

constructsteel

Monthly update for the construction industry
October 2022



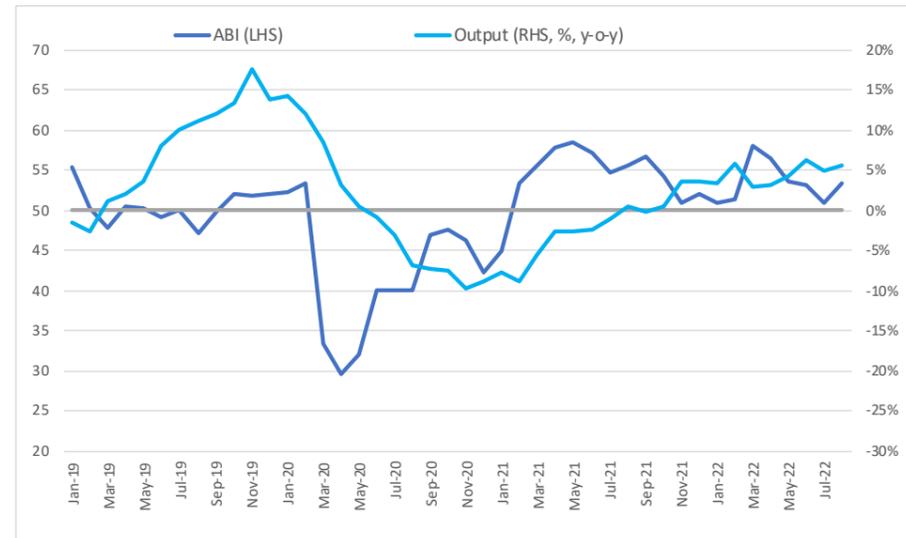
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Construction market trends

United States U.S. private housing market continues to cool as mortgage rates increase; business conditions at architecture firms supportive.

Private residential output down -0.9% m-o-m (12.5% y-o-y) in August; building permits down -8.5% m-o-m (-13% y-o-y). Architecture Billings Index (ABI) increased to 53.3 in August from 51 in July (>50, expansion). More firms report an increase in billings.

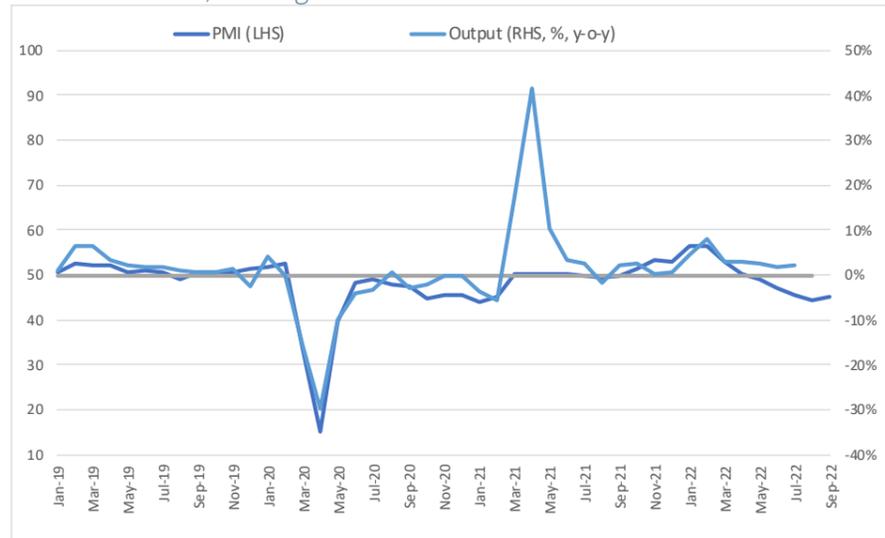
Private non residential output vs Architectural Billings Index (ABI)
Source: US Census, American Institute of Architects



Europe Eurozone construction struggles as demand slows; sector PMI faces fifth straight month of contraction.

Eurozone construction up 0.3% m-o-m (2.3% y-o-y) in July; Buildings up 0.3% m-o-m (2.3% y-o-y); Civil works down -0.6% m-o-m (1.6% y-o-y). The decline in the IHS Markit Eurozone Construction PMI improved marginally to 45.3 in September from 44.2 in August (< 50, contraction).

