

**86th Euroconstruct Conference:  
European Construction Market  
Outlook until 2021****Less Dynamics in Austrian  
Construction Market After Peak  
in 2017****Country Report Austria**

**Julia Bachtrögler, Michael Weingärtler, Michael Klien**

# 86th Euroconstruct Conference: European Construction Market Outlook until 2021

## Less Dynamics in Austrian Construction Market After Peak in 2017 – Country Report Austria

Julia Bachtrögler, Michael Weingärtler, Michael Klien

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### Abstract

Austria continues to face a favourable economic development in 2018, with a GDP growth rate above the EU average (+3.0 percent according to the latest WIFO short-term forecast). However, following increasing uncertainty which may hamper international trade, economic dynamics are expected to slow down notably in 2019. Business expectations of Austrian construction firms keep improving, which is mirrored in ongoing, albeit slowing down, growth in construction output after the growth peak in 2017. In upcoming years, output is expected to grow in all construction segments. In 2018, residential construction will still be the growth driver, however. After 2019, the civil engineering segment is expected to pick up speed. The non-residential construction segment is also expected to grow steadily until 2021, at slowly declining pace.

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# 86<sup>th</sup> EUROCONSTRUCT Country Report



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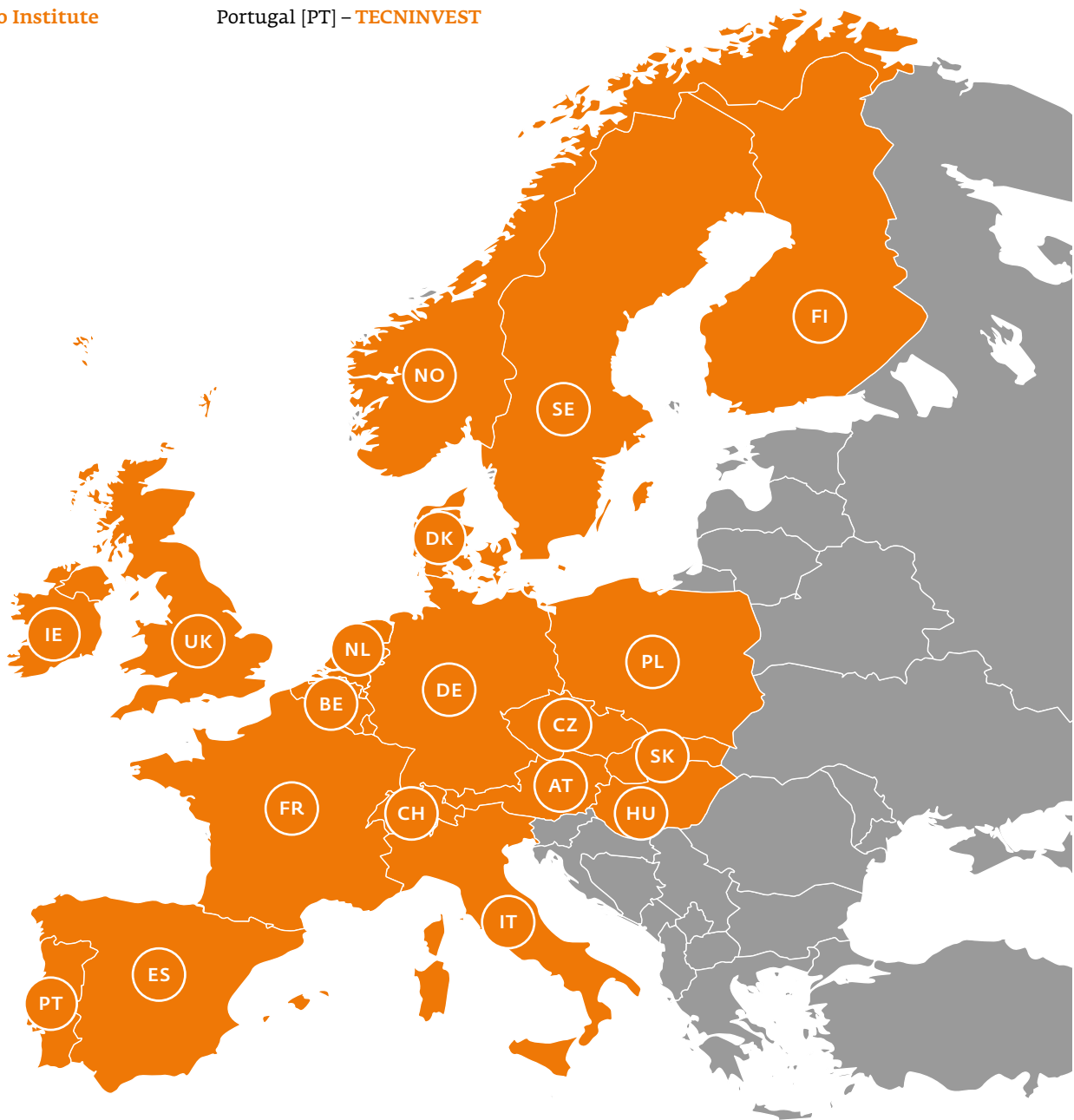
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# Austria

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## 1. Summary and Conclusions

**Austria's economy** will experience a further increase in its growth rate to 3.0% in 2018. While this continues the upswing phase of the recent years, economic dynamics are expected to be dampened notably in 2019 (+2.0%). This development will be triggered by increasing uncertainty regarding the consequences of global political discussions on trade policy, the 'Brexit' and exchange rate fluctuations in emerging countries. All of those issues are expected to hamper international trade. Still, the WIFO short-term forecast from October 2018 foresees that Austrian economic growth will exceed that of its neighbours and the EU average in 2018 and 2019, which is partly due to consumption expenditure that continues to grow thanks to the favourable labour market situation.

The **residential construction** market in Austria continues to expand. While its growth rate of 4.0% (in constant prices) outpaced the overall economic growth in 2017, it is estimated to diminish to the rate of 2.5% in 2018. Albeit further contractions in the annual changes of residential construction are expected for the years after, ongoing population growth and steadily rising housing prices seem to decelerate that development due to continuously expanding residential renovation. Building permits are forecasted to stagnate (at a high level) after 2017. Together with the expectation that the European Central Bank will initiate the first rise in the interest rate for main refinancing operations since the crisis in 2019, this makes drops in residential construction growth in future years more likely.

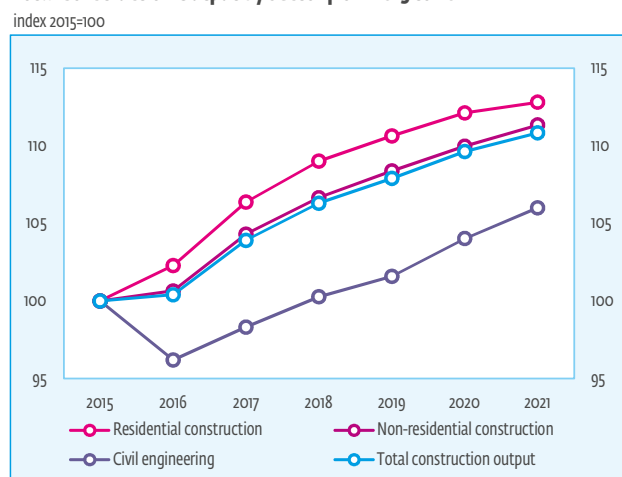
Output in **non-residential construction** was slightly revised upwards in 2018 and is expected to grow by a total of 2.2% year-on-year change. New office construction developed better than forecasted (+3.3%), with major projects in the capital Vienna

playing an important role. The further improvement in economic conditions also had a positive effect on industrial and commercial construction. Private consumption, corporate confidence and order backlogs reached a high level in the first half of 2018, with a lack of employment being the main obstacle for the construction industry. Private investment in new non-residential building construction is expected to increase until 2021, as the economic environment remains favourable. Nevertheless, growth in the coming years, together with overall economic development, will be lower in the privately financed segments of non-residential construction.

Construction of educational buildings is expected to increase in 2018 and 2019, mainly due to budgeted investments in federal schools and university projects. The pace of construction activity in the healthcare sector is likely to slow down in 2018 and 2019, as major hospital projects (such as Hospital North in Vienna) will be completed. Nevertheless, total construction relevant investments in the Austrian healthcare system are expected to increase more strongly in 2020 and 2021, because of the strong private engagement.

The prospects for **civil engineering** are much more positive in 2018, as investment in transport and investments in telecommunications infrastructure remain high. The most important growth driver is transport construction. Railway construction projects are expected to increase by 4.3% in 2018, by 6.3% in 2020 and by 4.7% in 2021 according to the public infrastructure framework plan until 2023. The outlook for investment in the road network is also positive, with the strongest expansion expected in 2019. This cycle of increased motorway construction is expected to end temporarily in 2020. Telecommunication works will continue to benefit from the broadband subsidy programmes in 2018 and 2019, recording significant growth. Energy and waterworks, in contrast, show comparatively low investment activity in the forecast period. Energy utilities continue to suffer from low energy prices, while growth in water utilities is hampered by weak demand due to ongoing tight municipal finances and the already high degree of interconnection.

**Total Construction Output by Sector from 2015 to 2021**



Source: EUROCONSTRUCT (86th Conference)

## 2. Macro-economic outlook

In 2018, Austria's economy will perform better than the countries in the EU and the euro area on average, as predicted in the 85<sup>th</sup> Euroconstruct report. The current WIFO forecast (October 2018) projects a GDP growth rate of 3.0% for Austria as compared to an EU-wide growth rate of 2.2% (2.0% in the euro area). While the economic upswing will come to a



halt also in Austria in the subsequent years, the economic growth in 2019 is still expected to be higher than the EU average.

However, as compared to the 85<sup>th</sup> report, national accounts data for the years 2015 to 2017 – and as part of that GDP growth – has been revised rather strongly by Statistics Austria. This revision was based on new data from the Structural Business Statistics and along with a change in the methodology for the calculation of output in real terms. While the overall economic growth rate was reported to amount to 1.5% in 2016, it turned out to be considerably higher (+2.0%). For 2017, the Statistics Austria revision now points to a lower GDP growth rate (+2.6%) compared to the expectation of 2.9% in the 85<sup>th</sup> report. Therefore, the economic development in 2017 was characterised by lower dynamics than WIFO would have expected in the first quarter of 2018. The downward revision of economic performance in 2017 is based on the growth rate of the important industrial production industry which underscored the expected rate by more than two percentage points. Also, the value added generated by other sectors performed below expectations. In contrast, the construction sector faced a more favourable development in 2017. It grew by 3.1% instead of by 2.5% as predicted in March 2018.

The revision of the production side of GDP is mirrored in the data on e.g. investment demand in the economy. Concerning construction investment, Statistics Austria now indicates that it grew notably slower in 2015 and 2016 than expected on the basis of preceding data (+0.1% instead of 1.1% in 2015 and 0.4% in 2016 instead of 1.1%). In contrast, or as a consequence, construction investment growth in 2017 jumped up to 3.5%, which means an upward revision of the growth rate by 0.9 percentage points as compared to March 2018.

