DIW Weekly Report 1+2 2022

AT A GLANCE

Construction industry: high price momentum continues, industry performing well despite COVID-19

By Martin Gornig, Claus Michelsen, and Laura Pagenhardt

- Construction industry in Germany remained robust in the second year of the pandemic; real construction volume grew by 1.6 percent in 2021 (2020: two percent)
- DIW Berlin construction volume calculation forecasts real growth of 2.7 percent for 2022 and three percent for 2023
- Construction prices have developed much more dynamically: construction volume prices increased by 8.5 percent in 2021, two-digit percent growth likely in 2022
- Over 2022 and 2023, nominal construction volume is likely to increase by 100 billion euros to 585 billion euros
- Capacity expansions could counteract price increases in the construction industry; public investments in a cross-budgetary fund would be beneficial in the medium and long term

High price increases are causing nominal construction volume to increase sharply; in contrast, real growth in construction work is only moderate

FROM THE AUTHORS

"In contrast with the general economic trend, the construction industry is continuing to perform well during the coronavirus recession. Sales are likely to increase over the next years due to unbroken demand and skyrocketing prices for construction materials."
— Martin Gornig —

MEDIA

Audio Interview with L. Pagenhardt (in German)
www.diw.de/mediathek

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ABSTRACT

Sales in the construction industry will continue to increase strongly in 2022 and 2023. Overall, DIW Berlin estimates a nominal increase in construction volume of almost 13 percent in 2022 and six percent in 2023 to 585 billion euros. In 2021, construction volume increased by ten percent to 488 billion euros, which is around 15 percent of GDP. This shows that construction demand remains at a high level despite the coronavirus pandemic. It is also likely that costs for construction work in particular will rise sharply over the course of 2022 following the significant increase in 2021. On the one hand, this is due to the fact that producer prices are currently rising more rapidly than they have in decades. On the other hand, the construction backlog—the number of approved construction projects not yet completed—is still high and the public sector is expanding its investment budgets, which offers companies in the construction sector further leeway for price increases. Nevertheless, the rising prices are likely to result in lower real construction activity. This is likely to make it more difficult for the public sector to achieve its ambitious goals in the areas of infrastructure expansion and housing provision.

Despite the coronavirus pandemic, the German construction industry performed well and expanded its real construction output in 2021. In 2022 and beyond, the construction volume is likely to experience considerable growth according to DIW Berlin forecasts, even if the industry does not escape the coronavirus pandemic entirely unscathed.

The construction industry has been affected by supply bottlenecks, material shortages, and the resulting price increases, especially in the second half of 2021. Material shortages, of lumber and steel in particular, caused production delays, while sharp price increases reduced real sales. However, supply chains should gradually stabilize again, just as the price of lumber has already declined slightly. Thus, a recovery is expected over the course of 2022. This is likely to be primarily driven by commercial construction, where significant investments are expected following two weak years during the pandemic.

These are the results of DIW Berlin's calculations of the construction volume,[1] which includes construction investments as well as repairs that do not increase value. Furthermore, in addition to construction in the narrower sense, the calculations encompass related sectors, such as steel and light metal construction, the manufacture of prefabricated buildings, building fittings, planning, and other services. As a supplement to the investment calculation of the Statistical Offices, DIW Berlin differentiates between new housing construction activity and housing stock modernization.

DIW Berlin not only calculates and documents the construction volume of past years; it also forecasts corresponding values for the current (2022) and subsequent years (2023). This forecast (Box) is integrated into DIW Berlin's Economic Outlook, particularly with regard to investment activity. In addition to the present estimates regarding the development of construction investment, the construction volume

1 The construction volume calculation is financed with funds from the *Zukunft Bau* research initiative for the sustainable development of the German construction industry of the Federal Ministry of the Interior, Building, and Community (*Bundesministerium des Innern, für Bau und Heimat*, BMI). Also see the definition of "Bauvolumen" in the DIW Berlin Glossary (in German; available online, accessed on January 8, 2021. This applies to all other online sources in this report unless stated otherwise).

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Box

Method for forecasting construction volume

Several steps are required for forecasting construction volume. Initially, the calculations for new construction and existing building stock are available on an annual basis. The first step involves calculating the trends during the year. The volumes of existing stock are adjusted for the quarterly trend in building installation and other construction work using quadratic minimization.[1] New construction volumes are calculated as the difference between overall volume and existing volumes as a means of ensuring consistency in the construction volume calculation. Next, these series are adjusted for seasonal patterns using the ARIMA-X12 procedure.

In the second step, the new construction and existing stock series are "nowcast" using the information currently available. Numbers from the monthly reports of the construction industry and employment in the construction industry, as well as weather information, are used.[2] 2021 is actually only an interim estimate of construction volume. Final values are not available until the following year, when the statistical offices publish complete reports of all the relevant series.

In the third step, the individual series are forecast. The volumes of existing stock and new construction are estimated separately. Statistical models supported by indicators are used in this step. In addition, the variables to be forecast (e.g., commercial building volume) are regressed to an autoregressive term and the lagged values of the relevant indicator. The forecasting equation has the following form:

$$y_t = \alpha + \sum_{i=1}^{n} \beta_i y_{t-i} + \sum_{j=1}^{m} \gamma_j x_{t-j} + \varepsilon_t$$

y_t stands for the value to be forecast, x_t for the indicator, and ε_t for the statistical error term. α, β_i and γ_j are the estimated parameters. Delay periods n and m (quarters) are determined based on the autocorrelation or cross-correlation function. The different specifications are assessed based on information criteria. The approach of estimating a number of individual models and using average values for the forecast has proven effective. For an individual series, up to 50,000 single models are estimated. Construction permits, incoming orders, production, interest, loan volumes, employment and income trends, and surveys of construction companies and freelance architects have proven to be suitable indicators. Capacity utilization is also included in the estimates.[3] Expected civil engineering work is equal to the difference between total volume and construction volume.

