European Construction Sector Observatory

Country profile Sweden
June 2018
The Swedish construction sector has been experiencing strong growth in the recent years. The number of companies in the sector grew by 21.4% in 2016 compared to 2010, to 213,434. Similarly, production in the construction of buildings has been on the upswing, exceeding the 2010 level by 19.2% in 2016. However, in 2016 production in civil engineering was 17.5% below its 2010. Positive developments are also observed in terms of profitability, with the turnover growing by 42.3% to EUR 127.1 billion over 2010-2016. Employment in the broad construction sector has also been buoyant, with the number of workers increasing by 20.2% over the same period (to 644,073 people).

Low interest rates and the ease of access to mortgages, coupled with population growth and immigration, are spurring demand for residential properties. However, there is structural undersupply of dwellings in Sweden and despite the high levels of dwelling construction in 2016 and 2017 (63,100 new starts, +34% compared to 2015; 76,00 new starts in 2017, +20.4 vis-à-vis 2016), these were not sufficient to address the housing shortage, which requires the construction of 600,00 new homes by 2025. This situation led to significant increases in house prices, with the house price index soaring by 47.1% between 2010 and 2016 and 8.6% between 2015 and 2016 alone. Coupled with the high household debt approaching 86% of GDP and about 180% of disposable income, there have been concerns about the vulnerability of the Swedish economy to shocks. Policy responses include fiscal stimulus for increased construction, regulatory reforms of planning and building regulations and revisions to housing loan regulations.

To boost investment in infrastructure, improve mobility and thus alleviate the housing shortage, the government introduced a new SEK 622.5 billion (EUR 65.8 billion) infrastructure bill for 2018-2029. Sweden is also a leader in research and innovation, with several initiatives to strengthen the link between academia and the construction industry to actively promote the commercialisation of research and research into sustainable construction. Schemes to support the energy efficiency and renovation of the housing stock are also available, including a 30% tax deduction (ROT) and a SEK 778 million (EUR 82.2 million) programme for the energy efficient renovation of rental housing in socio-economically disadvantaged areas.

The outlook for the construction sector is positive, with growth being forecast at 5.9% in 2017, 3.9% annually for 2018-2022 and 2.6% over 2023-2027. Obstacles to growth can be found in the remaining complexity of the planning and building regulations and the skills shortage already experienced by construction sector companies.
The number of enterprises in the broad construction sector in Sweden totalled 213,434 in 2016 (Figure 1). Companies in the narrow construction sector accounted for 49.8% of the total, followed by real estate activities (28.7%), architectural and engineering activities (18.8%) and manufacturing (2.7%). The overall number of enterprises in the broad construction sector experienced a 21.4% increase over 2010-2016, with growth in all sub-sectors at approximately 20%, with the exception of manufacturing, in which the number of companies declined by 7.5%. Production in construction and its subsectors was in decline between 2011 and 2013, but has been recovering since and in 2016 was 16.3% above its 2010 level. However, while production in the construction of building increased by 19.2% in that period, production in civil engineering remained below its 2010 value by 17.5%. (Figure 2).

In 2016, the total value added of the broad construction sector was EUR 59.6 billion, with the narrow construction sub-sector having the largest share, followed by real estate activities, architectural and engineering and manufacturing (Figure 3).

The share of gross value added of the narrow construction sector in the GDP reached 5.4% in 2016, while real estate activities accounted for 7.7% of GDP (Figure 4).
In 2016, Sweden’s GDP amounted to SEK 4,025 billion (EUR 405.6 billion), representing a 3.3% increase since 2015 and a 14.3% increase since 2010. The same year, the country’s potential GDP was SEK 4,017 billion (EUR 404.9 billion), resulting in a slightly positive output gap. Growth was driven in particular by domestic demand: an expansionary monetary policy, additional public expenditure to cope with the influx of asylum seekers and strong household income.

In 2016, general government expenditure as a share of GDP in Sweden was 50.1%. Data on government deficit as a share of GDP indicates that the country recorded a surplus of 0.9%, in spite of spending increases related to migration. Furthermore, general government gross debt amounted to 41.6% in 2016, higher than in 2010 (38.3%) but considerably below the EU-28 average of 85%.

Public finances are assessed as being robust, despite the need for continued spending on refugee integration, education and social services including housing.

The unemployment rate in Sweden stood at 6.9% in 2016, below the EU-28 average of 8.6% but also a marked decrease from the high unemployment level in 2010 (8.6%). Youth unemployment (below the age of 25) was at 18.9% in 2016, in line with the EU-28 average of 18.8% and an improvement since 2010 (24.8%).

In terms of access to finance, it is worth noting that lending to non-financial corporations has picked up in 2015-2016 (4% and 5.1% of year-on-year growth respectively), following actual contraction in 2009 (-4.4%) and slow annual growth in the following years. Nevertheless, Sweden is one of the top performers in Europe as regards access to finance for SMEs and specifically the availability of venture capital and equity to young and growing firms. SMEs have also benefited from financial support by the European Investment Fund, which has concluded agreements with a number of intermediaries in Sweden, amounting to EUR 235 million as of 2016.

In terms of demographics, the total population of Sweden amounted to 9.9 million people in 2016, which was 5.8% more than the population in 2010. Net migration has been growing continuously, reaching 117,000 people in 2016, i.e. 134% above the 2010 level. Largely due to the high number of refugees admitted to the country since 2013, the high migrations levels are putting additional pressure on the existing housing stock and driving the need for public infrastructure and services.

The total population of Sweden evolved 2010-2016.

The unemployment rate.

14.3% in Sweden.

8.6% Sweden 2010
6.9% Sweden 2016
8.6% EU-28 2016

5.8% in Sweden.

38.3% Sweden 2010
41.6% Sweden 2016
85% EU-28 2016
In 2016, Sweden’s **working age population** accounted for 62.8% of its total population, and it is projected to decline in the future, accounting for 59.8% of the total by 2050. People over 65 accounted for 19.8% in 2016 and their proportion is predicted to rise to 22.7% by 2050. This, together with the demographic growth in the country, are expected to drive the demand for public sector construction such as hospitals (see TO 1 - Investment conditions and volumes), but also for housing adapted to the needs of the elderly (See Policy schemes).
Key economic drivers of the construction sector

Productivity

Labour productivity in the broad construction sector in Sweden experienced a generally increasing trend, despite some fluctuations, growing from EUR 68,545 in 2010 to EUR 81,827 of gross value added per person employed in 2014 (+19.4%). Productivity across all construction sub-sectors has displayed a similar trend between 2010 and 2016, with labour productivity in real estate activities experiencing the largest increase in absolute terms, from EUR 176,400 in 2010 to EUR 218,400 in 2016, the highest among all sub-sectors. The relative increase in annual productivity over this period stood above 20% for all sub-sectors, with the exception of the architectural and engineering activities sub-sector where it was 16.8%.