Eurozone construction output vs PMI
Source: Eurostat, TradingEconomics



Knowledge partner:
McKinsey & Company

China Residential floor space started continues to decline. Incentives supporting property sales.

The 3 month moving average floor space started declined -45% in August; floor space sold down -22% y-o-y.

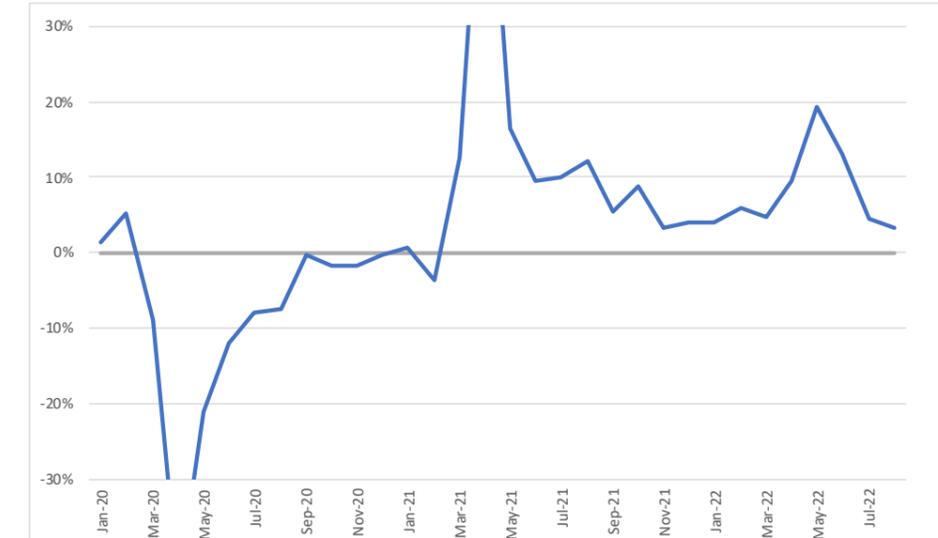
Floor space started (3 month moving average, %, y-o-y)
Source: National Bureau of Statistics of China



India Heavy rains negatively impact construction in August.

Weighted average of eight core industries output up 3.3% y-o-y in August, the lowest in 9 months; production of steel up 2.2%, cement up 1.8% y-o-y.

Weighted average of eight core industries industrial production (% y-o-y)
Source: Ministry of Commerce & Industry, India



Special topic: New Kelani Bridge is the first steel mega viaduct in Sri Lanka



The new Kelani Bridge is an outstanding example of structural steel use in a mega viaduct. The new six-lane bridge consists of two sections – a bridge section over the river, and the viaduct section (steel box girder), over the existing roadway showcasing technologies used for the first time in Sri Lanka.

Project outline

Its location posed a key challenge for the conclusion of this project. Construction kicked off on January 2018 in the northern part of Colombo, Sri Lanka. The works took place at a busy intersection merging four key locations: Colombo, Candy (the second largest city in Sri Lanka), Port of Colombo and the International Airport. On November 24, 2021, an opening ceremony celebrated the new Kelani Bridge.

Using steel helped reduce construction time and minimise road closures and traffic constraints. Over 21,300 tons of steel were used for the entire structure, including a steel box pier, a steel box girder and a composite deck system.

Structural feature

This project is unique for our member JFE Steel Corp as it marks the very first time they supply such a large amount of 3,700 tons of Steel for Bridge

High-Performance Structure (SBHS) 500MPa-grade steel. Among the many benefits of the material, SBHS has high strength and excellent weldability, in line with the Japanese Industrial Standard (JIS G 3140) for the part of the main frame of the Pier and Girder structure. In addition, the Steel Concrete Composite Deck slab (SCCD) system chosen offers high durability, also enabling road base construction without conventional formwork.