In the last step, the forecast results are transferred to the construction volume calculation formula. Demand-side trends are also considered by taking the special features of non-investment construction work over the business cycle into account. As a means of differentiating by other structural characteristics, more finely classified information on construction permits and the order backlog are included. In this way, it is possible to estimate the different patterns of individual producer groups, such as core construction and the renovation sector.

1 See Frank T. Denton, "Adjustment of monthly or quarterly series to annual totals: an approach based on quadratic minimization," *Journal of the American Statistical Association* 66, no. 333 (1971): 99–102.

2 For a documentation of the methodology, see Claus Michelsen and Martin Gornig, "Prognose der Bestandsmaßnahmen und Neubauleistungen im Wohnungsbau und im Nichtwohnungsbau," Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR) Online Publication no. 07 (2016) (in German; available online).

3 See Claus Michelsen and Martin Gornig, "Prognose der Bestandsmaßnahmen."

calculation includes forecasts on the growth of new and existing housing volumes in the structural engineering, residential, and non-residential sectors.[2] In addition, these figures are used to derive the development trends of the core construction industry and the renovation sector.

Residential construction impacted by powerful price increases

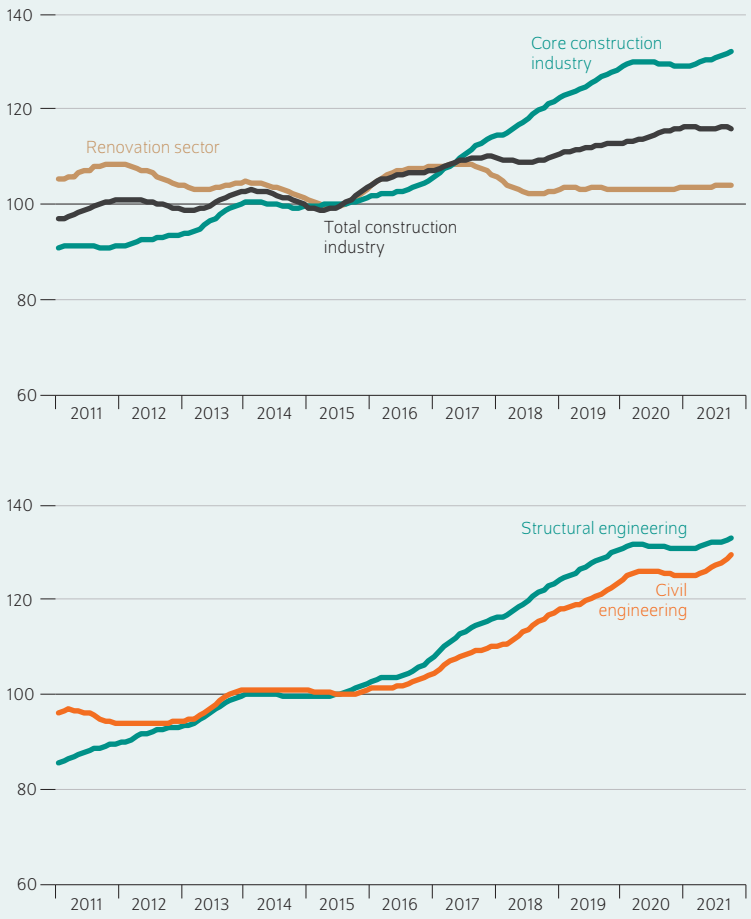
The enormous price increases for construction materials are leaving a clear mark on residential construction. Although construction firms cannot completely pass on their costs to contractors, residential construction prices rose by double-digit percentages at times during 2021 (Figure 8). Missing or delayed material deliveries compounded the situation. The renovation sector in particular, which had benefited from the VAT reduction in 2020, weakened significantly as a result of these developments. This was particularly reflected in production, which only moderately recovered following the expected slump at the beginning of 2021 and suffered renewed setbacks due to supply bottlenecks over the summer. Accordingly, production in the renovation sector continued to stagnate (Figure 1). Sales decreased in the second half of 2021.

Meanwhile, the demand for housing remains high and interest rates are still at historically low levels as a result of the very expansionary monetary policy (Figure 2). Thanks to considerable transfers, private households' incomes have remained mostly stable despite the recession. Due to these transfers and limited consumption opportunities, many households have been saving more money over the course of the pandemic, which is likely to be used for housing investments in many cases. Following years of extremely low prices for fuels, the rise in energy prices is in itself an incentive to invest more heavily in buildings' energy efficiency. The CO_2

2 Cf. Claus Michelsen and Martin Gornig, "Prognose der Bestandsmaßnahmen und Neubauleistungen im Wohnungsbau und im Nichtwohnungsbau," *BBSER-Online-Publikation* 7 (2016) (in German; available online).

Figure 1

Production in the construction industry
Index 2015 = 100, constant prices, trend component

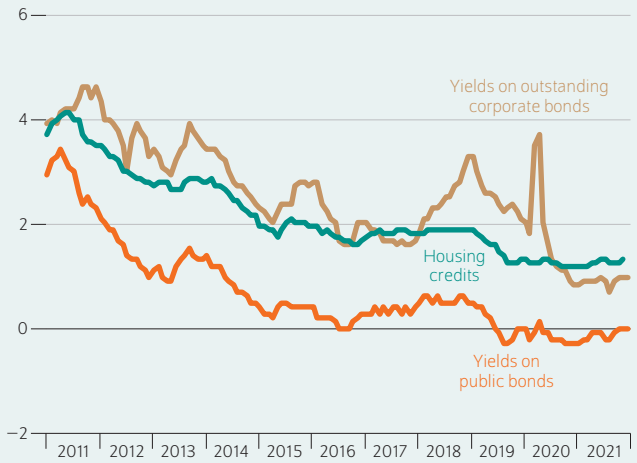


Source: Federal Statistical Office.