Given the major revision of national accounts data by Statistics Austria, WIFO adapted its prediction for 2018 towards a higher growth rate of construction investment (+2.3% instead of +1.6%). However, it is not expected that this shift in dynamics will affect the growth rates in 2019 and 2020 significantly. The latter are projected to stagnate after the outstanding growth in preceding years.

### Foreign trade.

While the Austrian economic growth performance underscored the EU average in 2014 and 2015, the economy grew by 0.2 percentage points more than the EU member states on average in 2017. According to WIFO short-term forecasts, the Austrian will exceed the EU average growth rate also in 2018 (by +0.8 percentage points). This implies that the Austrian economy seems to follow the positive economic dynamics in Europe with a lag.

The growth performance of EU countries on average is expected to deteriorate up from 2018. Therefore, the international demand for Austrian goods is expected to grow less than in 2017 (in nominal terms) in 2018, namely, by 6.2% (+6.6% in 2017). However, export growth still exceeds the growth rate of imports by 0.3 percentage points. One underlying reason may be that real effective exchange rate grew slower in 2018 than in the preceding year, which contributes to enhancing the attractiveness of Austrian export goods on the international market.

For 2019, WIFO forecasts a considerable decline in trade dynamics, i.e. export growth is predicted to decline to 4.2% and import growth to 4.0%. This development is driven, firstly, by ongoing uncertainty regarding the future of trade policies that is triggered by protectionist measures introduced by the US administration. Secondly, the EU has not agreed on a specific 'Brexit' scenario with the United Kingdom, which will play a major role for inter-European trade in the next years. Thirdly, high pressure on exchange rates of Argentina, Brazil, Turkey and other emerging countries contribute to a reduction in international trade. Finally, another obstacle for a dynamic foreign trade outlook for Austria is that the MOEL countries (Poland, Slovak Republic, Slovenia, Czech Republic and Hungary), which are important trading partners for Austria and continue to grow at a rate over 4% in 2018, are approaching the limits of their production capacities. The latter is the result of a survey among companies located in this country group. Therefore, the remarkable economic upswing in those countries is also expected to be dampened up from 2019, which may lead to lower demand for Austrian goods.

### Industrial production.

The fact that Austrian export demand continues to grow above the EU average is linked to the development of industrial production. While growth in this sector in 2017 was revised to a lower level by Statistics Austria (from +6.8% to +4.7%), WIFO forecasts of October 2018 expect a relatively high growth rate of 6.2% for 2018. Next to international demand, growth is likely to be triggered by national consumption which is projected to increase by 3.7% in 2018 (after +3.1% in 2017) and by positive business sentiments among entrepreneurs until the mid of 2018. Due to decelerating economic dynamics, the growth rate of industrial production is expected to be almost halved to 3.2% in 2019.

### Labour market.

Together with the economic upswing which will achieve the highest GDP growth rate in 2018, the labour market situation continues to improve. The increase in the number of employed persons in Austria is, after a growth rate of 1.8% in 2017, reinforced in 2018 and expected to amount to 2.2%. Due

to still relatively stable national and international demand, the unemployment rate will decrease from 5.5% in 2017 to 4.8% in 2018 (using the calculation method by Eurostat), while labour market participation will rise by 0.9 percentage points to a share of 73.1% of the population. The good labour market dynamics will be dampened in 2019 in line with the Austrian overall economic growth performance. According to WIFO short-term forecasts, the employment rate will grow at the lower rate of 1.4%, and the unemployment rate stagnate and amount to 4.5% in 2019.

**Consumer demand.**

The dynamic development of the labour market, rising wage levels and stable inflation favour private consumption expenditure. After a relatively low increase by 1.4% in 2017 as compared to the previous year, the growth of wages (per employee) is forecasted to reach rates of 2.5% in 2018 and 2.4% in 2019. The inflation rate is expected to amount to 2,1% in both 2018 and 2019, and therefore to remain stable relative to 2017. Taken the development of these two variables together, the forecasted stronger increase in wage growth than in the price level will boost private consumption demand and keep it growing at a high level. Another indication confirming this trend is that, according to a survey of the European Commission, consumer confidence is currently exceptionally high.

In 2018, the disposable income of private households is expected to reach a growth rate of 2.0% (+1.6% in 2019). Therefore, albeit increasing consumption expenditure, also the savings rate of household will be reinforced. It will slightly rise to 7.0% in 2018, however, it is predicted to stagnate again (and fall to 6.9%) in 2019.

**Prices and monetary policy.**

The WIFO forecast of October 2018 predicts inflation to stagnate at 2.1% (like in 2017) in 2018 and 2019. In the two subsequent years, WIFO projections point to a change in price levels of 2.0% p.a., which equals the inflation rate target by the ECB. In 2018, the development of energy prices is the main influential factor. Rising labour costs do not appear to put pressure on inflation, since labour productivity is growing steadily as well.

Mario Draghi, the president of the European Central Bank (ECB) has recently confirmed that the ECB’s main refinancing facility will be kept at 0.0% at least until autumn 2019. However, the pressure on the ECB to increase interest rates grows, as the Federal Reserve in the US has started to adjust interest rates upwards as a response to the economic upswing. Going into the direction of tightening monetary policy, the ECB announced to terminate its policy of quantitative easing. As a first step, the

ECB cut its planned assets purchases by half to 15 billion Euro in October 2018.

**Fiscal policy.**

The Austrian fiscal deficit of -0.8% in 2017 will fall to -0.1% in 2018 according to the current WIFO short-term forecast. In 2019, Austria is predicted to become a net lender, with a fiscal surplus of 0.2%. Currently, the Austrian government, led by the ministry of finance, is drafting a tax reform which should lower tax pressure on labour income by 3 to 3.5 billion Euro and on corporate income by about 1.5 billion Euro. The exact elements of the reform plans as well as proposals on how to finance the decrease in public revenues will be made public end of 2019 earliest.

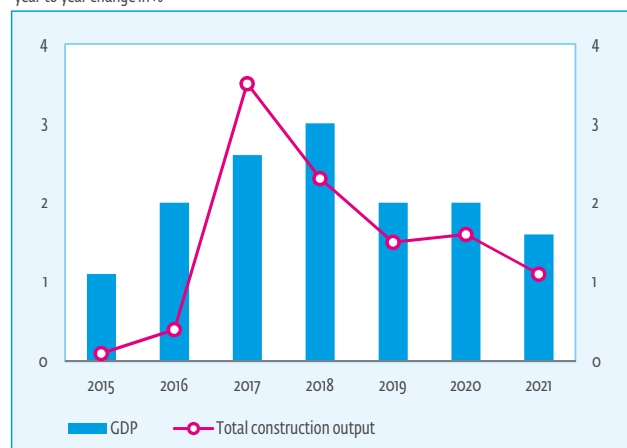
**Forecast uncertainties.**

As in the first quarter of 2018, there is still uncertainty about the consequences of labour market reforms (e.g. the abolishment of certain labour market programmes or the increase of general legal daily working hours from 10 to 12 hours) implemented by the Austrian government. Moreover, details on a tax reform which is announced to comprise 5 billion Euro and should be agreed on in 2019 are prepared at the moment and therefore cannot be considered in forecasts.

The short- and mid-term evolution of the restrictions on international trade imposed firstly by the US, and as a response in other economies including the EU, is uncertain. Furthermore, the (economic) development in several emerging economies, e.g. Turkey, Argentina and Brazil, leads to increased volatility on financial markets.

The United Kingdom will leave the EU end of March 2019. However, negotiations regarding the future relationship between the economies have not been successful until now. Therefore, it remains unclear whether there will be a ‘hard’ or a ‘soft’ ‘Brexit’

**GDP and Total Construction Output from 2015 to 2021**  
year to year change in %



Source: EUROCONSTRUCT (86th Conference)

(which, beside other elements, would consider a free trade agreement). This uncertainty may bias the forecast of economic development as international trade will be strongly affected as well as probably public fiscal balances due to shifts in the EU budget.

Finally, another risk to the economies in the EU are the Italian budgetary plans for 2019, which would break with the EU restriction to newly issued debt per year. To conclude, the forecast uncertainty points the likelihood of a downward correction of economic forecasts.

**Key Macroeconomic Indicators in Austria 2017 to 2021**  
annual percentage change, real terms

	2017	2018	2019	2020	2021
Gross domestic product	2.6	3.0	2.0	2.0	1.6
Private consumption	1.4	1.8	1.7	2.0	2.0
Public consumption	1.5	0.8	0.7	0.7	1.0
Investment (GFCF)	3.9	3.4	2.7	2.8	1.9
Inflation	2.1	2.1	2.1	2.0	2.0
Unemployment	5.5	4.8	4.5	4.4	4.5

Source: Statistics Austria. WIFO-forecasts October 2018.

### 3. Housing Market

According to the revision of national accounts data by Statistics Austria (please refer to the previous section for details) for the years from 2015 to 2017, the expansion of Austria's residential construction market in 2017 was even steeper than suggested. The revised data implies that the development of construction investment was weaker than expected in 2015 and 2016 and peaked at a growth rate of 3.5% (85<sup>th</sup> Euroconstruct report: +2.6%) in 2017. Residential construction investment flourished even faster than total construction investment (and than the overall Austrian economy in 2016 and 2017) and has thereby driven that expansion. The growth prospects of the residential construction market for 2018 are therefore as well boosted and estimated to reach 2.5% in real terms. For subsequent years, growth is expected to continue, however, as following such high levels which might entail the risk of an overheating of the market, at lower rates than before.

#### 3.1 New residential construction

##### Interest rates and financing conditions.

Inflation rates in Europe are approaching the ECB's target value of 2%, however, still, an increase of the main refinancing interest rate – away from the zero-lower-bound – is not expected to happen before September 2019. WIFO forecasts the short-term interest rate to remain negative and to increase only marginally to -0.2% in 2019 but to turn positive in 2020 and to amount to 0.9% in 2021. The same

trend of modest increases until 2019 is expected for long-term interest rates, with accelerated growth towards 2021 (+2.7%). Therefore, monetary policy remains expansive and is not expected to hamper residential construction importantly in the next year, while it may be an important constraining factor in the mid-term future.

While house prices increased sharply in the first half of 2018, financing conditions (including requirements regarding creditworthiness) are stable. The average interest rate for new housing loans continues to range around 1.8%, effective interest rates in August 2018 amount to 2.3% on average. Thus, it is not surprising that growth in housing loans granted to private households remains strong.

According to the Austrian national bank, the stock of outstanding housing loans increased from almost 105 billion Euro by the end of 2017 to over 110 billion Euro in August 2018. This development confirms fears of the risk of an overheating construction market. However, the rising share of fixed interest rate loans (from 36.4% of all new housing loans in 2016 to 47.8% in 2017) contributes to a decrease in interest risks.

In 2017, the Austrian parliament passed a new law which extends the macroprudential supervision of the Austrian national bank and the Financial Market Supervision by instruments to reduce systemic risks stemming from the financial development of the construction market. In a report in April 2018, the Austrian national bank noted, however, that they currently do not see any systemic risks (in the development of housing prices) and therefore no need to impose stricter regulation on housing loans.