The entire steel structural viaduct consists of:

- 33 steel anchor frames,
- 4,000 tons of steel piers (16 portal frame piers and one inverted L-shaped pier),
- 14,200 tons of steel superstructure box girders with 202 of bearings and 24 expansion joints. (11 multi-main box girder bridges in the main line section and 10 one-box girders in the ramp section),
- 40,000m² of steel composite deck panel

Fabrication

Given the short fabrication period for 21,300 tons of steel piers, steel box girders and deck panels, the fabrication work was executed simultaneously at five factories in four countries: Japan, Myanmar, Vietnam, and Thailand. The fabricators

were nominated based on several technical aspects, such as production capacity, process control, assurance of the quality control system, labour skill, and transportation route. The corner block of the pier was composed of complex multiple stiffener plates with critical design stress. Therefore the mock-up trial work helped to ensure a smooth assembly and welding sequence/positioning.

Site Construction

In April 2020, the site construction started amidst the COVID-19 pandemic. A conventional erection methodology was applied based on a bent support scheme. During the nighttime, several 250-ton all-terrains and crawler cranes were used and executed simultaneously in five separate zones considering existing traffic flow while avoiding road closures.

The structural behaviour due to the deflection and temperature variation during erection was analysed and demonstrated by frame analysis following the erection sequence. All the erection works for 21,300-ton steel components had been completed after 11 months in March 2021 with erection productivity of approximately 1,900 tons per month.



Technical trends:

Net zero building, Retrofits and new technologies
August 1, 2022 – For full article, see [Link](#)

Net-zero builders can create value by investing in next-generation technologies, replacing equipment with low-emissions models, and improving energy efficiency.

Construction is directly or indirectly responsible for almost 40 per cent of global CO₂ emissions from fuel combustion and 25 per cent of GHG emissions as a whole. These figures include materials such as cement and steel.¹ Within buildings, heating and cooking currently produce 6 per cent of global emissions.

The transition to net-zero buildings will create opportunities for companies in two ways: retrofitting existing structures and ensuring that new construction generates low emissions.

As the retrofit cycle accelerates, manufacturers and installers of low-emissions and efficiency-enhancing building materials and systems, as well as the services ecosystem that manages retrofit projects and maintains these systems, could experience

significant new demand.

In addition, demand for digital systems to track and improve energy use will likely rise. First movers into green engineering and performance-management services that support the retrofit industry will likely see bigger wins.

To manage the up-front costs and help incentivise spending by end consumers, financial institutions could play a role by devising new creative financial products and by helping to align incentives across stakeholders. Already a slew of newer technologies can make low-carbon heating and cooling systems, such as heat pumps and energy-efficient air conditioning, more cost-competitive in many markets and climates today.² In addition, smart building controls and improved insulation would help reduce energy demand.

All in, the building market size (including construction, materials, equipment, and operations) could grow an estimated 38 per cent by 2030, opening new value

pools and reshaping the competitive landscape.³ For more on how eight industries may transition in a 2050 net-zero scenario, see “Spotting green business opportunities in a surging net-zero world.”

Building sector timeline – Key economic transitions

• **2020 – 2030: Jobs** – 6 million new jobs.

Job gains associated with the building’s transition may be front-loaded as the majority of building retrofits may happen, for example, when installing electric heat pumps, adding insulation, and replacing windows. Our analysis indicates this could add four million to six million jobs per year.

• **2030 – 2040: Capital spending** – \$1.9 trillion, five-year average spending.

Capital spending could reach a high of \$1.9 trillion annually between 2036 and 2040. This spending may be partly offset by the resulting reductions in operating costs. On a per-dwelling basis, capital spending would likely fall

over time as the costs of low-emissions equipment fall with economies of scale. Financial stakeholders and policymakers may consider providing new products and incentives to address the high up-front capital costs that may be particularly burdensome for low-income households.

• **2040 – 2050: Output** – 90 per cent of unit sales may be heat pumps.

Low-carbon technologies are likely to get less expensive as innovation continues and their production scales up. Demand for equipment used in buildings would shift toward electric or low-emissions models. For example, by 2050, heat pumps are expected to constitute approximately 90 per cent of new heating unit sales, compared with 35 per cent today.

This analysis is a hypothetical scenario and is not meant to serve as a projection or prediction. It is based on the NGFS Net Zero 2050 scenario using the regional model of investment and development and the model of agricultural production and its impacts on the environment (REMIND-MAGPIE) (phase two). In some instances, variables were downscaled by Vivid Economics to provide more sector granularity. For more, please read the [Net Zero report](#).