Profitability

The turnover of the broad construction sector experienced a 42.3% increase between 2010 and 2016, following the decline brought about by the economic crisis. Similarly, gross operating surplus has been growing, reaching EUR 20.8 billion in 2014, i.e. 30.9% above the 2008 level (EUR 15.9 billion). The gross operating rate of the broad construction sector, which gives an indication of the sector’s profitability, was 17.4% in 2014, comparable to the 2008 value (17.3%). In parallel, construction costs for residential buildings have been experiencing an increasing trend, with the construction cost index rising by 13.2% over 2010-2016, spurred by the 15.1% and 13.1% increases in labour costs and input prices for materials (Figure 9). The closed and uncompetitive housebuilding market exacerbates this issue (see TO 4 - Single Market).
In 2016, the broad construction sector employed 644,073 people, a 20.2% increase compared to 2010 (535,817), representing 12.5% of total employment in the general economy. Specifically, the construction sub-sector employed 63.1% of the total workforce in the broad construction sector in 2016 (406,149 persons), followed by architectural and engineering activities (16.5%), real estate activities (13.4%) and manufacturing (7.1%) (Figure 10). Architectural/engineering activities, narrow construction and real estate activities experienced a 25.8%, 22.8% and a 15.4% increase in their workforce over 2010-2016. Conversely, the manufacturing sub-sector saw a 1.2% decline in the number of workers over the same period. As for employment by specific occupation, specialised constructions activities was the single largest occupation in the construction sub-sector in 2016 (272,813 people). Development of building projects professionals saw the largest increment, but from a low base of 232 in 2010 to 647 in 2016 (+198.4%), followed by workers in demolition and site preparation and building completion and finishing (+33.4% each). Conversely, the number of workers employed in the manufacture of products of wood, cork, straw and plaiting materials dropped by 7.9%, from 22,442 to 20,388 over the same period.

The number of self-employed workers in the construction sub-sector has remained roughly the same since 2010, from 60,300 to 59,400 in 2016 (-1.5%), and accounting for 14.5% of the total self-employed people in the general economy. Conversely, self-employment in the real estate sub-sector by 14.1% between 2010 and 2016, to 8,100 in 2016 and accounting for 2.0% of the self-employed in the general economy. SMEs play an important role in terms of employment, since they employed 80.3% of the total workforce of the broad construction industry in 2014.

Business confidence

Business confidence in Sweden has been improving since the economic crisis. Although fluctuating, the consumer confidence indicator has been positive since 2000, and increased from a bottom low of 1.1 in 2008 to a peak of 24.2 in 2010. It has been declining since then, reaching 10.7 in 2016, but was still above the 2008 value. The industry confidence has been fluctuating since 2010, but ended 2016 on a positive 3.6%. The construction confidence indicator was badly affected by the crisis, but managed to recover to a bottom low of -44.0 in 2009 to 15.8 in 2016. In parallel, the investment ratio has increased from 22.3% in 2010 to 24.7% in 2016. Investment per worker dropped by 23.7% between 2007 and 2009, from EUR 106,512 to a bottom low of EUR 81,241. It further fell in 2012 to EUR 77,072, but subsequently recovered to EUR 81,182 in 2014, but was still 23.8% below the 2007 value.
Domestic sales

The ranking of the most domestically sold construction products has remained constant in Sweden between 2010 and 2016. Domestic sales have experienced a considerable increase in value over this period, with ‘Windows, French windows and their frames’ growing from EUR 344.6 million to EUR 795.7 million (+130.9%) and ‘Prefabricated structural components for building or civil engineering, of cement, concrete or artificial stone’ increasing by 216.8%, from EUR 107.2 million to EUR 339.8 million. The top 5 most domestically sold construction products, both in Sweden and the EU, are presented in Table 3. These made up 75.4% of all Swedish construction products sales in 2015.

Export of construction-related products and services

The ranking of the most exported products has remained relatively stable since 2010. Some of the top exports have dropped in value compared to 2010, e.g. the exports of other structures and part of structures have dropped by 34% in that period, from EUR 315 million to EUR 208 million. In comparison, the highest growth for the period was in the export of towers and lattice masts of iron and steel – 1503%, but from a low value of 4 million in 2010 to 64 million in 2016. The top 5 most exported construction products from Sweden and the EU-28 are summarised in Table 4. Together, these made up 60.2% of all construction product exports in 2016.

Table 3: 5 most domestically sold construction products in Sweden and in the EU in 2016

<table>
<thead>
<tr>
<th>Product</th>
<th>Sweden Value (EUR m)</th>
<th>EU-28 Value (EUR m)</th>
<th>Share in construction product domestic sales (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prefabricated wooden buildings (group 162320)</td>
<td>1,546</td>
<td></td>
<td>29.3</td>
</tr>
<tr>
<td>Windows, French windows, etc. (group 162311)</td>
<td>795</td>
<td></td>
<td>15.1</td>
</tr>
<tr>
<td>Tiles, flagstones, bricks, etc. (group 236111)</td>
<td>626</td>
<td></td>
<td>11.9</td>
</tr>
<tr>
<td>Ready-mixed concrete (group 236310)</td>
<td>525</td>
<td></td>
<td>10.0</td>
</tr>
<tr>
<td>Other structures (group 251123)</td>
<td>491</td>
<td></td>
<td>9.3</td>
</tr>
</tbody>
</table>


In terms of cross-border provision of construction services, Sweden exported EUR 987.9 million worldwide in 2016, 57.6% higher than in 2010 (EUR 626.9 million). Specifically, 61.5% of exports (EUR 598.8 million) were made to the EU-28, up by 68.3% compared to 2010 (EUR 355.1 million). In the same period, the value of exports to countries outside the EU-28 grew by 43.6%, from EUR 271.8 million in 2010 to EUR 390.1 million in 2016. In parallel, Sweden imported a total of EUR 1,417.1 million in construction services in 2016, a 67.2% increase since 2010 (EUR 847.5 million), with EUR 1,212.5 million from EU-28 countries (i.e. 85.5% of imports). Sweden therefore reported a trade gap of EUR 429.3 million in 2016.
Access to finance in the construction sector

In 2017, around 10% of total bank lending went to firms with commercial property activities in some form, including lending to tenant-owner associations. The major Swedish banks have extensive exposures to real estate companies, which constitute more than 20% of their total lending and thus are the second-largest individual exposure after mortgages. To facilitate access to finance for developers, particularly smaller ones, and support housebuilding, the National Board of Housing, Building and Planning (Boverket) offers credit guarantees to banks and other lenders to protect them against losses, thus reducing the need for final financing or own capital for property developers. The guarantee covers up to 90% of the market value of the completed residential project.