The construction industry experienced robust growth in 2021, especially in the core construction industry.

Figure 2

Interest rates and yields
In percent, monthly average



Source: German Central Bank.

In 2021, housing credits were at a historically low level.

price introduced at the beginning of 2021, which will have gradually more than doubled by 2026 to up to 65 euros per ton of CO_2, will have a similar and more sustainable effect. In the long term, increasing the allowance for depreciation from two to three percent, as determined in the coalition agreement, should keep residential construction attractive to investors.

Following an increase of 11 percent in 2021, residential construction volume in nominal terms is expected to increase by 12.7 percent in 2022 and by around 6 percent in 2023 (Table 1).

Powerful nominal growth in residential unit construction

The strong demand for residential construction is continuing to fuel new construction activity. While the influx of new residents to major cities has slowed since 2020 due to the pandemic, these cities are still experiencing housing shortages, as the number of buildings approved for construction indicate. The number of permits rose sharply during winter 2020/2021, likely in part due to the lower VAT rate improving the conditions for planning construction work. Despite the decline at the beginning of 2021, the positive pre-pandemic trend continued over the course of the year (Figure 3). Nevertheless, the price trend is reflected here too: Although the value of the newly approved buildings in terms of their respective prices is steadily increasing, the overall number was declining until fall 2021. This is also reflected in the business expectations of residential construction companies, which, according to a business survey conducted by the *ifo Institut*, have declined slightly following a consistently positive trend throughout 2021. Overall, however, the permit surplus remains. The number of building permits was 4.2 percent higher between January and October 2021 compared to 2020[3] and capacity utilization remained consistently high following the pandemic-related setback in 2020 (Figure 4).

Although incoming orders declined over the course of 2021, for example in connection with the deadline for applying for *Baukindergeld*, they are trending upward overall (Figure 6). This also applies to existing orders, which again increased strongly in 2021, partly caused by many orders being delayed due to supply bottlenecks (Figure 7). Construction is also likely to flourish in 2022 and 2023: Following an increase

3 Cf. Statistisches Bundesamt, "Baugenehmigungen für Wohnungen im Oktober 2021: saison- und kalenderbereinigt -3,2 Prozent zum Vormonat," Press release no. 575 from December 15, 2021 (2021) (in German).

Table 1

Residential construction in Germany

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
	In billion euros at the respective year's prices									
New construction volume[1]	51.4	56.5	62.8	67.3	71.7	75.1	79.5	87.8	96.6	104.3
Construction on existing buildings[2]	130.8	131.3	136.3	143.2	153.1	168.2	175.9	196.6	224.0	236.0
Total residential construction volume	182.2	187.8	199.2	210.4	224.8	243.3	255.3	284.4	320.6	340.3
	Change in percent									
New construction volume[1]		9.9	11.3	7.1	6.6	4.8	5.7	10.5	10.0	8.0
Construction on existing buildings[2]		0.4	3.8	5.0	6.9	9.8	4.6	11.8	13.9	5.3
Total residential construction volume		3.1	6.1	5.7	6.8	8.2	4.9	11.4	12.7	6.1
	Shares in percent									
New construction volume[1]	28.2	30.1	31.5	32.0	31.9	30.9	31.1	30.9	30.1	30.7
Construction on existing buildings[2]	71.8	69.9	68.5	68.0	68.1	69.1	68.9	69.1	69.9	69.3
Total residential construction volume	100	100	100	100	100	100	100	100	100	100

1 Estimated using the estimated construction costs (construction activity statistics), plus surcharges for architects' services and fees, exterior facilities, and internal activities of investors.
2 Buildings and housing modernization (incl. conversion and extension measures) as well as repair services in the construction industry.

Sources: Federal Statistical Office; DIW Construction Volume Calculation.

Table 2

Non-residential construction volume in Germany

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
	In billion euros at the respective year's prices									
New construction volume[1]	31.7	32.4	35.4	37.9	41.0	44.7	46.1	49.3	55.2	58.5
Construction on existing buildings[2]	57.9	57.5	56.4	58.1	60.4	63.8	64.4	70.4	79.6	84.9
Total construction volume[3]	89.5	89.9	91.8	95.9	101.4	108.5	110.4	119.7	134.8	143.4
	Change in percent									
New construction volume[1]		2.2	9.4	6.9	8.3	9.1	3.1	7.0	12.0	6.0
Construction on existing buildings[2]		−0.6	−2.0	3.1	4.0	5.6	0.8	9.4	13.0	6.7
Total construction volume[3]		0.4	2.1	4.5	5.7	7.0	1.8	8.4	12.6	6.4
	Shares in percent									
New construction volume[1]	35.4	36.0	38.6	39.5	40.4	41.2	41.7	41.2	41.0	40.8
Construction on existing buildings[2]	64.6	64.0	61.4	60.5	59.6	58.8	58.3	58.8	59.0	59.2
Total construction volume[3]	100	100	100	100	100	100	100	100	100	100

1 Includes agricultural buildings.
2 Includes other non-agricultural buildings.
3 Construction volume in commercial and public construction.

Sources: Federal Statistical Office; DIW Construction Volume Calculation.