##### Building permits.

The stock of Austrian building permits for one- and two-family dwellings as well as multi-storey buildings increased to the number of 62,600 in 2017. Such a high level has last been registered in the late 1970's and points to a veritable boom in residential construction. This historical high is likely to have contributed to the upwards revision of the residential construction investment in 2018 (from the former prediction of 1.8% to 2.5%), and therefore to the smoother decline (than expected) in residential construction investment in subsequent years. Nevertheless, as the data of previous periods show, the development of the stock of building permits is not always a accurate indicator for explaining changes in investment demand. For example, an expected change in regulatory requirements for new housing may increase the incentive of applying for a building permit although the construction will actually take place several years later. However, even when considering a certain time lag, the link is not always apparent.

Regarding the evolvement of the residential construction market in 2018 and later, the deceleration of investment is mirrored in the tendency towards decreased stocks in building permits. In 2019, however, a short-lived upward tick is predicted, which is expected to be driven by one- and two-family homes. Towards 2021, building permits for smaller entities as well as for multi-storey buildings are predicted to continue to decline. The forecast for 2021, however, still exceeds the number of building permits in 2016, which indicates that construction investment may not shrink immediately. This trend is echoed in the predicted change in housing completions. Multi-storey buildings are expected to grow faster than completions of single- and two-family dwellings.

An analysis of the regional distribution of building permits within Austria shows that the historical high in the stock of building permits in 2017 was majorly determined by a large increase in Vienna. That may be linked to the fact that most multi-storey buildings are located in large urban areas such as Vienna (or Graz, Styria). In the rest of Austria, there is no clear pattern apparent for 2017. While building permits in Styria and Vorarlberg also went up, Upper Austria, Lower Austria, Carinthia and Tyrol exhibit (considerably) fewer building permits in 2017 than in 2015. The number of building permits in the first half year of 2018 mirror the strong expected increase in completions of multi-storey buildings. The latter are expected to majorly affect Vienna, Graz (Styria) and probably Linz (Lower Austria). Due to the boom of the construction market in Austria, WIFO-forecasts suggest that building permits in the whole year of 2018 will underscore those in 2017 by around 1,100 units.

#### Regional Building Permits in New Residential Buildings

	2013	2014	2015	2016	2017	H1 2018
Burgenland	1,629	1,968	1,931	1,611	1,392	874
Carinthia	2,416	2,718	2,915	2,537	2,315	1,119
Lower Austria	8,273	8,916	9,164	9,032	8,809	3,540
Upper Austria	7,244	9,089	7,535	9,142	7,498	3,948
Salzburg	3,764	3,011	3,168	2,923	2,607	1,197
Styria	7,317	7,754	7,261	9,527	9,740	4,917
Tyrol	4,089	4,337	5,360	4,679	4,197	1,970
Vorarlberg	2,287	2,665	2,777	2,800	3,284	1,234
Vienna	9,590	9,014	10,752	15,724	22,797	9,238
<b>Austria</b>	<b>46,609</b>	<b>49,472</b>	<b>50,863</b>	<b>57,975</b>	<b>62,639</b>	<b>28,037</b>

Source: Statistics Austria (October 2018).

#### House Prices

year-on-year change, %

	2013	2014	2015	2016	2017	H1 2018
<b>Austria Total</b>	<b>4.7</b>	<b>3.5</b>	<b>4.1</b>	<b>7.3</b>	<b>3.8</b>	<b>6.1</b>
<b>Total</b>	<b>8.7</b>	<b>4.2</b>	<b>2.2</b>	<b>3.8</b>	<b>1.5</b>	<b>3.9</b>
<b>1+2 Family Houses</b>	2.9	-3.3	2.6	-1.9	2.5	-0.9
<b>Vienna Flats</b>	9.1	4.7	2.2	4.2	1.4	4.1
<b>New flats</b>	3.7	1.0	4.7	10.1	1.8	4.8
<b>Used flats</b>	9.8	5.2	1.9	3.4	0.8	5.3
<b>Austria without Vienna Total</b>	<b>2.7</b>	<b>3.1</b>	<b>5.1</b>	<b>9.1</b>	<b>4.9</b>	<b>8.0</b>
<b>1+2 Family Houses</b>	1.1	6.4	6.8	7.5	1.9	9.8
<b>Flats</b>	3.3	1.9	4.5	9.7	5.8	7.1
<b>New flats</b>	2.2	-11.2	0.4	7.9	2.1	9.5
<b>Used flats</b>	3.4	3.5	4.9	9.8	5.9	7.5

Source: OeNB (2018), Prof. Wolfgang Feilmayr, Department for spatial planning, TU Vienna.

#### House prices and real estate.

Population growth in Austria continues to be coupled with increasing house prices, which reflects the rising demand for residential buildings. In the last few years, the extent of population growth has stagnated and, according to a price index published by the Austrian national bank, also the prices have developed less dynamically in 2017 (they increased by 3.8% on average in Austria) as compared to the previous year (2016: +7.3%). However, in the first half of 2018, relative to the same period in 2017, growth in house prices amounted to 6.1%. Therefore, it could be the case that price dynamics are reinforced following the strong upswing in residential construction investment in 2017.

Comparing the price development in the first half of 2018 in Vienna with the rest of Austria, the trend of recent years continued. Vienna has been driving house prices after the economic and financial crisis, however, since 2015, Viennese real estate prices lag behind the high growth rates in other parts of Austria. The augmentation of the price change in Vienna in the first half of 2018 (relative to the first half of 2017), which more than doubles the price development in 2017 as whole, might also point to a renewed price dynamic.

Related to house prices, also the number of transactions has been stabilizing. In 2017, the number of transactions decreased by 0.2%, whereas it has increased at extraordinarily strong growth rates in the years before. In 2018, however, another increase of almost 8% in the number of transactions in Austria (even 15% in Vienna), seems to support the prolongation of a dynamic residential construction market in Austria.

**Real estate transactions**

number in '000, volume in billion Euro

		2014	2015	2016	2017	H1 2018
Austria	number	96,197	112,124	121,436	121,171	64,901
Vienna		15,189	18,052	19,490	21,378	11,697
Austria	volume	19.5	23.5	26.9	28.1	15.6
Vienna		6.0	7.2	8.2	8.8	5.0

Year over year percentage change

		2014	2015	2016	2017	H1 2018
Austria	number	+18.1	+16.6	+8.3	-0.2	+7.6
Vienna		+18.1	+18.8	+8.0	+9.7	+15.0
Austria	volume	+21.9	+20.4	+14.2	+4.7	+12.5
Vienna		+23.4	+19.7	+14.6	+6.6	+18.3

Source: RE/MAX-Immospiegel / IMMOUnited GmbH, 2018. – Based on the official land register which covers new and existing buildings. Transactions cover all types of buildings (residential and non-residential) and land.

**Public sector and policies.**

The new federal government of Austria, which is in office since December 2017, has announced that their housing policies will focus on a decrease of construction costs and a modernization of renting regulations. It is too early to evaluate the effects of specific measures on residential construction demand, however, some of the measures are likely to have a significant effect.

- Liquidation of ‘Wohnbauinvestitionsbank’ (WBIB):**  
 After the financial ministry withdrew from assuming financial liability for the ‘Wohnbauinvestitionsbank’ (WBIB) in the first quarter of 2018, the liquidation of the bank is now fixed. The WBIB was founded in 2015 as an integral part of the ‘Wohnbauoffensive’ and should have raised collateralized loans from the European Investment Bank (EIB) at favourable fixed interest rates. The funds would have been made available for social housing and other developers. After the government refused to guarantee for a share of those loans, also the other federal governments (‘Bundesländer’) decided not to support the WBIB. The target of WBIB was to build 30,000 flats in addition to other public building initiatives and, therefore, the halt of the operations will have a detrimental effect on new public (social) housing. The housing activities from the second national initiative (Austrian Real Estate – ARE) continue as planned.

- New rental regulations:**  
 The Austrian government announced to change rental regulations in January 2019. There is no list of specific amendments publicly available yet, however, the envisaged reform will most likely include increasing incentives for longer-term renting contracts. This should help to reduce vacancies. Moreover, as another incentive to rent, landlords should be enabled to consider the cost for restorations of existing apartments for the rent.

In Austria, regional governments are also in charge of housing policies. One of the main instruments of those governments in order to steer residential construction is public housing support. The subsidy ranges from 2 to 3 billion Euro per annum, whereas it has been steadily decreased from year to year since 2014. In 2017, the expenditure for public housing support amounted to a fifth less than in 2014. The decline is due to both supply and demand side factors. On the supply side, some provinces are under pressure to reduce public spending to meet the requirements of the national stability pact. On the demand side, the favourable financing conditions make public subsidies, which are frequently coupled to fulfilling energetic and thermal buildings standards, less appealing.

There is considerable variation in the development of public housing support across Austrian regions (‘Bundesländer’). First and foremost, a reversal in the trend of decreasing support can be seen in Vienna, where the subsidy nearly quadrupled in 2017 as compared to the previous year. This increase may be one of the factors that boosted residential construction in 2017. Likewise, subsidies have slightly increased in the last years in Western Austria, i.e. in Tyrol and Vorarlberg.



**Public Housing Support -Expenditure**

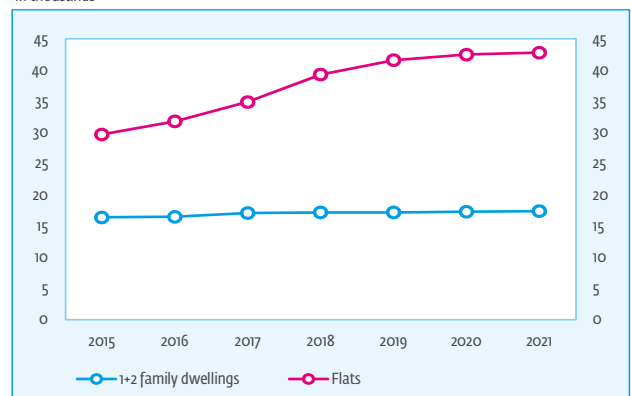
volume, million Euro

	2012	2013	2014	2015	2016	2017
Burgenland	96	70	94	79	63	59
Carinthia	149	123	135	124	131	129
Lower Austria	490	470	622	472	434	409
Upper Austria	229	310	339	284	275	276
Salzburg	215	272	262	188	168	140
Styria	430	441	444	451	380	334
Tyrol	265	255	268	270	277	277
Vorarlberg	221	168	146	147	141	148
Vienna	149	123	135	124	131	494
<b>Austria</b>	<b>2,562</b>	<b>2,672</b>	<b>2,939</b>	<b>2,528</b>	<b>2,378</b>	<b>2,265</b>

Source: BMF (2018).