The results of a 2017 government analysis of access to finance did not find sufficient evidence to confirm that lack of access to finance is an obstacle to housing construction in general, although difficulties in obtaining external funding can be an obstacle in smaller municipalities outside the metropolitan regions. The investigation estimates that the causes of existing financing difficulties or potential contraction in lending can be found in:

- The Basel rules, which mean that banks need higher capital adequacy for small and medium-sized companies.
- Small projects in weaker markets are not prioritized by banks, even if there is a repayment ability and sometimes there is no bank with local knowledge, which leads to risk premiums or denied loans.
- Smaller players often lack equity - even after small investments into new construction projects, it may take several years to rebuild the equity and be able to make further investments.
- Smaller operators may need external financing already during the design phase, which can be hard to obtain. This is the case in particular for builders’ associations and cooperative tenant associations.
- There is reluctance among some banks to finance housing construction with cooperative tenancy.

Access to housing

The number of households in Sweden reached 4.8 million in 2016, a 8.2% increase since 2010 (4.5 million). Furthermore, the country has a high urbanisation rate, with 34.6% of the population living in cities. Together with the general population growth and increasing mean annual equivalised net income (SEK 259,220 - EUR 27,332 in 2015), these figures highlight the growing demand and ensuing need for new residential properties.

Moreover, interest rates on mortgages fell from 4.91% in 2010 to 3.94% in 2016 (Figure 11), and total outstanding residential loans to households increased by 28.2%, from EUR 292.2 billion in 2010 to EUR 374.8 billion in 2015, further supporting the increasing demand for housing.

Over the last 20 years, Sweden has built about half of what other EU countries have, with construction of new residential buildings falling by 28% in 2009 after the crisis and reaching 19,500 units in 2010.
The generally low supply of dwellings coupled with high demand has resulted in a surge in house prices (Figure 12). Namely, the house price index for total dwellings has increased by 47.1% between 2010 and 2016 and 8.6% between 2015 and 2016 alone. This represents particularly the situation in large cities such as Stockholm, Gothenburg and Malmo. While this rapid house price growth is partly driven by strong fundamentals, valuation indicators suggest that house prices are overvalued by about 35% — among the highest levels in the EU. However, the greater supply of residential properties in 2016 and 2017 has already contributed to a slow-down in house price increases.

The greater supply of new residential properties contributes to increasing household debt, as ownership of new homes is largely financed through loans to both households and tenant-owner associations. The level of indebtedness of Swedish households is considerably above the international and EU average. Household indebtedness has continued to rise from already high levels and grew by 7.1% in 2016, approaching 86% of GDP and about 180% of disposable income, driven mainly by higher mortgage borrowing linked to continued house price rises. The distribution of debt levels is becoming increasingly uneven, with a growing fraction of newly mortgaged households borrowing as much as 600% of their disposable income. Other than the ongoing supply shortage, the key drivers for the rise in household debt include generous tax treatment of home ownership and mortgage debt, accommodative credit conditions coupled with relatively low mortgage amortisation rates.

The significant exposure of the Swedish economy to the housing market makes it vulnerable to shocks.

One area of concern is the current rental regulation, which keeps rental prices affordable and often below market levels, thus resulting in low rental yields and discouraging developers from building properties for lease. This is a subject for debate between industry stakeholders (developers and landlords) and trade unions, with the latter believing that introducing market pricing would not necessarily boost the construction of new dwellings, but rather make properties unaffordable for current tenants. There is a particular shortage of rental apartments in larger cities; this, in turn, pushes households who might otherwise wish to rent into home ownership, thus exacerbating the shortage (and upwards price pressure) in the owner-occupied market as well.

In 2016, 65.2% of the Swedish population owned their property. This rate increases to 71.7% for the population whose income is above 60% of the median equivalised income, but drops to only 31.7% for those below this threshold, one of the lowest reported values. Indeed, for this income group, the proportion of tenants has been increasing, from 60.2% in 2010 to 68.3% in 2016, signalling housing affordability issues. However, the housing cost overburden rate was at 8.5% in 2016, below the EU-28 average of 11.1%. Similarly, the overcrowding rate in 2016 was at 14.4%, below the EU-28 average of 16.6%, but one of the highest in Western Europe. Finally, the severe housing deprivation rate was 2.7% in 2016, below the EU-28 average of 4.9%, but increased compared to previous years and higher than that of neighbouring countries and Western Europe in general.

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The significant exposure of the Swedish economy to the housing market makes it vulnerable to shocks.

Infrastructure

According to the 2016-2017 Global Competitiveness Report, Sweden ranked 20th out of 138 economies in terms of its infrastructure.

Namely, it performs best in terms of the quality of its port (13th) and overall (18th) infrastructure. Conversely, it ranks comparatively worse with respect to the quality of its roads (21st), quality of air transport infrastructure (22nd) and quality of railroad infrastructure (30th), suggesting that further investment is required for its improvement. As discussed in TO 1 - Investment conditions and volumes, the Swedish government identified the latter as a priority for investment, which can in turn stimulate the construction of residential buildings and thus offset the housing shortage.
Key issues and barriers in the construction sector

Company failure

The business demography in the broad construction sector has generally seen an increase in the number of company births and a stabilisation in the number of deaths across most sub-sectors between 2008 and 2014, despite some fluctuations. Company births in narrow construction experienced a 16.2% growth, from 6,294 to 7,311 over 2008-2014, whereas company deaths increased by 36.4%, from 4,435 to 6,049. Company births in real estate activities increased by 6.2%, from 3,048 in 2008 to 3,238 in 2014, whereas the number of deaths decreased by 5.5%, from 2,032 to 1,920. Similarly, the architectural and engineering activities sub-sector experienced a 3.3% increase in company births (from 2,288 in 2008 to 2,363 in 2014), whereas deaths remained stable (2,007 in 2014).