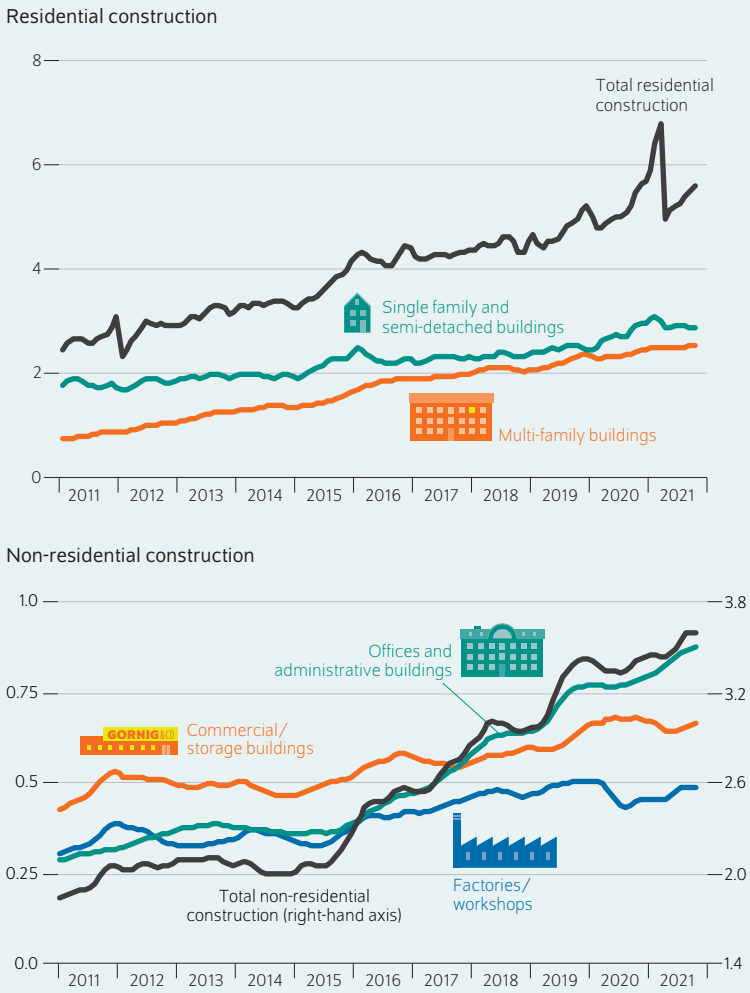
of a good ten percent in 2021, the growth in 2022 is likely to be around the same level. Momentum is likely to slow in 2023, but growth of around eight percent is still expected.

Renovation and modernization struggling due to supply bottlenecks

The supply bottlenecks and price increases have been impacting construction activity on existing residential buildings in particular. On the one hand, this branch is heavily affected by material scarcity, especially of lumber. On the other hand, in times of rising prices, renovation work can be more easily and quickly adapted to meet shifting circumstances and budget restrictions. Accordingly, quite a few households are likely to have reduced already planned projects or scrapped them completely. At the same time, due to the lower energy prices of the past years, an important incentive for energy-related renovations had disappeared. This is expected to change during the forecast period in light of the skyrocketing prices for heating energy and the CO_2 price introduced in 2021, with energy-related refurbishments becoming more important. The prospect of an increase in depreciation rates is also likely to make renovation investments in extensive modernization more attractive. Moreover, the coalition agreement places much less importance on tenant law-related interventions than many had feared. Far-reaching measures, such as Berlin's *Mietendeckel* (rent cap), were declared unconstitutional; in addition, an extensive use

Figure 3

Building permits in structural engineering in Germany
Respective prices in billion euros, trend component

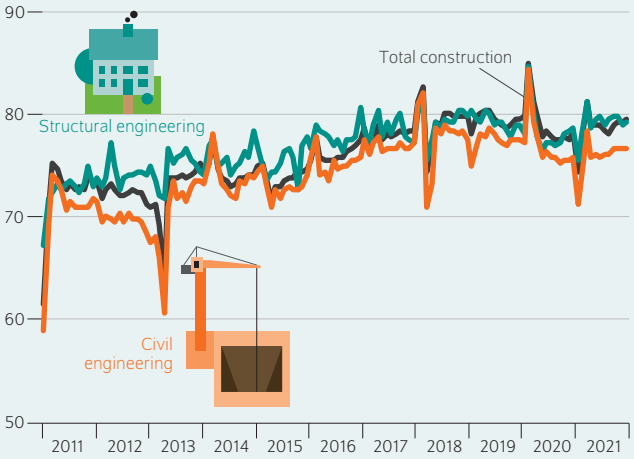


Sources: Federal Statistical Office; DIW Berlin Construction Volume Calculation.

The number of building permits for residential construction skyrocketed in winter 2020/2021.

Figure 4

Capacity utilization in the construction sector
As a percentage of normal seasonal machine utilization



Source: ifo Institute.

Capacity utilization in the construction industry is currently lower than it was a year ago.

of the municipal right of first refusal with corresponding prevention agreements for the comprehensive refurbishment of existing buildings was also ruled unlawful.[4]

DIW Berlin is expecting significant nominal growth in renovation work on existing buildings over the coming years; the sharp rise in prices plays a major role in this. An increase in renovation work of almost 14 percent is expected in 2022, while an increase of five percent is expected in 2023 as the upward price trend subsides.

Non-residential construction recovering following slump

Non-residential construction was able to recover slightly in 2021 following a weak performance in 2020 due to the pandemic. For example, private investors, primarily in the second half of 2021, showed more confidence and made up at least some of the delayed orders from 2020. This is likely due in part to industry remaining generally unaffected by the newer lockdown measures. Moreover, vaccination and testing strategies have enabled businesses of the service sector to remain operational. Meanwhile, material shortages prevented orders from being fulfilled in many places, thereby forestalling stronger momentum. Increased investment activity is expected in 2022 if the supply backlog resolves, which will release additional capacity, and the pandemic situation eases, reducing existing uncertainties (Table 2).

Nevertheless, restrained public spending is countering the cautiously positive signals from the commercial construction sector. Despite federal support, the coronavirus recession has significantly weakened the financial situation of municipalities, which is directly reflected in investment budgets in many cases.