Market opportunities

The net-zero transition in the buildings sector could open value pools around green building materials, low-emissions equipment, sustainable design, engineering and construction

services, and green technologies and operations.

• \$1.7 trillion average annual spending estimate on low-emissions heating and cooking equipment between 2020 and 2050

• 390 million units of low-emissions heating and cooking equipment estimated by 2050 (triple the amount today).

The growing heat pump marketplace

Using heat pumps to keep buildings warm, instead of traditional boilers and furnaces, could cut global CO₂ emissions by 3 gigatons per year if implemented worldwide.

Heat pumps remain expensive in some regions, but in many climates and jurisdictions, heat pumps already have a lower total cost of ownership than traditional systems, and the geographies that this applies to are growing.

Ongoing innovation, investment, and regulation could make them more affordable—and more competitive with traditional alternatives.

• Innovation

Today’s heat pump models are, on average, three times more energy-efficient than gas furnaces. Recent advances, such as variable-speed compressors, let heat pumps work across a range of new temperatures, opening the door to broader use.

Creative one-stop-shop solutions for low-carbon

heating replacement can help with consumer uptake by making the journey as smooth as possible.

• Investment

Financial institutions could devise products that support retrofits and incentivise new development of low-emissions buildings while helping to meet their own goals for reducing financed emissions.

To help encourage customers to switch to heat pumps, companies and regulators can provide open and transparent communication on risks, safeguards, and expected payback periods for new types of heat pumps.

• Regulation

Policymakers can consider stimulating the uptake of heat pumps by providing incentives to banks to offer subsidies, mortgages, and rebates for energy-efficient retrofits and purchases of electric heat pumps.

Financial incentives, such as the UK government’s recent announcement to support the installation of heat pumps, could generate additional interest. Using the United Kingdom as an example, 600,000 heat pumps are expected to be installed annually by 2028.

Other approaches to consider include amending building codes and regulations to let owners retrofit buildings in ways they currently can’t or to mandate energy-efficiency standards, such as the use of low-emissions equipment, in new construction.

[1] “Call for action: Seizing the decarbonisation opportunity in construction,” McKinsey, July 14, 2021.

[2] Additional investment may be required to address cooling, which can draw a lot of power and create scope 2 emissions (see [The net-zero transition: What it would cost, what it could bring](#) for more). Some practices focusing on efficiencies first (for example, making a building more efficient first, which in turn may then only require a smaller heat pump) indicate a potential reduction to the cost of a net-zero pathway for buildings.

[3] “Playing offence to create value in the net-zero transition,” McKinsey Quarterly, April 13, 2022.

Construction steel news headlines

construction market and regulations

North America:

Nonresidential construction input prices dipped for a second consecutive month in August, providing more evidence that construction material costs peaked in June and supporting newfound optimism in the sector. Prices for steel mill products, crude petroleum and softwood lumber were down 5.7%, 5.3% and 3.1%, respectively, for the month, while the cost for all nonresidential supplies moderated 1.4%. [Link](#)

North America: The U.S. Dept. of Transportation awarded \$1.5 billion for 26 freight and highway infrastructure projects in the latest round of its seven-year-old Infrastructure for Rebuilding America grants program. Funding for the INFRA grants comes from the Infrastructure Investment and Jobs Act. The IJA increased INFRA funding by more than 50% from the earlier level. The INFRA program was created in the 2015 Fixing America's Surface Transportation Act. In all, the IJA is providing \$8 billion for INFRA over five years. [Link](#)

Europe: German construction industry association Bauindustrie has welcomed federal government support to

increase the number of construction workers. The body estimates the sector will be short of 100,000 workers by 2030. Germany's construction sector has recruited around 460,000 people since the low point in employment in 2009, but by 2030 there will be a shortage of over 100,000, mainly because of the ageing workforce. [Link](#)

Asia: China Construction Bank Corp, one of the country's four largest state-owned lenders, will set up a 30-billion-yuan (\$4.2 billion) fund to buy properties from developers. The move comes even as policymakers take steps to contain a real estate crisis that is weighing on the economy. [Link](#). The biggest fall in Chinese cement production in at least two decades has dragged global output of the construction material into decline, demonstrating how a crisis in the country's vast property sector is hitting other industries that rely on it for growth. Global cement output fell 8 per cent year on year to 1.9bn tonnes in the first six months of 2022. The global drop was caused by a 15 per cent fall to 977mn tonnes in the volume of cement produced in China. [Link](#).