Late payments

Late payments with regard to the Public Administration are not a significant issue in Sweden, compared to other countries (e.g. Italy, where the PA pays contractors with a 112-day delay).

The Swedish authorities reported an average payment delay of 4 days in 2017, according to the European Payment Report 2017, settling their invoices within 33 days, compared to the 29-day payment terms extended by businesses on average. However, 65% of Swedish businesses reported being pressured to accept longer payment terms than they are comfortable with, with 34% accept such payment terms unconditionally. The payment terms granted to B2B customers in 2017 stood at 28 days (no change from 2016), with the actual time required by customers to pay amounting to 32 days and resulting in a 4-day delay (compared to 3 day in 2016). The main causes of late payments are considered to be intentional delays and administrative inefficiency.

Trade credit

After a sharp increase in sales on credit terms in 2016 (55.8%), the total value of B2B sales on credit in Sweden decreased again in 2017 (47.8%). On average, 52.1% of the sales to domestic B2B customers were transacted on credit, while the share of sales on credit to foreign B2B customers is 43.5%. Compared to Western Europe (domestic: 42.6%; foreign: 35.1%), Sweden maintains a credit-friendly approach.

Time and cost of obtaining building permits and licenses


7 procedures and 116 days are required to complete administrative formalities to build a warehouse, which is shorter than the OECD high-income average (12.1 procedures and 152.1 days, respectively). Nevertheless, the cost of building a warehouse represents 2.1% of the
value of the warehouse, above the OECD high-income average of 1.6%. Specifically, obtaining a building permit takes 60 days and costs SEK 92,000 (EUR 9,858) (Table 5).

### Table 5: Construction procedures timing and costs in Sweden

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Time to complete</th>
<th>Associated costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hire an external certified supervisor</td>
<td>1 day</td>
<td>SEK 180,000 (EUR 19,268)</td>
</tr>
<tr>
<td>Hold technical consultation meeting with Building Committee of the Municipality</td>
<td>15 days</td>
<td>no charge</td>
</tr>
<tr>
<td>Obtain building permit</td>
<td>60 days</td>
<td>SEK 92,000 (EUR 9,858)</td>
</tr>
<tr>
<td>Receive decision to commence construction</td>
<td>5 days</td>
<td>no charge</td>
</tr>
<tr>
<td>Submit supervisor’s report and hold final consultation meeting</td>
<td>10 days</td>
<td>no charge</td>
</tr>
<tr>
<td>Obtain water and sewerage connection</td>
<td>25 days</td>
<td>SEK 190,000 (EUR 20,333)</td>
</tr>
<tr>
<td>Obtain final certificate</td>
<td>10 days</td>
<td>no charge</td>
</tr>
</tbody>
</table>

### Skills shortage

**Job vacancies** in the construction and real estate sectors experienced an increasing trend since 2009. In the construction sub-sector, they soared by 155.2% between 2009 and 2015, from 1,534 to 3,914, while in the real estate sub-sector grew by 146.4%, from 520 in 2009 to 1,281 in 2015. Moreover, the number of tertiary students in engineering, manufacturing and construction, and specifically in architecture and building, has been increasing continuously since 2008, growing by 68.4% from 2,173 in 2008 to 3,660 in 2014. Likewise, adult participation in education and training has been on the rise. In the construction sub-sector, it went from 15.1% in 2008 to a peak of 18.9% in 2016. In real estate activities, adult participation in education and training grew from 24.7% in 2010 to 27.6% in 2016.

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### Sector & sub-sector specific issues

#### Material efficiency and waste management

- Around 9.4 million tonnes of construction and demolition waste were generated in 2014, of which 8.9 million tonnes came from construction.

Approximately 800,000 tonnes of the waste was classified as hazardous and consisted primarily of contaminated soil masses (590 000 tonnes), mineral waste in the form of contaminated concrete, brick, asphalt, etc. (130 000 tonnes) and impregnated wood waste (50 000 tonnes). Non-hazardous waste amounted to almost 8.6 million tonnes and consisted mainly of soil masses (5.1 million tonnes), mixed construction and demolition waste (1.7 million tonnes), dredging spoils (1.2 million tonnes), metal waste (330,000 tonnes) and wood waste (200,000 tonnes). The largest amounts of construction and demolition waste were used as construction materials, refill and landfill coverage (4.2 million tonnes), followed by landfill (2.4 million tonnes). 1.2 million tonnes of dredged spoils were dumped at sea, in the figure called “Other disposal” and about a million tonnes went to pre-treatment / sorting. Soils, concrete and rock were the types of waste deposited to landfills to the greatest extent.

The skills shortage is expected to increase in the coming years, due to growing investments in construction, coupled with high retirement rates in the sector. The Construction Industry Association has assessed that 50,000 new employees will be needed over a five-year term solely because of aging. Further needs arise due to the projected construction of 600,000 new dwellings by 2025 and the infrastructure projects outlined in the national transport plan 2018-2029.

Sweden is experiencing a slight skills shortage in the narrow construction sector, both for blue and white-collar workers. The Swedish Migration Board regularly updates the list of occupations experiencing labour shortages and in January 2018 it included architects, surveyors, civil engineers, bricklayers, roofers, floorers, scaffolders, painters and concrete workers. Currently, the proportion of foreign workers in the construction industry is lower than in other industries, but the differences have declined over time. For the most part, foreign workers in the construction sector hold EU nationality. In small businesses with fewer than 50 employees, foreign workers account for 12.7 percent of the workforce, compared to 8.6 percent in the larger companies.

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### Source

Climate and energy

Emissions of greenhouse gases carbon monoxide and dioxide, methane, nitrous oxides and particulate matter from activities in the construction and real estate sub-sectors amounted to 2,224,930 tonnes and 269,638 tonnes in 2014, respectively. The former have increased by 6.6% since 2008, whereas the latter have experienced a 12.4% decline.

The Waste management plan for 2012-2017 published by the Swedish Environmental Protection Agency emphasises the need for improved waste statistics and improved Construction and Demolition (C&D) waste management, namely recycling. The Swedish Construction Federation published updated guidelines to improve the management of resources and C&D waste during construction and demolition activities.
Innovation in the construction sector

Innovation performance

Sweden is considered an Innovation Leader, according to the European Innovation Scoreboard 2016, reporting the best innovation performance in the EU in 2016 and having increased its performance by 2.3% relative to that of the EU in 2010.