However, investment needs remain high in this area. For example, municipalities still have an investment backlog running into triple-digit billions.[5] In 2021, the *Bundestag* election and the formation of the new government resulted in less investment activity by the federal government. More

4 Bundesverwaltungsgericht, *Decision from November 9, 2021 – 4 C 1.20* (in German; available online).

5 KfW Research, *KfW-Kommunalpanel 2021* (2021) (in German; available online).

Table 3

Civil engineering in Germany

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
	In billion euros at the respective year's prices									
Commercial civil engineering	29.3	29.5	30.3	32.9	35.0	37.7	38.9	43.7	50.7	54.7
Public civil engineering	27.4	27.3	28.5	30.9	34.4	37.8	39.2	41.0	44.9	47.1
Total civil engineering	56.7	56.9	58.8	63.8	69.5	75.5	78.0	84.6	95.6	101.7
	Change in percent									
Commercial civil engineering	0.8	2.5	8.6	6.4	7.8	2.9	12.4	16.2	7.8	3.8
Public civil engineering	0.0	4.2	8.4	11.5	9.7	3.7	4.6	9.5	4.9	4.6
Total civil engineering	0.4	3.3	8.5	8.9	8.7	3.3	8.5	12.9	6.4	4.2
	Shares in percent									
Commercial civil engineering	51.7	51.9	51.5	51.6	50.4	50.0	49.8	51.6	53.1	53.7
Public civil engineering	48.3	48.1	48.5	48.4	49.6	50.0	50.2	48.4	46.9	46.3
Total civil engineering	100	100	100	100	100	100	100	100	100	100

Sources: Federal Statistical Office; DIW Berlin Construction Volume Calculation.

Table 4

Key figures for development of construction volume in Germany

	2016	2017	2018	2019	2020	2021	2022	2023	2017	2018	2019	2020	2021	2022	2023
	In billion euros at the respective year's prices								Change from the previous year in percent						
Total construction volume	349.71	370.16	395.67	427.33	443.78	488.74	550.97	585.45	5.8	6.9	8.0	3.8	10.1	12.7	6.3
Residential construction	199.15	210.43	224.81	243.30	255.31	284.38	320.57	340.28	5.7	6.8	8.2	4.9	11.4	12.7	6.1
Commercial construction	103.33	109.68	116.29	124.27	126.25	139.95	159.48	170.12	6.1	6.0	6.9	1.6	10.9	14.0	6.7
Public construction	47.23	50.05	54.57	59.77	62.22	64.40	70.92	75.05	6.0	9.0	9.5	4.1	3.5	10.1	5.8
	Index 2015= 100														
Price development	101.96	105.63	110.79	115.95	118.04	128.12	141.06	145.54	3.6	4.9	4.7	1.8	8.5	10.1	3.2
	Real, chain index 2010=100														
Total construction volume	102.58	104.88	106.98	110.56	112.82	114.62	117.66	121.18	2.2	2.0	3.3	2.0	1.6	2.7	3.0
By construction sector															
Residential construction	103.97	106.44	108.85	112.64	116.10	118.69	121.51	124.98	2.4	2.3	3.5	3.1	2.2	2.4	2.9
Commercial construction	100.16	102.28	103.32	105.93	105.62	107.07	111.27	115.26	2.1	1.0	2.5	−0.3	1.4	3.9	3.6
Public construction	102.22	104.24	107.47	112.33	115.40	111.60	113.01	115.77	2.0	3.1	4.5	2.7	−3.3	1.3	2.4
By producer group															
Core construction industry	103.41	107.45	110.98	116.40	119.37	121.61	125.02	128.88	3.9	3.3	4.9	2.6	1.9	2.8	3.1
Finishing trades	101.92	102.63	104.13	107.08	109.57	111.25	113.71	116.76	0.7	1.5	2.8	2.3	1.5	2.2	2.7
Other producers	103.08	106.34	110.18	112.61	113.85	115.02	118.40	122.49	3.2	3.6	2.2	1.1	1.0	2.9	3.5

Sources: Federal Statistical Office; DIW Berlin Construction Volume Calculation.

momentum can be expected in the coming years due to the coalition's commitment to increase new construction and expansion as well as the increased implementation of investment initiatives already laid out in the Future Package (*Zukunftspaket*). The Federal Ministry for Housing, Urban Development, and Building, which is its own independent ministry again as of December 2021, could also accelerate some of the processes and provide additional momentum.