**Housing Completions from 2015 to 2021**

in thousands



Source: EUROCONSTRUCT (86th Conference)

### 3.2. Residential renovation

In concert with new residential construction, also residential renovation evolved more dynamically than expected in 2017, and residential renovation investment growth is expected to slow down in 2018 and consequent years. However, up from 2019, when the remarkable upswing in new residential construction will gradually extenuate, renovation investments are expected to grow even relatively stronger.

There are several explanations why residential renovation has accelerated less than new construction in the last years why it is estimated to continue to do so in 2018. Firstly, public support for housing in Austria majorly targets building new houses. The subsidies for renovation works paid by the Austrian regional governments in 2017 amounted to less than one third of subsidies for new residential units.

Secondly, regional public housing expenditure for renovation in Austria has been reduced gradually in recent years. In 2010, it amounted to about 850 million Euro while it dropped below 525 million Euro in 2017. Since 2014, those subsidies for renovation works have declined by more than 25% and therefore have experienced higher cuts than the total public housing support which we referred to in the previous section. Next to the regional funding scheme, the federal government offers the so-called 'renovation cheque' ('Sanierungsscheck'), a subsidy directly targeted at, mostly thermal, renovation works. However, the funds made available for that purpose were reduced by 20 million Euro to a total budget of 80 million Euro in 2015. In 2016 it was nearly halved and, as in 2017 and 2018, amounted to around 43 million Euro. Moreover, the 'renovation cheque' is not only targeted at private households and residential renovation but also at firms for the thermal renovation of buildings. It seems that weak demand for the 'renovation cheque' was one of the reasons why the budget made available was reduced.

Finally, the low uptake rate suggests limited interest from households to engage in renovation and energy efficiency measures, which is likely to be due to insufficient financial incentives. Several institutional factors, such as the issue that renovation costs can only be partially considered for rents, contribute to this. Combined with the principal agent issue that the benefits (e.g. energy savings) accrue to the renter and not the owner of the residential unit aggravates this problem.

The Austrian government has announced changes in rental regulations in 2019, one of which should allow to factor renovation costs into rents. This reform as well as elevated land prices and housing cost, especially in urban areas, is expected to spur residential renovation investment in the near future.

## 4. Non-residential Market

**Past market performance.** The recovery of Austria's non-residential construction market took place at a slower pace than in residential construction. In 2015, the total non-residential market grew by only 0.6% and in 2016 by 0.7% in real terms, compared to the previous year. It should be noted that this contrasts with the data provided in the previous 85<sup>th</sup> conference. The changes are stronger this time in comparison to previous years. On the one hand, the official data was revised based on new information available from the so-called 'Structural Business Statistics'. On the other hand, the calculation methodology at constant prices was put on a new foundation by Statistics Austria. In the past, calculation in real terms was based on a sector calculation since price trends were not available on a goods level. From now on, new input/output tables calculated at constant prices at the level of goods (up from 2014) are available and used for the calculation of construction output in real terms. The new information available from the so-called Structural Business Statistics in combination with the change in methodology led finally to a new economic picture with slower recovery in total non-residential construction in the years 2015 and 2016. Contrarily, it turned out that total non-residential construction grew more dynamically in 2017 (+3.6%). High business confidence, full order books along with strong overall economic growth pushed this construction market segment.

**Recent market performance and outlook.** The favourable economic framework is expected to hold on also in 2018 with an even slightly stronger GDP growth of 3.0% than in 2017 (+2.6%). An expanding labour market along with declining unemployment pushes various subsectors (like industrial and mainly office construction). Private consumption is also expected to growth further in 2018, which influences construction segments like commerce positively. Thus, an overall stronger growth by 2.2% in total non-residential construction compared to the previous 85<sup>th</sup> forecasts (+1.7%) is expected.

Beside private non-residential construction also the outlook for public non-residential investments (like in education and health) improved slightly. The public body and municipalities profit from higher tax gains which increase the budgetary leeway. A positive impact on public investment in buildings results from a law, called 'Support for Municipal Investments' ('Kommunalinvestitions-gesetz') which came into force in 2017 with the aim to strengthen municipal infrastructure. This programme has a financial volume of 175 million Euro from which the public sector expects three times higher investments

than the subsidies granted. The special-purpose grant is intended for the following additional construction investments at municipal level:

1. Building, expansion and renovation from child day centres and schools
2. Building, expansion and renovation of facilities for elderly and persons with disabilities
3. Building and renovation of sports facilities and public buildings owned by municipalities

In 2019, investment levels will remain high in total non-residential construction. Growth is weakening due to several factors. First, the overall economy is forecasted to grow at a slower pace (GDP growth 2019 of 2.0%). Additionally, major city development projects in the capital Vienna will be finished by the end of 2018 and early 2019, especially in office construction. Furthermore, market saturation can be observed in some areas, all above in commercial construction where competition has already reached a very high level.

In summary, non-residential will continue to grow, by 1.6% in 2019 and, at decreasing rates, also in 2020 and 2021.

**New non-residential construction by subsectors.**

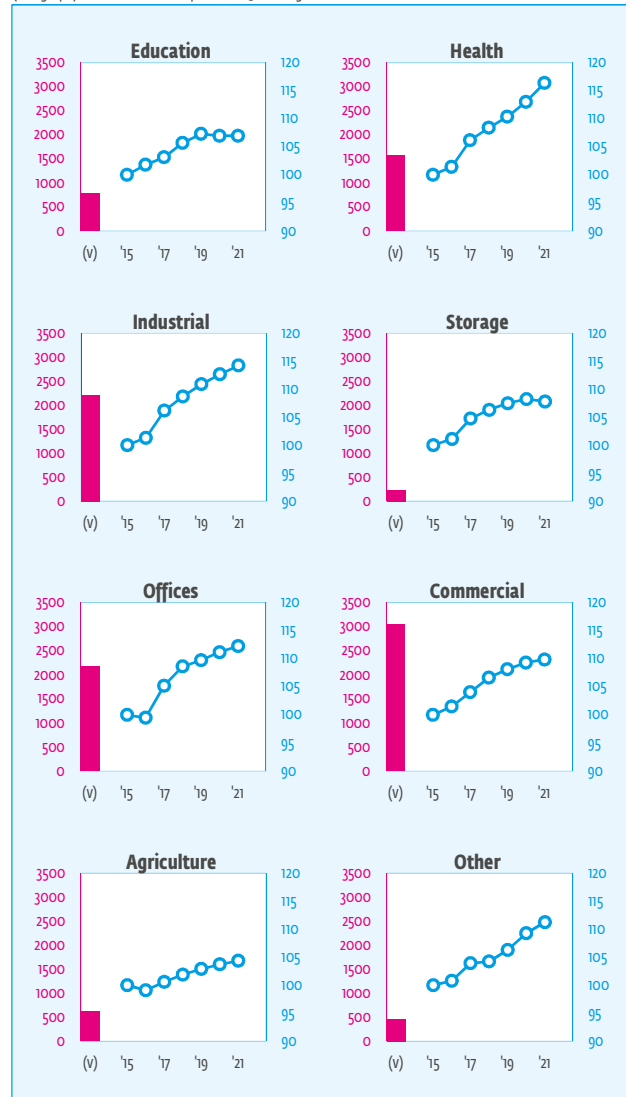
**Education.** The construction of education buildings is implemented on three institutional levels: Firstly, on the municipal (being the largest contributor), and secondly on state (‘Bundesländer’) level. Thirdly, investments are undertaken by BIG, the federal real estate company, which acts as an important player, mainly in the area of federal schools and universities.

At the municipal level, investment in education has increased in recent years, according to the budgetary reports of the federal states. As they have achieved record high growth levels compared to the last 15 years, it is likely that future growth rates in this area will diminish. Nevertheless, the 2018 outlook (+2.5%) was slightly revised upwards because of expected investments from BIG. Impulses will stem from the expansion of kindergarten facilities, which also was responsible for the recent stronger investment activity on the municipal level. The current draft law of the so-called ‘§15 agreement’ between the public sector and the federal states suggests a support volume of 142.5 million Euro between 2018 and 2022. Furthermore, the draft law states that the federal states have to provide 52.5% of the public support, whereby at least 65% of the public support is earmarked for the expansion of the offer of kindergarten care.

The public sector budget 2018/19 indicates strong investments of BIG until 2023. Large new building projects are the Future Art Lab – Musical University

**New non-residential: breakdown by subsectors**

(v) = volume 2017, million €, left scale;  
(line graph) = index at constant prices, 2015=100, right scale



Source: EUROCONSTRUCT (86th Conference)



Vienna, the Biology Centre St. Marx and Silicon Austria Labs – Technical University Graz.

Despite the expected strong investment activity of BIG, educational investments are expected to stagnate towards 2020 and 2021 because of lower activity on the municipal and state level.

No major impacts on educational construction are expected from a recently passed law on educational investments (‘Bildungsinvestitionsgesetz’) which came into force 2017. It comprises a total investment volume of 750 million Euro for the period until 2032. For the first years, 2018 to 2023, an average volume of about 60 million Euro was budgeted, but the impact on construction will be minor since investments target mainly the expansion of all-day school forms (in existing school buildings). Additionally, according to recent decisions, no funds will be paid based on this law in 2018 but first payments are expected from summer 2019 onwards.

**Health.** Expenditures in the Austrian Health System amounted to around 40.1 billion Euro according to the flash estimate of Statistics Austria. Nearly 7% of these expenditures (2.7 billion Euro) were investments in buildings and medical equipment. The net construction-relevant investments amounted to about 1.6 billion Euro in 2017. Investments in health buildings grew strongly in 2017, with a growth rate of about 4.7%. This growth stems solely from the private sector, as public investments declined slightly. The trend of increasing private engagement therefore continues. It can be seen that the absolute volume of private investments in the health sector – covering buildings and medical equipment – increased nearly by one third within the past five years. Almost half of the health investments in Austria will be made by private entities in 2018. The ongoing strong private engagement reflects the continuous high demand for health services. The construction of care facilities for elderly is one driving force. Demographic development indicates that the population over 75 years will grow by 140,000 persons within the next ten years. The share of population within this age group will more than double (from 4.0% to 8.1%) between 2010 to 2050.

The outlook for construction investment the health sector holds on to be positive in the upcoming years. The completion of big hospital projects (like the Vienna North Hospital) will lead to minor growth in 2018 and 2019. Investment activity is also adversely affected by Austria's very dense hospital network (see excursus on hospitals). Hospital locations and possible merges are still evaluated with the aim to increase the efficiency in the health sector. Thus, public investments are expected to be weak, reinforced by the public 'debt brake' which is in place since 2017. This forces state governments to tighten cost controls in the upcoming years. It is expected that these lower investments from the public sector will be fully offset by private investment. Total growth for health construction is therefore expected to vary between 2% and 3% in the years 2020 and 2021.

#### **Excursus Hospitals.**

The latest OECD report 'Health at a Glance 2017' shows that Austria has the largest number of hospital discharges of the 34 OECD countries, which exceeds the OECD average by 64%. Hospital discharges even increased in the past two years by nearly 4 percentage points. Austria is also among the top five countries in terms of the number of hospital beds per 1,000 inhabitants (7.6). This is likely to limit future development in this area.