The country performs above the EU average for all dimensions, such as Open, excellent and attractive research systems, Linkages and Entrepreneurship and Human resources. Specifically, its strongest indicators are International scientific co-publications, Lifelong learning. New doctorate graduates, R&D and innovation expenditure, Public-private co-publications, and patent applications. On the contrary, its relative weaknesses are in the Sales share of new product innovations, Private co-funding of public R&D expenditure and Venture capital investments.

Business enterprise R&D expenditure (BERD) in the broad construction sector has shown a generally increasing trend over the past years. The professional, scientific and technical activities sub-sector experienced a 172.1% soar between 2007 and 2013, from EUR 166.4 million to EUR 452.6 million, the highest across the sub-sectors. Similarly, BERD in the construction sub-sector increased by 76.9%, from EUR 16.0 million in 2009 to EUR 28.3 million in 2013.

In parallel, the total R&D personnel (full-time equivalents – FTE) in the broad construction sector also experienced a growing trend. In line with the positive evolution of the BERD, the professional, scientific and technical activities sub-sector reported the highest FTE, which amounted to 2,988 in 2011. Likewise, total FTE in the construction sub-sector increased by 15.7% over 2009-2013, from 153 to 177.

Moreover, there has been a slight increase in the annual average number of construction related patent applications in recent years. In fact, over 2000-2007, an average of 93.5 patents were filed in the European Patent Office (EPO) and United States Patent and Trademark Office (USPTO). This increased to 95.8 in the period 2008-2016, with the year 2011 reporting the highest number of applications (117). Fourteen Swedish construction-related firms ranked amongst the top 1,000 EU companies by R&D spending, including two firms in the Construction & Materials sector.

To foster sustainable innovation the Swedish construction sector and increase its productivity and efficiency, the Swedish Innovation Agency VINNOVA and a consortium of companies and universities are carrying out the programme Construction Innovation 2011-2016 (Bygginnovationen 2011-2016), aiming to promote the commercialisation of research results by supporting the adoption of innovative ICT and green growth solutions. With a total budget of SEK 90 million (EUR 9.7 million), the programme’s funds target primarily construction SMEs engaging in R&D activities and their commercialisation.

The programme has been extended until 2018, with a budget of SEK 7 million (EUR 737,735) per year from Vinnova, matched by the same amount from industry partners.
According to a study by VINNOVA, major construction companies in Sweden focus mainly on eco-innovation, particularly associated with products and organisational processes, which account for 30% and 20% of the innovative measures adopted by the companies, respectively. These include the construction of energy efficient and carbon-smart housing (e.g. LEED-certified), but also internal measures aiming to improve the environmental performance and footprint of the companies themselves. For instance, the major construction firms use energy efficient insulation and ventilation, as well as renewable energy (wind and solar) to power their activities.

As for R&D activities, construction companies are active in the development of sustainable products, such as long-life asphalt. The Swedish Research Council (Formas) is responsible for funding research under Sweden’s National Research Program for Sustainable Spatial Planning and the strategic innovation programme Smart Built Environment. Smart Built Environment is a plan for embracing the new opportunities of digitalization and promoting the development of intelligent, sustainable cities, efficient resource management and reduced carbon emissions. In 2017, the Council granted 6.3 million SEK under the plan to projects within e.g. machine learning, genetic algorithms and artificial intelligence to support construction processes.

Furthermore, industry operators, along with the Swedish Energy Agency, run a series of innovation clusters: LÅGAN is for buildings with very low energy consumption; BELOK is a cluster for nonresidential premises; BeBo is an innovation cluster for owners and managers of apartment buildings; BeLivs is an innovation cluster of grocery premises; and BeSmå groups together house builders. Two new innovation clusters began operating in 2016. They are Innovationskluster för energieffektiv sjukvård (Innovation Cluster for Energy-Efficient Medical Care) and Innovationskluster Hållbart samhälle (Innovation Cluster Sustainable Society). The innovation clusters have mainly affected energy efficiency of the building stock by promoting the development of new solutions and applying and demonstrating new knowledge and technology. Experience and expertise is disseminated by bringing together industry operators in the clusters.

The Swedish Energy Agency also invests in research in the field of buildings in the energy system through a range of programmes focusing on energy-efficiency in buildings, heat pump research and district heating research.

Eco-innovation and digitalisation

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The government has recognised that the long building planning process can slow down the construction of new housing units, as municipalities used to be able to increase the requirements on permits, such as accessibility and energy efficiency requirements. This therefore led to greater costs and a reduction in profitability. The Planning and Building Act passed in 2010 and further amended with Government Bill 2013/14:126 clarified that municipalities are no longer allowed to increase the requirements on permits, thereby improving the efficiency of the planning process.

In June 2016, the government also introduced a series of 22 measures to increase housing construction. For instance, one of the measures foresees the sale of public land for residential construction. Moreover, the exemption of certain construction works (e.g. construction of shelters for public transport, roof replacement, façade works, etc.) from obtaining the building permit will be considered for extension to other activities, and further simplifications to the planning process will be evaluated. Indeed, in early 2017, the government presented a proposal aimed at further streamlining and simplifying the Planning and Building Act. The proposal contains measures to help freeing up resources, including for instance a deadline for counties’ waiver decision over municipal zoning matters and further exemptions from the requirements of building permits for works such as external cladding or smaller interventions such as construction of balconies or bay windows. These simplification actions are welcomed by the Swedish Construction Federation as a step forward, although measures to improve the mobility in the housing market and support home ownership for lower-income households whilst counteracting household debt are necessary to tackle the housing shortage.

The government has also proposed the Planning and Building Act on temporary building permissions for portable building for housing purposes (proposal 2016/17:137), which will make it possible to use temporary housing to augment permanent construction when the housing need cannot be fully met through ordinary planning and building processes by issuing permits with a validity of 15 years.

The government has also taken measures to address the increasing concern about the growing indebtedness of households due to mortgages (see Access to housing). As of June 2016, mortgage loans over 50% of the value of the property have had to be amortised (i.e. paid back) at 1% every year, while loans worth 70% or more of the property’s value must be amortised at 2% annually. This measure was introduced as a macro-prudential measure to offset a potential housing crisis.

In 2017 Sweden’s financial supervisory authority Finansinspektionen proposed a new amortization requirement for new housing loans. The so-called ‘debt ratio brake’ requires households that borrow more than 4.5 times their gross income to amortize their debt at a faster pace. The authority estimates that about 15 percent of new borrowers would be affected by the tightening of amortization requirements. Apart from increasing households’ resilience to macro-economic disturbances, the measure is expected to lead to a slight decline in housing prices, favouring buyers who want to enter the housing market for the first time.