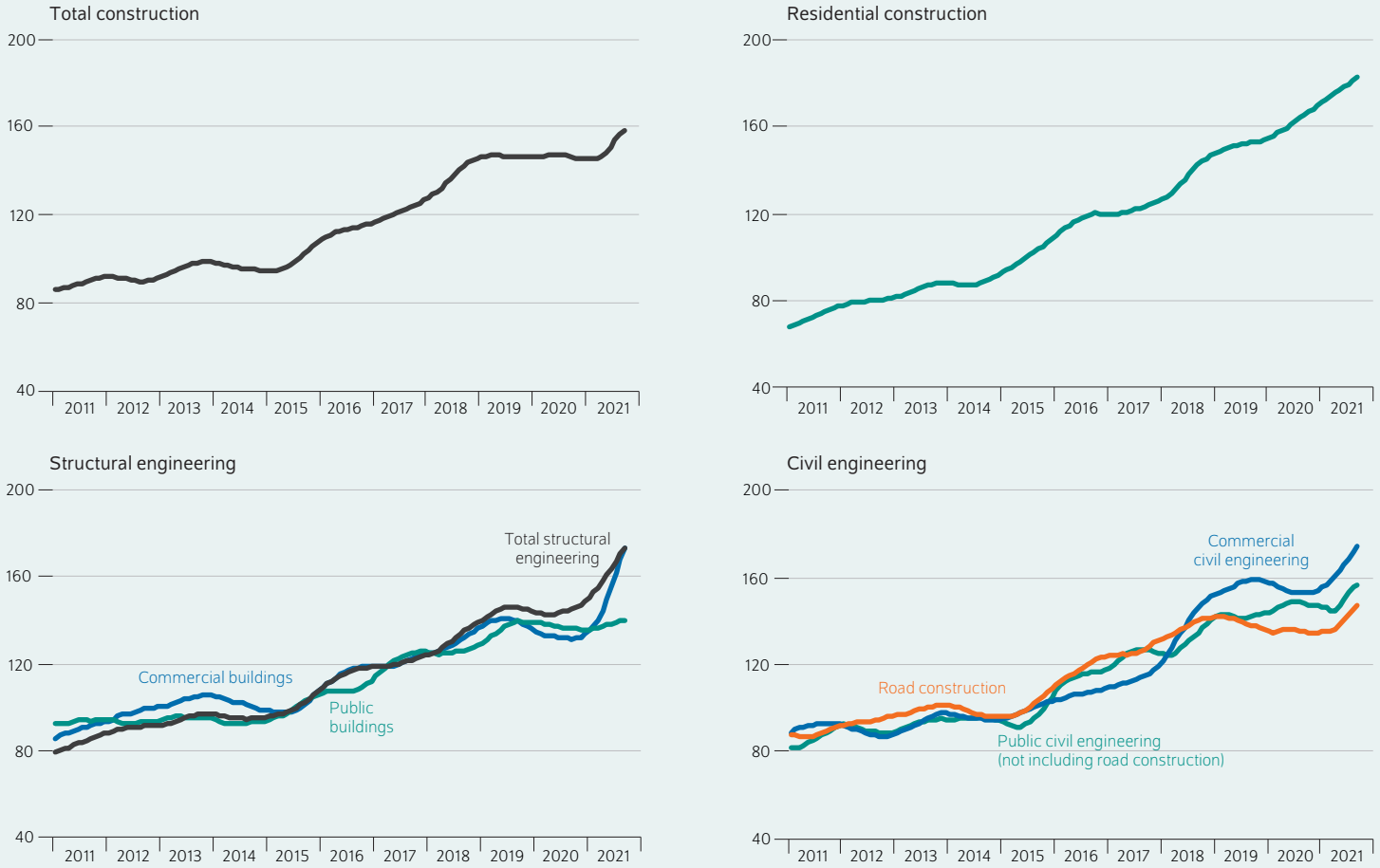
DIW Berlin is expecting nominal spending on non-residential construction to increase by a good twelve percent in 2022, following an 8.4 percent increase in 2021. A further six-percent increase is likely in 2023, with lower growth primarily due to less pronounced price increases.

New construction breaks free from the grip of the pandemic

The momentum in commercial building construction, still clearly marked by the effects of the pandemic in 2020, reversed course in 2021. The demand for warehouses eased somewhat despite the persisting boom in online trade and as restrictions were increasingly lifted, while the economic recovery fueled investments in factories and workshops as well as hospitality buildings. Even building permits for office buildings, which seemed to be losing importance in light of the expansion of remote work options, resumed their pre-pandemic upward trend (Figure 3). Public spending on new building construction is also expected to pick up again

Figure 5

Incoming orders in the core construction industry
Index 2015 = 100, respective prices, trend component



Source: Federal Statistical Office.

Incoming orders are increasing in every sector.

in the coming years. The prospect of relieving municipalities of old debts is likely to at least spur on planning of investment projects. Following growth of seven percent in 2021, new construction activity in non-residential construction is likely to experience growth of 12 and six percent in 2022 and 2023, respectively.

Renovation and modernization continuing to grow in importance

Renovations of existing buildings have become more important over the past years, with the trend expected to continue in the future. The primary focus will likely be on repairs of public infrastructure, which has become increasingly dilapidated in recent years. Rising land prices also play a role,[6] making renovations and expansions more economically relative to new construction. Following growth of nine percent in 2021, renovation and modernization is likely to grow by around 13 percent in 2022. Growth is expected to be somewhat slower in 2023; due to smaller increases in prices, it is likely to be six percent (Figure 5).

Civil engineering trending upward

Although civil engineering volumes were significantly affected by the coronavirus pandemic as well as the ferocious winter weather in early 2021, they recovered significantly over the course of the year. This sector has benefited from the fact that materials used in civil engineering were less affected by supply bottlenecks and price increases. Demand is driven by the private sector; the increased investment budget of the *Deutsche Bahn* was especially reflected in a large amount of new orders (Figure 5). Thanks to record investments by the *Deutsche Bahn* as well as the federal government, this trend

6 Cf. Konstantin Kholodilin and Claus Michelsen, "Immobilienpreisblasen: Gefahr steigt regional – Korrekturen in den nächsten Jahren möglich," *DIW Wochenbericht* no. 51/52 (2021): 823–833 (in German; available online).

is likely to continue over the next years. Civil engineering's capacity utilization increased again over the course of 2021, but remains below its pre-pandemic peak value (Figure 4).

However, public sector demand recently fell short of expectations. Here, too, the investment backlog and the municipalities' tight budgets are noticeable. Stronger momentum is expected over the course of 2022 and particularly 2023, especially if the measures agreed upon in the coalition agreement on long-term investment in infrastructure development and maintenance as well as digitization are implemented and funds from the Future Package are increasingly distributed. Civil engineering is likely to increase by about 13 percent overall in 2022. In 2023, its growth is projected to be 6.5 percent (Table 3).

Core construction industry faring best during the pandemic

The core construction industry had already been experiencing powerful growth due to the construction boom of past years (Table 4). In 2020, the real construction volume was almost 20 percent above the 2015 level. In contrast, the renovation sector experienced growth of only ten percent during the same period. Strong growth, initially in residential construction and later in public construction, is affecting the core construction industry especially favorably.

