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