The government has continued its reform efforts by commissioning a series of inquiries and reviews on the Planning and Building Act and related regulations, the results of which will inform further policy revisions that can address the remaining challenges in the Swedish housing market and the needs for infrastructure development.

In parallel, the government has introduced a series of measures stimulating investment in construction. In order to address the housing shortage, the government introduced the Stimulus for increased construction (Stimulans för ökat byggande/ Investeringsstöd) in 2015, as part of the 2016 budget. Under the responsibility of the Ministry of Enterprise and Innovation, this initiative sought to provide incentives to increase construction of new properties destined for the rental market, particularly in urban areas with high population growth/housing pressures (Stockholm, Göteborg and Malmo). The budget...
amounts to SEK 2.2 billion (EUR 227.1 million) for 2016, SEK 2.7 billion (EUR 278.8 million) for 2017, SEK 3.2 billion (EUR 330.4 million) for 2018 and SEK 3.2 billion for 2019, reaching a total of SEK 11.3 billion (EUR 1.2 billion). An additional SEK 300 million (EUR 31 million) was intended specifically for the construction of student dwellings in 2016. The programme, which entered into force in January 2016, aims to achieve the construction of 15,000 new flats per year.

In 2017, the government also introduced a state subsidy to municipalities to increase housing construction in view of the population increase and new arrivals as well as the increased housing demand.

The subsidy is administered by the National Board of Housing, Building and Planning (Boverket) and in 2017 was granted to 199 municipalities. In 2017, the subsidies amounted to SEK 1.8 billion, with further allocation of up to 1.3 billion in subsidies per year. The contribution will later be allocated between eligible municipalities. Interest in government support for housing construction has increased sharply, from 114 municipalities that applied 2016 to 204 municipalities in 2017.

In order to improve the availability of dwellings for the elderly in response to the predicted ageing population, in 2016 the government introduced a scheme providing grants for the construction and adaptation of dwellings for the elderly population. For new constructions, the amount of the support can reach SEK 3,600 per m² (EUR 380.2) (with the maximum floor area depending on the number of residents), whereas for renovation and adaptation works the limit is SEK 3,200 per m² (EUR 337.9) and SEK 200,000 (EUR 21,122) per building, respectively. Beneficiaries include both private property owners, as well as municipalities, construction companies and housing associations. The budget of the programme amounts to SEK 300 million (EUR 31 million) for 2017 and SEK 400 million (EUR 41.3 million) per year for the period 2018-2020, for a total of SEK 1.5 billion (EUR 155 million). Another measure aimed at improving the housing situation of the elderly is the increased housing allowance as of 1 January 2018, which is available pensioners with pension and other income of less than SEK 15,000 per month after tax.

Insurance and liability related regulations

The liabilities of the different parties involved in a construction project are principally defined in a contractual fashion. The standard forms of contracts are drafted by the Construction Contracts Committee BKK (Byggandets Kontraktskommitte). A large percentage of contracts in Sweden are based on “General Conditions of Contract for Building and Civil engineering and Installation Work” (AB04) or the “General Conditions of Contract for Building, Civil Engineering and Installation work performed on a package deal basis” (ABT06). The liability covers the design, plan, build and guarantee period, which is usually 5 years for non-conformity to the contract and 10 years for important defects if it is proved to be negligent.

The Law on Construction Defects Insurance requires that all buildings that are intended for permanent habitation must carry this insurance, which covers material damage caused by faulty materials, design or works execution within 10 years from the certificate of completion. This Law was repealed in July 2014 through provisions in the Law on Completion Coverage, which requires contractors to be covered through insurance or a bank guarantee. It applies to small buildings intended for permanent habitation. In addition to the mandatory insurance above, there are other securities and warranties offered on a voluntary basis.

Building regulations

Sweden's National Board of Housing, Building and Planning (Boverket) governs the regulatory landscape for all building works. The main regulations and legislation in the construction sector are detailed in Boverket’s Building Regulations (BBR). These cover mandatory requirements for accessibility, dwelling design, ceiling height and utility rooms, as well as general rules for buildings, mechanical resistance and stability, fire safety, hygiene, health and environment, noise protection and energy performance. The design regulations (BKR) cover areas such as load bearing structures, geo-structures, timber, masonry, concrete, steel, aluminium structures and fire resistance requirements.

The BBR set mandatory performance requirements for both residential and non-residential buildings, depending on their location and type of heating system involved. The BBR cover requirements related to the thermal transmittance of the building envelope and encourage efficient design of the energy consuming systems, including HVAC (heating, ventilation, air conditioning), hot water, lighting, auxiliary systems, as well as materials and products. Compliance with the requirements is verified through measuring the actual energy use of the finished building and showing it to be less than or equal to the allowable energy frame predicted at the design stage. Enforcement of the BBR is ensured by on-site inspections during construction and post-occupancy. The building’s energy consumption should be measured over a continuous period of 12 months, to be completed within 24 months after the building is put in use. Through these measurements, any gap between the designed and as-built performance of the building can be identified and corrected. In general, in Sweden the awareness of performance issues at the construction site level is very good, although maintenance of an airtightness layer in high-performance buildings remains challenging.
Current Status & National Strategy to meet Construction 2020 Objectives

TO 1 - Investment conditions and volumes

Total investment by the broad construction sector\(^7\) has shown diverging trends over the past years (Figure 13). Indeed, despite an initial 15.8% drop between 2008 and 2009, investment by real estate activities experienced a 10.1% increase over 2008-2015, growing from EUR 22.1 billion to EUR 24.3 billion. Conversely, investment by the construction sub-sector fell by 31.1% over 2008-2009 and, although it has been recovering since, it reached EUR 2.7 billion in 2015, i.e. still 5.3% below the EUR 2.8 billion recorded in 2008. In terms of investment in intangible assets, the construction sub-sector invested EUR 76.9 million in intellectual property products in 2015, 6.7% lower than 2008 (EUR 82.4 million), whereas the real estate sub-sector invested EUR 121.4 million, 35.0% higher than 2008 (EUR 89.9 million).

Following steady investment levels in 2010-2013, investment in construction\(^8\) has been experiencing a strong growth ever since, surpassing the 2010 level by 30.1% in 2016 (Figure 14). In line with the high demand for housing (see Access to housing), investment in dwellings grew by 51.1% om 2016 compared to 2010. Investment in non-residential construction and civil engineering grew at a slower rate and its 2016 levels were 15.0% higher than 2010. In absolute terms, investment in the construction sector totalled EUR 40.9 billion in 2014, out of which EUR 17.3 billion was invested in dwellings and EUR 23.6 billion was devoted to non-residential and civil engineering\(^9\)\(^10\).