Stable growth in residential unit construction will support the development of the core construction industry over the coming years. In addition, there will be positive momentum from the powerful growth in civil engineering, initially from the commercial sector and then from public civil engineering as well as of 2023. Following a two-percent increase in 2021, real volume construction is likely to return to around three percent annual growth in the coming years.

In contrast, the renovation sector will grow at a lower rate overall; capacity bottlenecks are likely to be one reason for this. Thus, a large part of the strong growth in sales is likely to be determined by price increases. Real production growth will also slowly return toward three percent.

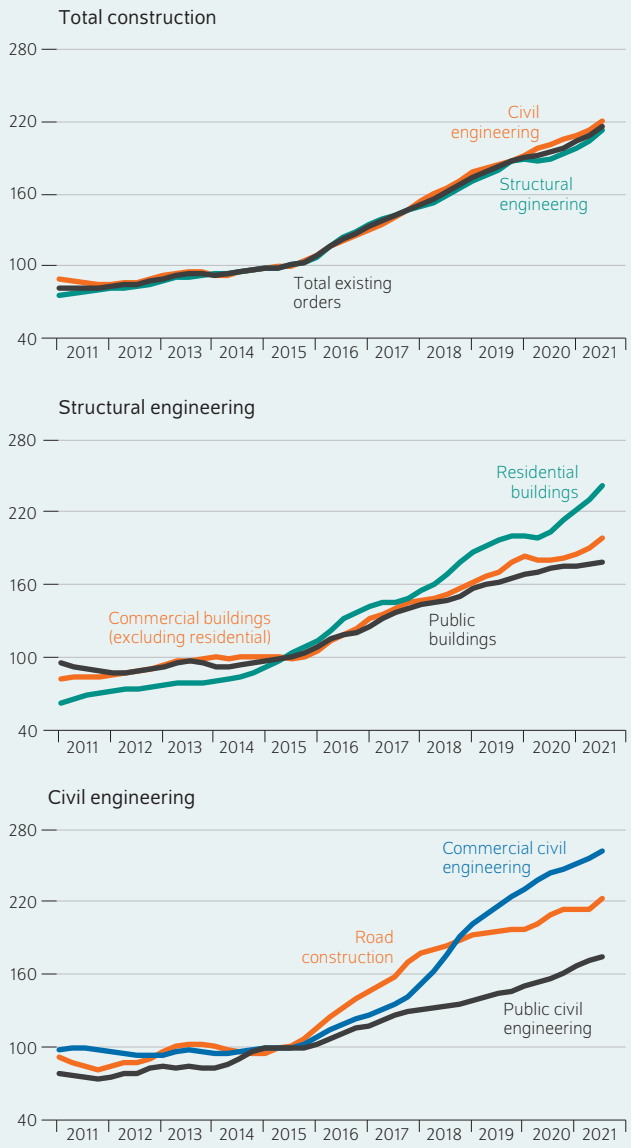
The pandemic is having a significant impact on the development of construction volumes among other producers, including the manufacturing industry and architectural firms, which contribute the planning work to construction volumes. In particular, the weak development of commercial construction in 2020 and 2021 has affected real construction volume growth. However, as commercial construction and public civil engineering pick up pace again, the real growth rates in 2022 and 2023 will be somewhat higher than that for construction industry producers.

Conclusion: Price developments are worrisome; shortages are slowing construction activity

Construction activity has barely been affected by restrictions during the coronavirus pandemic. Sales and output have continued to increase and demand for construction work rose overall. While the outlook for 2022 remains positive, the construction industry, which is important for facing future challenges, cannot escape the pandemic unscathed. The global upswing following the extensive restrictions and construction booms, especially in the USA and China, are causing material shortages, rising prices, and major problems implementing construction projects on schedule in some cases. Some activity is likely to have been postponed in real terms due to the high prices—despite the serious need for infrastructure investment, the housing shortages prevalent throughout Germany, and the transition toward

Figure 6

Existing orders in the core construction industry
Index 2015 = 100, respective prices, trend component