**Industry.** Construction of industrial buildings increased significantly in 2017. Investments in this area grew at a rate of 4.8% at constant prices in 2017.

This is much stronger than previously anticipated. A major reason was the strong return of overall economic growth. Business surveys reached peak values in confidence and order books of construction companies showed record levels. The high growth rates resulted technically also from the lower underlying volumes because of the weak performance in 2015 and 2016.

Beside investments in construction, also investments in equipment increased in 2017 stronger than expected. Companies were and are expanding their production capacities to fulfil the demand. WIFO surveys on economic sentiments showed that in 2017 the capacity utilisation rose dynamically and reached similarly high levels in the first half of 2018 such as in the years 2007 and 2011. Ongoing strong private consumption is additionally supporting this development. A peak was expected in summer 2018, and the current economic sentiment indicator from WIFO confirms this forecast. The strong business confidence holds on in the construction sector with an index above the 30-point mark (32). Nevertheless, the September 2018 survey showed already a decline in the business sentiment index by 5 points according to the feedback from construction companies. This decline is derived from companies reporting lower construction activity. Other business sentiment factors like order backlogs and production restriction (e.g. labour shortage) remained constant.

Therefore, the outlook stays positive even if growth is expected to be lower, at rates around 2% on average, in the upcoming years towards 2021.

**Office.** After a decline in office construction in 2016, this market subsegment grew dynamically in 2017 as forecasted. The driving force were not construction projects for let; instead most of the new office production will be used by the builder. Total investments in Austria's office construction had a volume of about 2.2 billion Euro in 2017. Vienna is the most important office market with a total office space of about 11 million square meters by the end of 2017 according to the real estate company CBRE. In 2017, the office market picked up significantly with 154,000 square meters completed after several years with relatively poor performance. Strong growth is expected to hold on in 2018, but at a slightly lower pace of 3.3% since major office projects are in the phase of completion. Estimations from the real estate companies EHL and CBRE expect around 280,000 square meters in office space completed in 2018. Major current office projects are the Austria Campus (1020 Vienna, size: 6 buildings totalling 200,000 sqm), The Icon Vienna (1040 Vienna, size: 88,000 sqm), ViE (1030 Vienna, size: 13,800 sqm). The current positive market situation led to vacancy rates of around 5% in the capital Vienna. Average



rents are also increasing slightly according to the real estate companies CBRE and EHL. The latter predicts a slight upturn of average office rents by 14.30 Euro to 14.50 Euro per square meter. One of the reasons for the price increase is the higher demand for new high-quality office buildings which are more often requested by companies. The Austrian office sector is also an interesting market for multinational companies, since prime rents of 26 Euro are rather low as compared to other European countries. Office construction is also positively influenced by the investment market which seems to get more international with new players in 2018.

Lower economic growth and accordingly lower investments are expected in the upcoming period, which limits the positive outlook on office construction investment. The high production rates within the past two years have an additional negative impact which can be derived from the statistics on office permits. After a strong increase of permits for offices and administration buildings by nearly 15% in 2017, the development slowed down in the first half of the year 2018. Thus, the outlook for office construction from 2019 and 2021 stays favourable, but construction investment will expand at lower growth rates of about 1% annually on average in real terms.

**Commerce.** Commercial construction performed slightly better in 2017 and grew by 2.5% in real terms. A similar performance is expected in 2018. Economic growth along with higher consumption spending are stimulating the market additionally. Austria, all above the capital Vienna, was one of the top ten targets for new business entrants according to CBRE. Their survey in 2017 showed that 29 brands planned to enter the Austrian retail market.

Private consumption increased by 1.4% in 2017 and a continuously stronger expansion is expected from 2018 onwards reaching a growth of 2.0% p.a. in constant prices in the years 2020 and 2021. Increasing tourism is additionally supporting the retail market.

**Forecast risks in commercial construction.** Legal regulations restrict new greenfield shopping centres. In this area, expansions and mainly renovation works are more important factors than new construction. Additionally, Austria has the highest sales space per capita. The Retail Barometer 2018 for Austria ('Handelsverband') shows that with 1.67 square meters (m<sup>2</sup>) per inhabitant, domestic retailers rank first in this statistic ahead of Belgium (1.64 m<sup>2</sup>) and the Netherlands (1.61 m<sup>2</sup>). For many retailers in Austria, the strong focus on branches poses the threat of declining market shares and lower returns, especially since online traders like Amazon expand their market shares. This limits

new commercial construction and as a result new projects are located almost exclusively in top locations because of the strong competition. This leads to a continuous increase in high-quality shopping facilities but also the criteria for a top location are getting stricter and stricter.

**Structural facts.** Austria's retail market records a total retail space of about 14 million square meters according to CBRE. Shopping centres take a share of 2.8 million square meters and speciality retail centres of 1.1 million square meters. This proportion is similar when it comes to completed space.

## 5. Civil Engineering Market

AT

Austria's civil engineering market was also affected by the major revision of the national accounts as already discussed in the previous chapters on housing and non-residential construction. The latest data available indicates a stronger decline in the years 2015 (-2.3%) as well as in 2016 (-3.8%). Not all subsectors were affected at the same extent. Mainly investments in the transport sector and in water works performed weaker than expected in the previous 85<sup>th</sup> Euroconstruct report.

The 2017 data remained unchanged because the shift of projects towards the following years was already considered in the past forecasts. In 2018, the improved overall economic performance and thus the higher budgetary leeway on the municipal level lead to a stronger expected growth of the civil engineering market (+2.0%; instead of previously +1.1%). This is underpinned by improving government net borrowing which is expected to reduce from -1.6% in 2016 to -0.1% of GDP in 2018. The forecasts for 2019 even show a financial surplus of 0.2% of GDP according to the recent budgetary plan 2018/19.

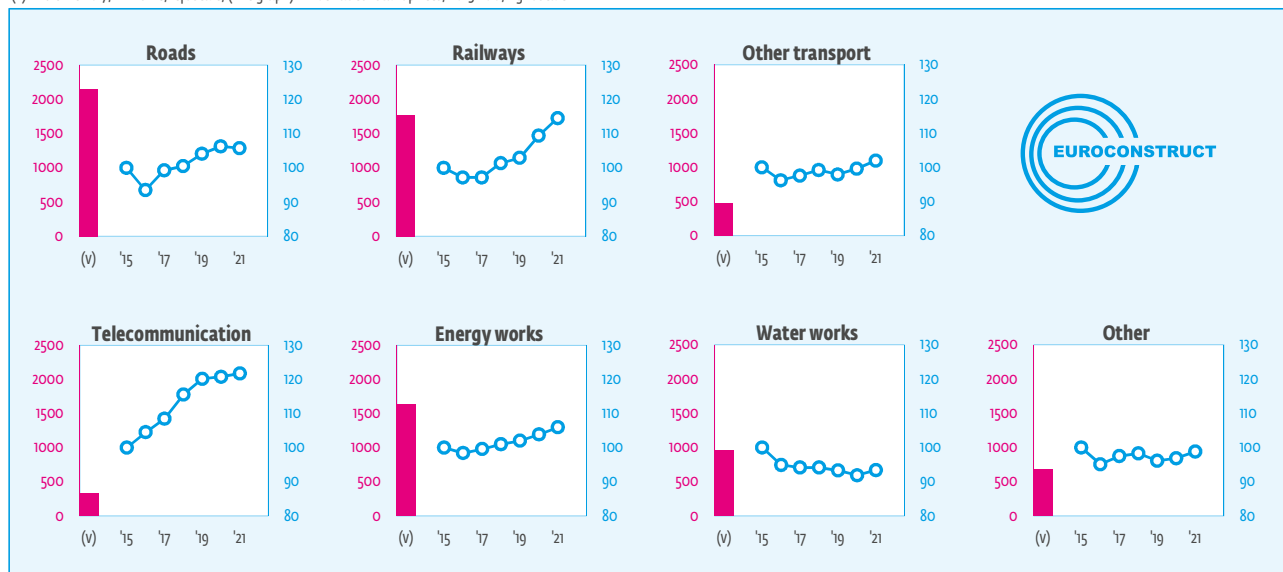
Beside the improved financial position of the public sector, also several legal measures were undertaken to improve Austria's business location. One of the latest was the reform of environmental impact assessments for new construction projects which was approved on October 25<sup>th</sup>, 2018 by the National Council. The main target was to shorten the procedure in order to achieve a faster realisation of bigger infrastructure projects. On the downside, the new regulation will restrict the rights of non-governmental organisations, which is a highly criticised aspect as it is probably not in line with EU law.

### 5.1 Civil engineering by sectors

**Transport infrastructure.** The main construction trends in transport infrastructure can be derived from the budgetary draft for 2018/2019 which was presented by the Ministry of Finance on 21 March

**Total civil engineering: breakdown by subsectors**

(v) = volume 2017, million €, left scale; (line graph) = index at constant prices, 2015=100, right scale



Source: EUROCONSTRUCT (86th Conference)

2018. It also determines the budgetary scope of the transport infrastructure framework plan. The focus of the current budgeting period 2018/19 is mainly set on families, education, research and public security. Civil engineering is also considered as an important factor, but several projects are postponed compared to the infrastructure roadmap 2017 (84<sup>th</sup> Report/2017).

The current (upward) revision for 2018 is not based on a change of the governmental roadmap. It must be seen as an adjustment to the current economic environment and the results of company surveys as well as production statistics. Recent data suggest that a higher growth rate of 2.5% in the transport infrastructure sector is likely, mainly because of the strong performance of rail construction works which is expected to grow by 4.3% in 2018.

**Road infrastructure.** Road infrastructure was revised to a growth of 1.2% in 2018. Low-ranked road network construction volumes are expected to stagnate even more, and thus follows the trend of the last couple of years. Furthermore, it could be observed that the budgetary drafts ('Landesrechnungsvoranschlag') published were often too optimistic. According to final financial statements ('Landesrechnungsabschluss') of the Austrian federal states, the final expenses for road infrastructure were often lower than budgeted.-

The situation in the high-ranking road network (highway infrastructure) is much more positive, as construction investments are increasing in this segment. One of the reasons is that highways are run and operated by Asfinag (Austria's highway financing stock cooperation). Asfinag is fully owned by the Austrian Republic; nevertheless, it

is independent from the public budget, because it finances its project from its own resources. The main source of income stems from the yearly toll (Vignette) for passenger vehicles and the distance-based toll for heavy vehicles which generated high revenues in the past years. The mileage on Austria's motorways increased by 2.7% in 2017 which led also to a solid growth in income. Therefore, toll revenues grew significantly by 5.8% in 2017, reaching a level of two billion Euro. Heavy vehicles contributed most with an increase by 7.6% in toll revenues.

In 2018, nearly 1.1 billion Euro will be invested in the Austrian highway network. Most of the funds (335 million Euro; 34%) will be spent for new projects (excluding tunnels), 316 million Euro (29%) for renovation works (excluding tunnels) and 280 million Euro is budgeted for tunnel projects (new and renovation). The rest (110 million Euro) is used for other tasks such as toll and traffic management.