Figure 13: Investment by the Swedish broad construction industry between 2008-2015 (EUR m)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total by Construction</th>
<th>Total by Real estate activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>22.1b</td>
<td>0.0b</td>
</tr>
<tr>
<td>2009</td>
<td>19.5b</td>
<td>0.1b</td>
</tr>
<tr>
<td>2010</td>
<td>20.3b</td>
<td>0.0b</td>
</tr>
<tr>
<td>2011</td>
<td>21.0b</td>
<td>0.2b</td>
</tr>
<tr>
<td>2012</td>
<td>21.7b</td>
<td>0.3b</td>
</tr>
<tr>
<td>2013</td>
<td>22.4b</td>
<td>0.4b</td>
</tr>
<tr>
<td>2014</td>
<td>23.1b</td>
<td>0.5b</td>
</tr>
<tr>
<td>2015</td>
<td>23.8b</td>
<td>0.6b</td>
</tr>
</tbody>
</table>


Figure 14: Investment in the Swedish construction sector between 2008-2016 (2010=100)

Total inland infrastructure investment as a share of GDP was 0.7% in 2014, slightly lower than the 0.9% peak recorded in 2009. Despite some fluctuations, annual investment in rail infrastructure in Sweden was 3.2% lower in 2015 (EUR 1,387 million), compared to 2010 (EUR 1,433 million). On the contrary, the country saw a 11.6% increase in its road infrastructure investment in 2015 compared to 2010, EUR 1,861 million and EUR 1,667 million respectively. Investments in air transport infrastructure grew steadily over the period and in 2015 stood at 131 million, more than double the investments made in 2010 (EUR 78 million) In parallel, annual investment in infrastructure maintenance has been growing, especially in the case of road infrastructure, which was 35.3% higher in 2015 compared to 2010 and rail infrastructure (+25.8%). However, there was a decrease in annual investment in air transport infrastructure, which in 2015 stood at EUR 12 million, about half of the amount invested in 2010.
Despite an initial 8.0% decline over 2008-2009, **household renovation spending** has seen an increasing trend since then. Indeed, it reached EUR 866.2 million in 2015, 26.1% above the EUR 686.9 million registered in 2008, and accounting for 0.4% of household disposable income, comparable to 2008.

Having identified the link between public sector investments in infrastructure and residential housing investments, the Swedish government is actively investing in the civil engineering field. In particular, the transport network was the focus of investment under the **2014-2025 national transport plan**, which had a budget of SEK 522 billion (EUR 56 billion). This constitutes a 20% increase compared to the previous plan. Of these, SEK 86 billion (EUR 9 billion) was foreseen for the maintenance and operation of the rail network and SEK 155 billion (EUR 17 billion) for the operation and maintenance of roads. The remaining SEK 281 billion (EUR 30 billion) was allocated for new transport projects, including a high-speed rail line between Stockholm and Linköping, and the expansion of other railway tracks.

The 2017 budget further strengthens the government’s financial commitment to support investment in transport infrastructure. Indeed, the new infrastructure bill **Infrastructure for the future – innovative solutions for strengthened competitiveness and sustainable development (Investerings i framtiden – innovativa lösningar för stärkt konkurrenskraft och hållbar utveckling)** was introduced in October 2016, proposing an increased financial framework for transport infrastructure investments for the 2018-2029 period. Thus, the new budget amounts to SEK 622.5 billion (EUR 65.8 billion) i.e. SEK 100 billion more than the 2014-2025 plan. In particular, the allocation for the operation and maintenance of the railway network will see a 47% increase compared to the previous plan, amounting to SEK 125 billion (EUR 13.2 billion). The allocation for the operation and maintenance of roads will be increased to SEK 164 billion (EUR 17.3 billion). The remaining SEK 333.5 billion (EUR 35.2 billion) will be devoted to new transport projects. In 2017, the government issued a mandate for an analysis of the commercial conditions for traffic on new high-speed railways from Stockholm to Gothenburg and from Stockholm to Malmö and the negotiations of the financing for the construction of the infrastructure.

Indeed, investments in **transport infrastructure**, namely roads, railways and metro lines, can have positive repercussions on the housing supply in the medium term. Improved connectivity within and between urban areas facilitates commuting in these areas, thus opening up additional zones for new residential developments, relieving the competition and ensuing housing shortage in urban areas.

Within this context, the Swedish County Administrative Boards are responsible for the development and adoption of regional transport infrastructure development plans. For instance, the plan to expand the metro line network in Stockholm, which had already been supported by a SEK 3.5 billion (EUR 400 million) loan from the European Investment Bank (EIB), is also expected to have a positive impact on the housing supply in the medium term.

In addition, Sweden is also focusing on **investments in healthcare**, due to the projected increase in the proportion of the elderly population. Consequently, the government is investing in the construction of hospitals, with recent projects including the New Karolinska Solna University Hospital in Stockholm, due for completion in 2018 and with a value of SEK 14.5 billion (EUR 1.6 billion). Moreover, Sörmland County Council is also planning the refurbishment and extension of three hospitals in Södermanland by 2023, under a SEK 3 billion (EUR 323.6 million) contract.

Finally, infrastructure investments in Sweden benefit from extensive **EU support**, with EUR 1.4 billion from the Cohesion funds dedicated to environment protection and resource efficiency and EUR 152.9 million to network infrastructures in transport and energy over the period 2014-2020. Moreover, the EIB invested EUR 1.7 billion in the Swedish economy in 2016 alone, with infrastructure projects accounting for 35% of the total commitments. For instance, in 2016, under the European Fund for Strategic Investments (EFSI), the EIB supported the construction of a wind farm through a EUR 16 million co-investment, the first renewable energy infrastructure project to be backed by EFSI. In February 2017, under EFSI, the EIB also signed a SEK 900 million (EUR 95.1 million) agreement to support investment in local infrastructure in the Nordic countries through the “Infranode I” investment platform, focusing mainly on utilities, renewable energy, social and transport infrastructure projects.

### TO 2 – Skills

The employment rate of VET graduates stood at 81.6% in 2015, one of the highest in the EU. Nevertheless, **participation of upper secondary students in VET** is decreasing, and the transition between the different training pathways (e.g. upper secondary school, adult education, the apprenticeship system and training for the unemployed) remains challenging.