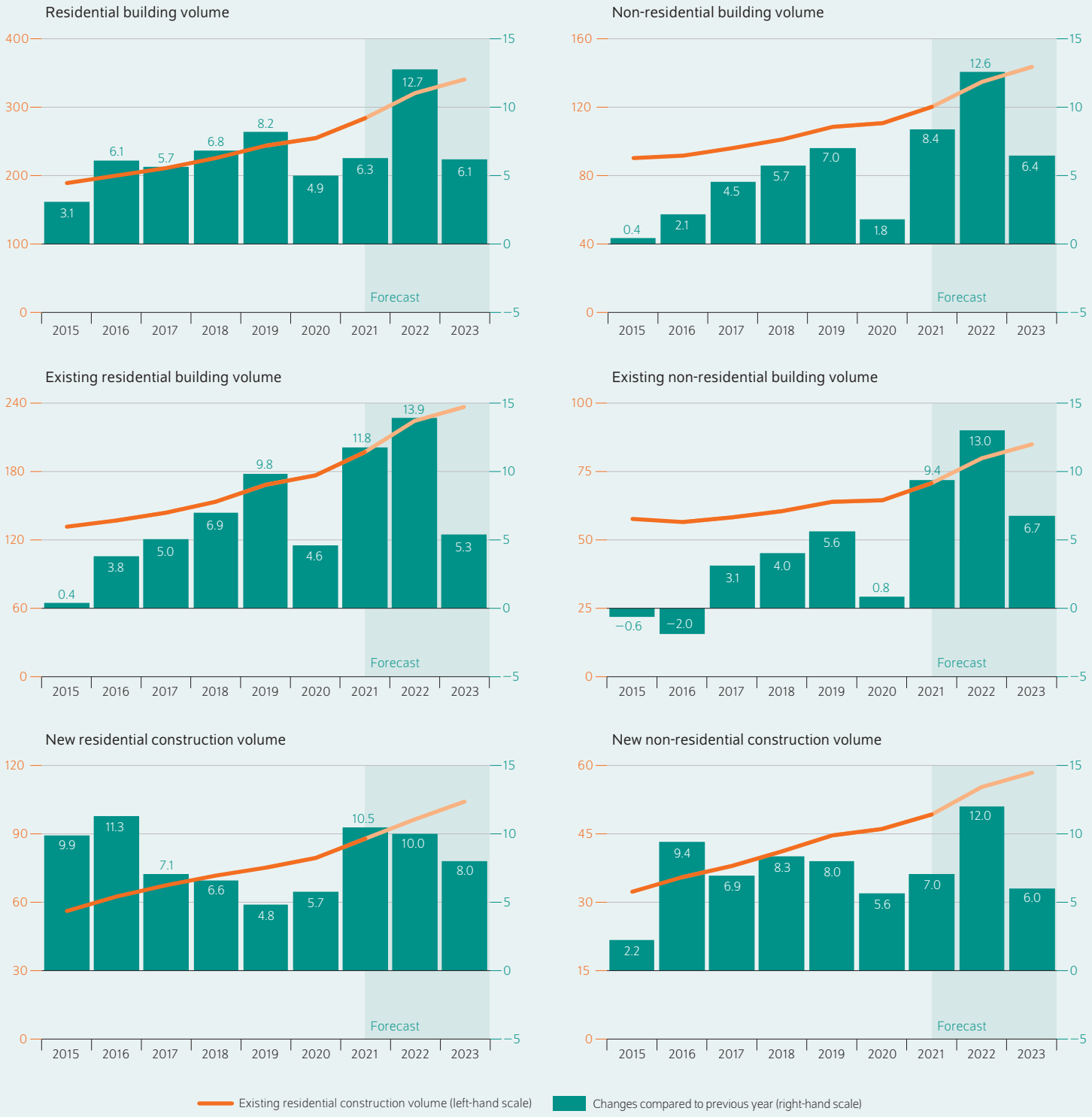


Source: Federal Statistical Office.

The order books are increasingly filling up.

Figure 7

Structural engineering in Germany according to new and existing housing stock
In billions of euros in respective prices (left-hand axis), change from previous year in percent



Source: DIW Berlin Construction Volume Calculation.

The pace of structural engineering development will speed up in 2022.

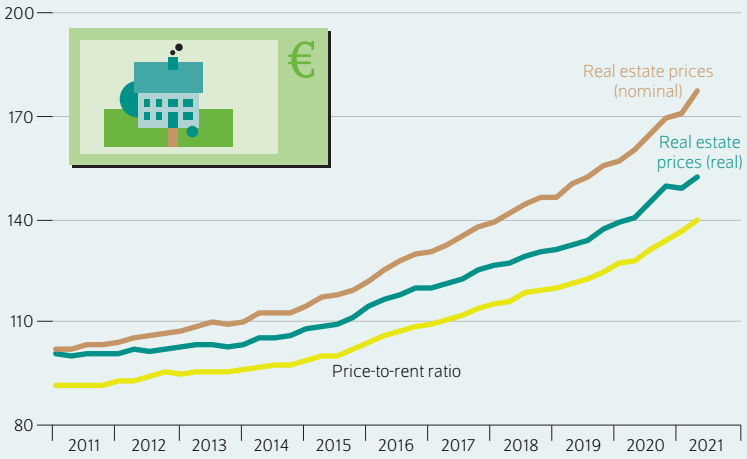
a climate-neutral economy. If the supply bottlenecks dissolve, the high savings of private households are likely to flow into more housing construction activity and the public sector should act quickly in implementing its infrastructure investments. However, it is becoming clear that supplies will be impacted by the effects of the coronavirus recession for some time to come. Therefore, construction prices are still expected to rise sharply. Recently, producer prices have been skyrocketing at a rate not seen since German reunification.

This does not make the new government's investment plans any easier. The *Ampel* coalition is planning to build 400,000 new buildings annually until 2025. Significant expenditure is also required for construction work relating to digitalization; the case is similar for public infrastructure and energy-related renovation of public and private buildings. Thus, vague expansion goals and financial resources available in the short term are not sufficient. Rather, a concrete investment plan for the medium and long term is needed, for example in a cross-budgetary fund. For this purpose, the new government is already considering some projects: The Energy and Climate Fund, for example, should enable investments in the coming years. Spending increases were also agreed upon for expanding the hydrogen infrastructure, digitalization, and railroads. The *Bundesanstalt für Immobilienaufgaben* (BIMA) should initiate its own investment plans in residential construction as well.

This would give construction firms the perspective they need to build up required capacities and to invest in educating skilled workers and in the digitalization of their processes. This also applies to public administration, whose workforce has barely expanded in recent years despite the ongoing construction boom; its age structure is likely to pose a challenge in the future to which smart solutions must be found. One answer is the joint allocation of planning capacities across municipalities, as is done by the *Gesellschaft Partnerschaft Deutschland* (*PD – Berater der öffentlichen Hand GmbH*). With regard to the development of material and energy prices, however, the government has little room for maneuver.

Figure 8

Prices for residential real estate
Index, 2010 = 100



Source: bulwiengesa.

Real estate prices have increased significantly over the past years.

Martin Gornig is is Research Director of Industrial Policy and Deputy Head of the Firms and Markets Department at DIW Berlin | mgornig@diw.de

Claus Michelsen is a real estate economist and the Managing Director of Economic Policy at the Verband Forschender Arzneimittelhersteller | cmichelsen@vfa.de

Laura Pagenhardt is a research associate in the Forecasting and Economic Policy Department at DIW Berlin | lpagenhardt@diw.deAbstract

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DIW Berlin — Deutsches Institut für Wirtschaftsforschung e. V.
Mohrenstraße 58, 10117 Berlin
www.diw.de
Phone: +49 30 897 89–0 Fax: –200
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