Global: Several countries announced rail investments: Bangladesh has signed two contracts

with India for building a new broad-gauge line between Khulna- Darsana and transforming a metre gauge line into a dual-gauge line between Parbatipur and Kaunia. [Link](#). A \$3bn contract has been signed by the state rail operators of Oman and the UAE for the construction of a 300km rail line between the two countries. [Link](#). Plans for a high-speed rail connection between the Portuguese capital Lisbon and the city of Porto have been unveiled. Work will start on the first phase of the project in 2024, with an investment of €2.95 billion, €1 billion of which will come from European Union funds. [Link](#)

Middle East: Following the launch of Saudi Arabia's Vision 2030 in 2016, the Kingdom is on its way to becoming the world's biggest construction site with a total investment of \$1.1 trillion in infrastructure and real estate projects. Planned construction projects in the Kingdom being over 555,000 residential units, over 275,000 hotel keys, over 4.3 million square meters of retail space, and over 6.1 million square meters of office space. [Link](#)

Building materials & construction technologies

Europe: San Francisco-based construction tech startup Toric raised \$22 million in funding and inked a partnership with one of the largest contech firms in the market. The investment round featured \$16 million in equity led by San Francisco-based contech stalwart Autodesk, along with participation from existing investors Storm Ventures, Leaders Fund and Real Ventures. An additional \$6 million was acquired through debt financing. [Link](#)

Europe: London-based Disperse has raised \$16 million in new funding. Disperse is an AI-driven construction platform that can track job-site progress and issue warnings about potential rework using photographs. The company's funding round was led by London-based venture capital firm 2150. [Link](#)

Europe: Peri, a company best known as a manufacturer of scaffolding and formwork products, has completed what is claimed to be Europe's first 3D-printed office building. Designed by German practice Mense-Korte Architects, the 125 m² building is an extension to contractor Strabag's office in the Austrian town of Hausleiten. It is Austria's first 3D-printed building of any kind. [Link](#)

Europe: The latest Builders Merchant Building Index

(BMBI) report in the UK reveals that the quantity of goods sold by builders' merchants in July was down 12.8% year-on-year, but with prices up 15% since July 2021, the value of sales was marginally up by 0.2%. Month-on-month, total merchant sales were down 2.6% by value in July compared with June 2022. Volumes were down 5.2%. Prices rose in July and were 2.7% higher than in June. However, July had one more trading day than June, so like-for-like sales were 7.3% lower. [Link](#)

construction sector players

Europe: Several European construction players have announced sustainability targets. Construction and technology group Strabag has announced that it will become climate neutral along its entire value chain by 2040. [Link](#) Construction and concessions giant Vinci has announced a commitment to reduce its carbon footprint by 40% within the next eight years. [Link](#) Global design, engineering, and environmental consultancy Ramboll estimates that by 2030, the company will have reduced upfront embodied CO₂ emissions from its new building projects globally by 2.5 million tonnes per year compared to 2021. [Link](#)

North America: Pasadena, California-based engineering firm Tetra Tech has trumped engineering and design giant WSP Global's offer for

environmental consulting firm RPS Group. With Tetra Tech's offer of \$691 million beating WSP's \$641 million offer by about 7.8%, the RPS board of directors unanimously approved the offer. The firm would be Tetra Tech's largest acquisition to date. [Link](#)

Europe: Kier Reported improved results for the year to June 2022, a period of strong work winning had seen the forward order book swell 27% to £9.8bn, reflecting a large number of contract wins across all divisions. The construction business average order size stands at £13m, reducing exposure with regular repricing of contracts. But Kier's reported pre-tax profit continued to be impacted by restructuring and other costs, which ran to £56m over the year. [Link](#)

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