More than 70 highway projects with a volume of 500,000 Euro and higher were started in 2018. Following projects belong currently to the most important ones:

- A26 Linzer Highway (project start: 2018, planned end: 2023, budgeted volume 668 million Euro)
- S7 Fürstfelder Expressway (project start: 2017, planned end: 2023, budgeted volume 488 million Euro)
- A7 Mühlkreis Highway (project start: 2018, planned end: 2020, budgeted volume 168 million Euro)
- A9 Pyhrn Highway – Gleinalm tunnel (project start: 2013, planned end: 2019, budgeted volume 290 million Euro)
- A11 Karawankentunnel (project start: 2018, planned end: 2023, budgeted volume 168 million Euro)

- S3 Weinviertler Expressway (project start: 2017 planned end: 2020, budgeted volume 132 million Euro)
- S16 Arlberg Expressway (project start: 2016, planned end: 2019, budgeted volume 130 million Euro)

Asfinag's budgetary plan indicates a significant increase in investment in 2019 and a slowdown in construction growth in 2020. The project volume will be significantly reduced in 2021 and therefore also the whole road works sector is expected to decline by the end of the forecasting period.

Total road investments amounted to slightly above 2 billion Euro. Thereof around 50% of investments are used for the extension and renovation of the highway network. The rest is split into investments on the municipal (35%) and on the federal level (25%).

All in all, the recent revision suggests a minor growth in road construction works by 1.2% in 2018, which results from a less pessimistic outlook on the federal and municipal level since the budgetary situation improved. The outlook for 2019 is even more favourable – mainly because of Asfinag's ambitious investment targets which should ensure a positive development in the whole road works sector (+3.6%). Budgetary plans show that growth will continue in 2020 but at a minor level, while the current plans indicate a reduced investment activity in road construction in 2021.

**Railway infrastructure.** Investment in the railway sector was influenced significantly by the recent public sector budget 2018/2019. In contrast to the financing of highways, the railway sector fully depends on the public household planning. Therefore, also the recent construction update only shows some minor adoptions without any severe changes. As reported, several postponed projects led to a stagnation in railway construction in 2017, whereas an accelerated growth in construction at around 4.3% is expected for 2018.

#### Recent main railway projects are:

- The 'Brenner Basis Tunnel' is currently the largest railway project with a volume of close to 5 billion Euro (without financing costs). For the period 2018-2020, investments of about 952 million Euro are budgeted. The project is still in the start-up phase – less than 17% of the total volume was spent at the beginning of 2018. Annual investments are expected to increase in course of the construction progress from 211 million Euro in 2018 to 470 million Euro in 2020 and to over 500 million Euro in the years afterwards. The route is planned to be finished in 2025.
- Southern route ('Südbahnstrecke'). The main project is the 'Semmering Basis Tunnel', connecting Gloggnitz and Mürzzuschlag, with a volume of

about 3.3 billion Euro. For the period 2018-2020, around 871 million Euro are budgeted. The largest investments will be spent in 2020 (312 million Euro) and not in 2018 as previously planned. Around one quarter of the project is finished, and completion is expected in 2026.

- The 'Koralmbahn', the connection Graz-Klagenfurt, has a project volume of around 5 billion Euro. In the period 2018-2020 construction works will amount to 960 million Euro which are nearly evenly distributed over this three-years period. The opening of the route will be delayed towards 2026 instead of previously stated 2024.

Several projects (and project stages) scheduled for 2018 and 2019 in the old (2017) framework plan were postponed. This explains a rather low growth of railway works in 2019 by 1.5% and the catch-up in 2020 (+6.3%) and 2021 (+4.7%).

**Telecommunication works.** On October 25th, 2018 a new telecommunication law was passed with the aim to accelerate broadband expansion. Several actions go along with this, e.g. telecommunication providers will be able to install 5G antennas unburdened on public buildings. Furthermore, federal states and municipalities are required to report their excavation work so that, if necessary, fibre-optic cables can be laid additionally by telecom operators. Conversely, states and municipalities can join the excavation work of private companies. These actions make the expansion of the next 5G generation of mobile communications less bureaucratic and more can be invested in the expansion of the network – also due to the anticipated lower costs for the acquisition of the 5G frequencies.

The last frequency auction made a revenue of 2 billion Euro for the public budget from which 1 billion was granted for public support. This also explains the current strong investment activity. These actions should help to reduce the digital gap in Austria since investments in broad band and high-speed internet connection lag behind other industrial countries, with an investment volume of only 0.23% of GDP. This is one of the lowest rates within the OECD.

The current budgetary plan introduced in March 2018 contains public broadband support with a volume of 135 million Euro in 2018 and 145 million Euro in 2019. This represents an increase of over 7% compared to the previous year. In 2017 construction-related telecommunication works increased by 3.8% and growth remained below the forecasts. The improved measures are expected to lead to a growth rate of 6.5% in 2018 and 4.0% in 2019. No major additional impulses are expected from 2020 onwards. The forecasted investment volume in 2020 is rather uncertain because it will mainly depend on the

modalities of the 5G tendering process and its final costs which will determine the investment means of the telecommunication companies.

**Energy works.** Austria's volume of energy works amounted to around 1.6 million Euro in 2017. As described in the previous report, Germany intends to introduce congestion management on the boarder to Austria. This would lead to different prices in Germany and Austria (instead of the currently same price) when capacity limits are reached. These plans were put into reality and will come into force on 1 October 2018. Recent analysis of energy exports calculated much smaller effects than originally expected. An evaluation of Aurora Energy Research showed that energy prices might only increase by 35 cent per MWh in Austria. One reason for the lower impact is that capacity management will affect only 10% to 15% of the total volume and parts of the increase can be also subset due to smart means electricity trade.

In general Austria's power production is sufficient to satisfy electricity demand according to the energy regulator E-Control. Nevertheless, an expansion of hydro-power plants and further investments in renewable are necessary to meet the international climate target. The share of renewable energy according to the EU directive 2009/28/EG amounted to 32.8% (EU-28: 16%). The largest shares within this area takes water power (37%), followed by solid biomass (29%). Wind, solar, biogas, geothermal and photovoltaic have altogether only a share of about 10% of the renewable energy but the latter shows also the strongest growth in the recent past.

The outlook for energy investments is quite dim even if an expansion especially in the network infrastructure would be needed. Low energy prices still dampen the outlook. Investments in the energy infrastructure will be therefore only around 1% in 2019 and stronger investment activity is forecasted for 2020 and 2021, especially in the area of high voltage infrastructure networks.

**Water works.** Austrian investments in water and wastewater works amounted to about 980 million Euro in 2017. This area is highly subsidised. The funds for urban water management and water ecology had a volume of 340.9 million Euro. The public budget 2018/19, though, suggests a minor increase in the support in 2018 (344.2 million Euro), going back to the 2017 levels in 2019. However, much of this spending is based on past investment. Current subsidy levels are below 100 million Euro.

The market can be split into two types of investments: water and wastewater. The volume of water investments took a share of about 43% and wastewater investments had a share of 57% in the total water

works market in 2017. A report published every two years by the Ministry of Sustainability and Tourism shows that the connection rate increased from 47.9% to 95.2% in the period from 1971 to 2016. In total, Austrian wastewater is treated in 1,883 sewage treatment plants.

On the one hand, inquiries of municipalities indicate that, until 2020, investments in the wastewater sector will decline, mainly because of a drop in new wastewater facilities. This can be explained by the high connection rate which varies between 95.1% and 100% depending on the municipal size class. On the other hand, renovation works in both areas, water and wastewater, perform rather stable.

All in all, the increase in funds will help stabilizing total water works sector in 2018. A decline by 0.9% is expected in 2019 among others also because of lower new waste water facilities. In 2020 a stronger reduction in investment by a rate of 1.5% is likely because of an expected stronger downturn in new fresh water activities, which is likely to be compensated in the year 2021.

## APPENDIX – DEFINITIONS

Data from the national accounts represents an integral part of the reported construction forecasts. Not only the forecasts are updated in each report, but also the previously published data from the national accounts are revised regularly. The revisions affected almost without exception all economic areas according to official publications by the national statistics agency Statistics Austria. The revision calendar is as follows: The first data for year  $t$  are available in year autumn  $t+1$ , e.g. the first official data from the national accounts on growth or the construction industry for 2017 is available in autumn 2018. The main data sources for these figures are WIFO's economic forecasts as well as the monthly business surveys and other auxiliary data. In year  $t+2$ , information from structural business statistics is incorporated and the data revised if necessary. In year  $t+3$ , the compilation of input-output tables through the supply-use tables can lead to an additional revision of the official data.

### Table 1

- **Population:** Statistics Austria, main scenario, on January 1<sup>st</sup>.
- **Households:** Statistics Austria, on January 1<sup>st</sup>.
- **Unemployed:** Austrian Public Employment Service (AMS), WIFO forecasts.
- **Unemployment rate:** Labour Force Survey, EUROSTAT, WIFO forecasts.
- Economic forecasts are based on the October 2018 WIFO forecasts (2018 to 2019) and on the autumn 2018 WIFO mid-term forecasts (to 2021). All national account data (historic and forecasts) are based on ESA 2010 system.

### Table 2

- **Construction output** includes own production (do-it-yourself), black economy and exports. Non-intensive private repair and maintenance measures were estimated by WIFO. The forecasts of growth rates reflect the WIFO October 2018 forecasts based on ESA 2010 (correspondently also Tables 4a and 4b).
- Data for cement consumption are based on the information of the cement industry.

### Table 3

- Permits, starts and completions refer to new dwellings in new residential buildings.
- Permitted dwellings until 2017 stem from official data (October 2018) from Statistics Austria.
- **1+2 family houses:** Buildings with one or two dwellings (in previous reports buildings with one dwelling only).
- **Flats:** Buildings with three and more dwellings (in previous reports they referred to buildings with two and more dwellings).

- **Building starts:** No official statistics are available for Austria. The provided number is based on estimates considering a delay and drop out between permits and housing starts.
- **Building completions:** The results reported in this publication differ from official statistics from Statistics Austria. The reason for this deviation lies in the incomplete and delayed reporting to and from municipalities, which severely affects data quality. Data included in this report are based on housing permits and historical rates of completions.
- **Housing stock:** Annual average. The housing stock is a forward projection of the register-based census 2011. Significant methodological changes in the 2011 census resulted in a higher housing stock.
- **Second homes. Vacancies:** WIFO forecasts based on Statistics Austria.
- **Home ownership rate:** WIFO forecasts based on Statistics Austria; share of dwellings owned by the occupier/relatives of the occupier.

### Table 4a

- **Offices:** They include also other buildings for administration.
- **Miscellaneous:** e.g. buildings for sports and leisure time.


### Table 4b

- **Other transport** includes mostly airport infrastructure as well as public transport (mainly underground transportation).
- **Energy works** includes construction of distribution lines for electricity as well as integral parts (e.g. related buildings such as power plants).
- **Water works** includes the construction of distribution lines for transportation of fluids (e.g. water utility lines, sewage) and related buildings (pumping stations), water well drilling and also the construction of river works, dams, etc.

### Table 5

- Information is based on the October 2018 WIFO forecasts (2018 to 2019) and the autumn 2018 WIFO mid-term forecasts (2021). Data stems from the national accounts based on ESA 2010 system.
- Volumes of each GDP component are at market prices. VAT included.
- The sum of the individual GDP components is not exactly equivalent to total GDP because of the so-called statistical difference. It represents a residual component which can be attributed to current account imbalances due to international trade and capital flows.




Country/Pays/Land: Austria								Table 1
	<b>MAIN DEMOGRAPHIC AND ECONOMIC INDICATORS</b> <b>PRINCIPAUX INDICATEURS DÉMOGRAPHIQUES ET ÉCONOMIQUES</b> <b>WICHTIGE DEMOGRAPHISCHE UND ÖKONOMISCHE INDIKATOREN</b>							
				Est.	Forecast		Outlook	
	2015	2016	2017	2018	2019	2020	2021	
<b>Population ('000s)</b> <b>Population</b> <b>Bevölkerung</b>	8 585	8 701	8 773	8 822	8 871	8 919	8 965	
<b>Households ('000s)</b> <b>Ménages</b> <b>Haushalte</b>	3 777	3 826	3 870	3 907	3 942	3 976	4 007	
<b>Unemployed ('000s)</b> <b>Chômeurs</b> <b>Arbeitslose</b>	354	357	340	312	300	299	306	
<b>Unemployment rate (%)</b> <b>Taux de chômage</b> <b>Arbeitslosenquote</b>	5.7	6.0	5.5	4.8	4.5	4.4	4.5	
<b>Change of GDP</b> <b>Variation du PIB</b> <b>Veränderung des BIP</b> <b>(% change in real terms)</b>	1.1	2.0	2.6	3.0	2.0	2.0	1.6	
<b>Consumer prices (% change)</b> <b>Prix à la consommation</b> <b>Verbraucherpreise</b>	0.9	0.9	2.1	2.1	2.1	2.0	2.0	
<b>Construction prices (% change) <sup>1)</sup></b> <b>Prix de la construction</b> <b>Baupreise</b>	0.6	1.3	2.1	2.6	2.6	2.5	2.3	
<b>Short term interest rate <sup>2)</sup></b> <b>Taux d'intérêt à court terme</b> <b>Kurzfristiger Zinssatz</b>	0.0	-0.3	-0.3	-0.3	-0.2	0.2	0.9	
<b>Long term interest rate <sup>3)</sup></b> <b>Taux d'intérêt à long terme</b> <b>Langfristiger Zinssatz</b>	0.7	0.4	0.6	0.7	1.0	2.2	2.7	

1) Refers to new construction only.

2) 3-month interbank rate (or equivalent).

3) 10-year government bonds (or equivalent).


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Country/Pays/Land: Austria		Table 2							
		<b>CONSTRUCTION BY TYPE</b> <b>PAR TYPE D'OUVRAGE</b> <b>BAUPRODUKTION NACH BAUARTEN</b>							
		Volume mill. euro <sup>1)</sup>	% change in real terms (volume)						
2017	2015		2016	2017	Est. 2018	Forecast 2019 2020		Outlook 2021	
<b>Residential construction</b> Logement Wohnungsbau	New	12 009	1.2	2.5	4.5	2.7	1.4	1.0	0.3
	Renovation	5 336	0.3	1.8	2.9	2.0	1.7	2.1	1.3
	<b>Total</b>	<b>17 345</b>	<b>0.9</b>	<b>2.3</b>	<b>4.0</b>	<b>2.5</b>	<b>1.5</b>	<b>1.3</b>	<b>0.6</b>
<b>Non-residential construction</b> Bâtiments non résidentiels übriger Hochbau	New	11 102	0.7	0.9	3.8	2.4	1.5	1.4	1.1
	Renovation	3 606	0.2	-0.1	3.1	1.8	2.0	1.7	1.5
	<b>Total</b>	<b>14 708</b>	<b>0.6</b>	<b>0.7</b>	<b>3.6</b>	<b>2.2</b>	<b>1.6</b>	<b>1.5</b>	<b>1.2</b>
<b>Building</b> Bâtiment Hochbau	New	23 111	1.0	1.7	4.2	2.6	1.4	1.2	0.7
	Renovation	8 942	0.3	1.0	3.0	1.9	1.8	1.9	1.4
	<b>Total</b>	<b>32 054</b>	<b>0.8</b>	<b>1.5</b>	<b>3.8</b>	<b>2.4</b>	<b>1.5</b>	<b>1.4</b>	<b>0.9</b>
<b>Civil engineering</b> Génie civil Tiefbau	New	6 412	-2.7	-3.6	2.4	2.2	1.5	2.5	1.7
	Renovation	1 603	-0.7	-4.6	1.4	1.2	0.7	2.0	2.7
	<b>Total</b>	<b>8 014</b>	<b>-2.3</b>	<b>-3.8</b>	<b>2.2</b>	<b>2.0</b>	<b>1.3</b>	<b>2.4</b>	<b>1.9</b>
<b>TOTAL CONSTRUCTION OUTPUT</b>		<b>40 068</b>	<b>0.1</b>	<b>0.4</b>	<b>3.5</b>	<b>2.3</b>	<b>1.5</b>	<b>1.6</b>	<b>1.1</b>
		2017				Est.	Forecasts		Outlook
		Volume mill. tons	2015	2016	2017	2018	2019	2020	2021
<b>Domestic cement consumption</b> Consommation intérieure de ciment Inländischer Zementverbrauch		4.90	3.8	3.7	2.1	1.7	0.4	0.6	0.0


Renovation covers repair and maintenance, refurbishment and reconstruction.

1) At 2017 prices, excluding taxes.




Country/Pays/Land: Austria		Table 3						
		<b>RESIDENTIAL CONSTRUCTION</b> <b>CONSTRUCTION DE LOGEMENTS</b> <b>WOHNUNGSBAU</b>						
		Thousands dwellings						
					Est.	Forecast		Outlook
		2015	2016	2017	2018	2019	2020	2021
<b>Building permits</b> <b>Logements autorisés</b> <b>Baugenehmigungen</b>	1+2 family dwellings Individuels 1+2-Familienhäuser	16.5	18.0	17.5	17.4	17.5	17.4	17.1
	Flats Collectifs Mehrfamilienhäuser	34.3	40.0	45.2	44.1	44.1	43.4	42.7
	<b>Total</b>	<b>50.9</b>	<b>58.0</b>	<b>62.6</b>	<b>61.5</b>	<b>61.7</b>	<b>60.7</b>	<b>59.9</b>
<b>Housing starts</b> <b>Logements commencés</b> <b>Baubeginne</b>	1+2 family dwellings Individuels 1+2-Familienhäuser	15.6	16.4	16.8	16.5	16.6	16.6	16.4
	Flats Collectifs Mehrfamilienhäuser	32.1	35.3	40.5	42.4	41.9	41.6	40.9
	<b>Total</b>	<b>47.7</b>	<b>51.7</b>	<b>57.3</b>	<b>59.0</b>	<b>58.5</b>	<b>58.1</b>	<b>57.3</b>
<b>Housing completions</b> <b>Logements terminés</b> <b>Baufertigstellungen</b>	1+2 family dwellings Individuels 1+2-Familienhäuser	16.4	16.5	17.1	17.2	17.2	17.3	17.4
	Flats Collectifs Mehrfamilienhäuser	29.7	31.8	34.9	39.3	41.6	42.5	42.8
	<b>Total</b>	<b>46.1</b>	<b>48.2</b>	<b>52.0</b>	<b>56.5</b>	<b>58.8</b>	<b>59.8</b>	<b>60.1</b>
<b>Housing stock</b> <b>Logements existants</b> <b>Wohnungsbestand</b>	<b>Total</b>	<b>4 606</b>	<b>4 653</b>	<b>4 703</b>	<b>4 758</b>	<b>4 815</b>	<b>4 873</b>	<b>4 931</b>
	thereof second homes dont résid. secondaires davon Zweitwohnungen	264	267	270	273	276	280	283
	thereof vacancies dont inoccupés davon leerstehend	230	233	235	238	241	244	247
	share of family dwellings (%) part des maisons individuelles Anteil 1+2-Familienhäuser	47.3	47.1	46.8	46.5	46.2	45.9	45.6
<b>Home ownership rate <sup>1)</sup></b> <b>Taux de propriétaires occupants</b> <b>Wohneigentumsquote</b>		54.8	54.2	53.6	53.2	53.1	53.1	53.0

1) Cf. Appendix to the individual country report.


Country/Pays/Land: Austria		Table 4a							
	<b>NEW NON-RESIDENTIAL CONSTRUCTION (PUBLIC AND PRIVATE)</b> <b>CONSTRUCTION NEUVE NON RÉSIDENIELLE (PUBLIQUE ET PRIVÉE)</b> <b>NEUER NICHTWOHNHOCHBAU (ÖFFENTLICH UND PRIVAT)</b>								
	Volume mill. euro <sup>1)</sup>	m <sup>2</sup> x 1000	% change in real terms (volume)						
						Est.	Forecast		Outlook
			2017	2017	2015	2016	2017	2018	2019
<b>Buildings for education</b> Bâtiments de l'éducation et de la recherche Gebäude des Bildungswesens	788		-1.4	1.8	1.3	2.5	1.5	-0.3	0.0
<b>Buildings for health</b> Bâtiments de santé Gebäude des Gesundheitswesens	1 566		-2.0	1.4	4.7	2.1	1.8	2.4	3.0
<b>Industrial buildings</b> Bâtiments industriels Industriegebäude	2 214		2.1	1.3	4.8	2.4	2.0	1.6	1.4
<b>Storage buildings</b> Bâtiments de stockage Lagergebäude	229		0.2	1.1	3.6	1.5	1.1	0.7	-0.4
<b>Office buildings</b> Bureaux Bürogebäude	2 178		2.4	-0.5	5.7	3.3	1.0	1.3	1.0
<b>Commercial buildings</b> Commerces Geschäftsgebäude	3 047		0.8	1.5	2.5	2.5	1.4	1.1	0.5
<b>Agricultural buildings</b> Bâtiments agricoles Landwirtschaftsgebäude	621		0.4	-0.9	1.5	1.3	1.0	0.8	0.6
<b>Miscellaneous</b> Autres Sonstiges	461		-0.6	0.8	3.1	0.3	2.0	2.8	1.8
<b>TOTAL</b>	<b>11 102</b>		<b>0.7</b>	<b>0.9</b>	<b>3.8</b>	<b>2.4</b>	<b>1.5</b>	<b>1.4</b>	<b>1.1</b>

1) At 2017 prices, excluding taxes.

Country/Pays/Land: Austria		Table 4b							
		<b>TOTAL CIVIL ENGINEERING</b> <b>ENSEMBLE DU GÉNIE CIVIL</b> <b>TIEFBAU INSGESAMT</b>							
	Volume mill. euro <sup>1)</sup>	% change in real terms (volume)							
					Est.	Forecast		Outlook	
		2017	2015	2016	2017	2018	2019	2020	2021
<b>Transport infrastructure</b> <b>Infrastructures de transport</b> <b>Verkehrsinfrastruktur</b>	Roads Réseau routier Straßen	2 154	0.0	-6.5	6.2	1.2	3.6	2.1	-0.5
	Railways Voies ferrées Bahnanlagen	1 777	-3.6	-2.8	0.0	4.3	1.5	6.3	4.7
	Other transport Autres réseaux Übrige Verkehrsinfrastruktur	469	-5.5	-3.8	1.4	1.7	-1.3	1.7	2.4
	<b>Total</b>	<b>4 400</b>	<b>-2.1</b>	<b>-4.7</b>	<b>3.1</b>	<b>2.5</b>	<b>2.2</b>	<b>3.8</b>	<b>2.0</b>
<b>Telecommunications</b> <b>Télécommunications</b> <b>Telekommunikation</b>	334	11.4	4.5	3.8	6.5	4.0	0.5	0.8	
<b>Energy works</b> <b>Réseaux d'énergie</b> <b>Energieversorgung</b>	1 629	-3.2	-1.6	1.2	1.4	1.0	1.8	2.0	
<b>Water works</b> <b>Réseaux d'eau</b> <b>Wasserversorgung</b>	966	-4.4	-5.1	-0.8	0.0	-0.9	-1.5	1.6	
<b>Other</b> <b>Autres</b> <b>Sonstiges</b>	685	-3.6	-4.9	2.5	0.8	-2.2	0.8	2.0	
<b>TOTAL</b>	<b>8 014</b>	<b>-2.3</b>	<b>-3.8</b>	<b>2.2</b>	<b>2.0</b>	<b>1.3</b>	<b>2.4</b>	<b>1.9</b>	

AT

1) At 2017 prices, excluding taxes.

Country/Pays/Land: Austria <span style="float: right;">Table 5</span>								
	<b>GROSS DOMESTIC PRODUCT            PRODUIT INTÉRIEUR BRUT            BRUTTOINLANDSPRODUKT</b>							
	Volume bill. euro <sup>1)</sup>	% change in real terms (volume)						
					Est.	Forecast		Outlook
		2017	2015	2016	2017	2018	2019	2020
<b>Private consumption<sup>2)</sup></b> Consommation privée Privater Verbrauch	199.9	0.4	1.4	1.4	1.8	1.7	2.0	2.0
<b>Public consumption</b> Consommation publique Staatsverbrauch	74.5	0.8	1.8	1.5	0.8	0.7	0.7	1.0
<b>Gross fixed capital formation</b> Formation brute de capital fixe Bruttoanlageinvestitionen								
Total	92.0	2.3	4.3	3.9	3.4	2.7	2.8	1.9
of which construction	41.5	0.1	0.4	3.5	2.3	1.5	1.6	1.1
<b>Stocks (contribution as % of GDP)<sup>3)</sup></b> Variations de stocks Vorratsveränderungen	8.4	1.1	1.1	1.5	2.2	2.2	2.2	2.2
<b>Exports</b> Exportations Exporte	198.8	3.5	2.7	4.7	4.9	3.7	3.6	3.6
<b>Imports</b> Importations Importe	187.3	3.6	3.4	5.1	4.0	3.5	3.6	3.6
<b>GDP</b> PIB BIP	<b>387.4</b>	<b>1.1</b>	<b>2.0</b>	<b>2.6</b>	<b>3.0</b>	<b>2.0</b>	<b>2.0</b>	<b>1.6</b>

Standard National Accounts, gross figures.

1) At 2017 prices.

2) Including final consumption expenditure of NPISH's, ISBLM inclus, einschließlich POoE.

3) Including net acquisitions of valuables, net acquisitions d'objets de valeur inclus, inkl. Nettozugang an Wertsachen.

## Notes

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86<sup>th</sup> EUROCONSTRUCT Conference ○ 22–23 November 2018, Paris, France

## GENERAL DEFINITIONS

The following notes describe which are the most common definitions of the concepts of the Euroconstruct report among the different countries. These definitions do not apply literally to each of the 19 countries, so readers are encouraged to check the specific methodological notes of each country in order to identify the possible deviations from these standards that may apply to that particular market.

### Macroeconomic

- **Population and households:** as of January 1st.
- **Unemployed:** figures based on labour force surveys that also include jobseekers that do not register at the employment offices.
- **Unemployment rate:** as percent of total labour force.
- **Construction prices:** annual change rate of sales prices, not construction costs.

### Construction Output

Production is calculated according to branch definition, including not just works done by construction firms, but also works done by all firms that execute construction work regardless of the industry group they belong to. It also includes:

- Services provided by public bodies in the case that fees are involved.
- The builders' own effort, like do-it-yourself works.
- Works done by unregistered firms (black economy) should be included.

VAT or any other sales tax are not included.

Production value of a **building** project, residential and non-residential, includes:

- Project development.
- Planning and engineering works, architects.
- Plot work up.
- Construction work on the building including all intermediate products (building materials, transport cost, energy, use of machinery and equipment etc.)
- Installations work (electrical, plumbing, glazing, paintings and wallpaper, lifts etc.)
- Public fees (for building permits etc.)
- Financial costs, like interest and fees on construction loans (external funding)
- Fees to estate agents
- Transaction costs, if any
- Advertisement costs, if any

Production of **civil engineering** in general follows the same rules, so the value of investments (and maintenance) in civil engineering includes all intermediate products and not only the civil engineering part.

### Residential

This category includes:

- Permanent residences
- Second homes or holiday homes owned by households.
- Building objects considered as auxiliary of the main residential object, such as garages, out-houses or other annexes.

The **1+2 family dwellings** category includes:

- Detached or semi-detached houses that contain one or two dwellings (for example, a main dwelling plus one bed-sit, basement flat etc.)
- Farmhouses that contain one or two dwellings.

The **flats** category is for residential buildings that contain three or more dwellings, including the following cases:

- Row houses, linked houses and terraced houses.
- Multi-dwelling buildings of more than one storey, free-standing or linked.
- Residences and service residences for the elderly and other social groups, when the health care aspect is not dominant (otherwise they are categorised as nursing homes and accounted as non-residential)
- Student homes.
- Other residential buildings for communities.
- Dwellings in non-residential buildings.

A **second home** is defined as any dwelling of the residential categories (1+2 families or flats), that is only in use temporarily as a holiday or leisure residence. Second homes also include cottages, huts, shacks, chalets, etc.

When second homes are a market product that is different from permanent homes (design, size...) and that market is big enough to be noticeable, and statistics allow them to be distinguished from permanent homes, they may be excluded from the figures for permits, starts or completed dwellings. However, they still are included in stock figures. Investments in second homes are also included in residential construction.

A residential building is considered **completed** when either a temporary permission to use the building is given by the competent authority, or when a certificate for completion is issued by the competent authority. This certificate should be given when final documentation about the building and a declaration from the builder that the building is completed is available.

### Non-residential

This category includes every other building that is not considered residential. The following cases are also treated as non-residential:

- Buildings for temporary residential use that have a commercial purpose, for instance hotels, hostels, motels and holiday homes for rent by businesses/public bodies.
- Homes for the elderly with manned facilities and nursing services.

Non-residential surface is measured as utility floor space, which is the floor area measured within the outer walls.

The category of **buildings for education** includes the facilities (also playgrounds) for:

- Pre-school, kindergartens.
- Primary and secondary education.
- Higher education, including laboratories and research facilities.

The category of **buildings for health** includes:

- Hospitals.
- Clinics, doctor's offices, medical centres, emergency clinics.
- Health and social services centres, health stations.
- Nursing homes.
- Residence and home with nursing and medical care.
- Buildings for rehabilitation, sanatoriums
- Other long-stay hospitals and primary health buildings.

The category of **industrial buildings** includes:

- Factory buildings.
- Workshops.
- Treatment plants, pumping stations, transformer stations that can be considered buildings.

The category of **storage buildings** includes:

- Warehouses.
- Cold storage warehouses.
- Silo buildings and other specialised storage.

The category of **office buildings** includes:

- Buildings for bureaucratic purposes, town halls.
- Banks.
- Post offices.
- Buildings for the media.

The category of **commercial buildings** includes:

- Shopping centres, department stores.
- Detached shops.
- Service stations.
- Other wholesale and retail trade buildings.
- Hotels, hostels, motels, pensions.
- Holiday camps, tourist chalets, apartment lodging buildings, camping huts, holiday bungalows.
- Restaurant buildings and derivatives: food kiosks, cafés, canteens, etc.
- Parking garages.
- Fair and congress buildings.

- Buildings related to transport infrastructures such as railway stations and underground stations, airport terminals, air traffic control towers, telecommunication buildings, etc.

The category of **agricultural buildings** includes:

- Buildings for animals, granaries, fruit and vegetable storage, agricultural silos, buildings for hay/grain drying
- Greenhouses.
- Works buildings used for fishery and hunting, including fish farms, fishery boat-houses and sheds.

The category of **miscellaneous buildings** includes:

- Non-residential space in residential buildings.
- Buildings for entertainment: cinemas, theatres, concert halls, opera houses, discotheques.
- Museums and art galleries.
- Libraries.
- Zoological and botanical gardens.
- Sports halls, ice arenas, indoor swimming pools, fitness centres and Buildings for other sports.
- Community centres, local meeting halls not for bureaucratic uses.
- Buildings for religious use: churches, chapels, houses of worship, parish houses, crematoriums, cemetery chapels, chapels of repose, convents, monasteries.
- Monuments.
- Prison buildings.
- Police stations.
- Fire stations, ambulance stations.
- Building for emergency preparedness: air-raid shelters, bunkers.
- Lighthouse buildings, pilot stations, radar facilities.
- Public toilets.

### Renovation with change of use

Sometimes building renovation is related to a change of end use: from residential to non-residential buildings and vice versa. When a non-residential building is transformed to a residential building, the value of this production is included in residential renovation. And vice versa.

### Civil Engineering

The category of **transport infrastructure** includes:

- Construction of roads and streets, including bridges and tunnels.
- Railways include also tramways and undergrounds, also with bridges and tunnels.
- "Other" collects airports and airfields, harbours, ports, breakwaters and moles, canals, etc.

The category of **energy** includes infrastructures for:

- Generating energy: power plants and power stations that can not be considered buildings, dams



for hydroelectric power production, wind farms, wave farms.

- Delivering energy: power transmission lines, gas supply lines.

The category of **water works** includes infrastructures for water supply, sewer and waste water transport and treatment; either for drinking water, irrigation, industrial water or river flow maintenance.

The category of **other civil engineering** includes infrastructures for agriculture, forestry and fishery, civil engineering facilities for the industry **that can**

**not be considered buildings**, outdoor sports and leisure facilities (for example, amusement parks).

### Gross Domestic Product

To be comparable to the rest of the figures in Table 5, gross fixed capital formation in construction is measured at market prices, in contrast to the measure used in Tables 2, 4a and 4b that considers output at production prices, that is, without sales taxes (or sales subsidies).