The Swedish vocational education (VET) system is well developed, with dual education programmes combining practical work experience with theoretical teaching having been introduced and boosting good participation among employers. The **employment rate of VET graduates** stood at 81.6% in 2015, one of the highest in the EU. Nevertheless, **participation of upper secondary students in VET** is decreasing, and the transition between the different training pathways (e.g. upper secondary school, adult education, the apprenticeship system and training for the unemployed) remains challenging. Under the 2017 budget, SEK 72.4 billion (EUR 7.7 billion) has been allocated to education and academic research, SEK 21.7 billion (EUR 2.2 billion) of...
which will be specifically devoted to child, youth and adult education\textsuperscript{106}.

Ongoing efforts to ensure that the construction workforce has the highest level of skills are carried out by Swedish Construction Industry Training Board (BYN), the national body for construction vocational training\textsuperscript{107}. BYN works in close collaboration with European organisations to ensure that Swedish VET has a degree of uniformity within the various branches of the industry across different countries. This will eventually result in the cross-border recognition of skills and qualifications of construction workers in Europe, in their increased mobility and in uniformly high-quality constructions.

A further step in this direction was made through the ID06 Skills Database (Kompetensdatabasen), developed in 2013 by the Swedish Construction Federation. It is an electronic card that stores and centralises all the professional qualifications of workers on the building site, enabling the site manager to quickly check that all employees have the necessary skills to perform their respective tasks\textsuperscript{108}. This system constitutes a means to limit undeclared illegal work, to ensure the appropriate level of skills and consequently to enhance the safety of the workplace and the quality of the construction output\textsuperscript{109}.

The Swedish Construction Federation also plays an active role in the training of the construction workforce through its Entrepreneurship School (Entreprenörsskolan), which offers training courses in areas such as health and safety, construction law, construction management and energy and the environment, as well as e-learning modules and seminars\textsuperscript{110}.

In order to develop the energy efficiency skills of the construction workforce, the Swedish Construction Federation together with other industry stakeholders launched Energy Builders (Energibyggar), a four-hour interactive web-based training in the field of energy-efficient construction and renewable energy tailored to all parties active on a construction site, including builders, installers, supervisors and managers.

The programme includes areas such as thermal insulation, air-tightness, moisture control and installations. Upon successful completion of the training, the acquired qualification can be registered in the ID06 Skills Database\textsuperscript{114}.

Other similar initiatives to improve the energy efficiency skill-base in the sector are also in place, including the Swedish Construction Industry Training Board’s Purchaser Skills (Beställarkompetens), which aims to impart methods and tools for energy efficient renovation among clients, developers and property owners\textsuperscript{115}. The Swedish Energy Agency’s Energy Boost (Energilyftet) provides training in energy efficient construction for architects, clients, construction managers and consultants\textsuperscript{116}.

In 2017, Sweden’s construction industry associations and trade unions introduced a new joint venture called Professional Introduction (Yrkesintroduktionsanställning) aimed at addressing the skills shortage in the construction industry and the obstacles for new arrivals (persons with refugee background who have recently been granted a residence permit) to enter the labour market. With the help of so-called Professional Introductory Appointments, linked to the established Vocational Training Agreement, companies in the construction sector can broaden the skills supply available to them by employing people without previous experience and vocational training. In the case of newly arrived refugees, the education will be free of charge for the company and will instead be financed by promotional funds from the state\textsuperscript{117}.

In 2017, the Swedish Construction Industries, together with the association of the installation industry Installatorföretagen published the report ‘Competence for spatial planning - a prerequisite for more housing and a well-functioning infrastructure’. The report contains proposals for policy measures needed to increase the supply of skills as well as concrete suggestions for the development of a functioning apprenticeship system that complements existing school-based vocational education programs for young and adult learners.

TO 3 - Resource efficiency / Sustainable construction

The fourth National Energy Efficiency Action Plan (NEEAP) reaffirms the energy efficiency targets for Sweden expressed as a 20% reduction in energy intensity between 2008 and 2020, i.e. the input energy per unit of GDP must decrease by 20%.

Therefore, the primary energy consumption by 2020 should be 505 TWh or lower, with final energy consumption being a maximum of 352 TWh. Regarding buildings specifically, the target is for energy consumption per square metre to fall by 20–30% by 2050 relative to 1995. Results by 2016 show that the planned energy savings in the housing sector have been attained.

The 4th NEEAP also contains Sweden’s second National Strategy for Renovations to increase energy efficiency. The document presents further analysis of barriers to renovation and possible instruments to remove those barriers in order to attain the objectives of the strategy.

The Swedish Energy Agency and the National Board of Housing, Building and Planning (Boverket) developed a first National Strategy for the Energy Efficiency Renovation of the National Building Stock (Nationell strategi för energieffektiviserande renovering) in 2014. The draft of the second version was published in November 2016, with the final document being set to be adopted in 2017\textsuperscript{118}.
In 2017, the Boverket completed the procurement of an information center for sustainable construction. The Information Center will be operational on January 1, 2018, with the aim of promoting energy-efficient renovation and energy-efficient construction using sustainable materials and low climate impact from a lifecycle perspective. The mission extends through 2018, but may be extended if the government allocates funds for a continuation.

The Swedish Government introduced the Repairs, Maintenance or Conversion and Extension Work (Rotavdrag - ROT) deduction programme back in 2008, offering a 50% tax reduction on energy-saving measures, up to a maximum of SEK 50,000 (EUR 5,300) per person per annum. The tax deduction can only be claimed for the costs of labour, not for materials. The ROT was amended in January 2016, so that the maximum tax deduction was reduced to 30% of the labour costs, but still up to a limit of SEK 50,000 per year. The deduction is available to homeowners and applies to renovation and construction works on a residential property older than five years, as well as repair and maintenance interventions to restore a dwelling to its former condition, regardless of its age. Specifically, interventions falling under the ROT scheme include repainting and replacing floors, ceilings and wall materials; replacement and repair of facades, gutters and roof tiles; extensions; repair/replacement of windows; insulation; modernisation of electrical systems and installation of solar cells; and installation and repair of energy efficient boilers and heat pumps, such as geothermal heating.

Another instrument meant to increase access to finance for energy efficiency measures and renovations are the credit guarantees for housing construction made available by the government. Prior to 2017, these were clearly linked to the definitions for new building and conversion as specified in the Planning and Building Act. The Swedish National Board of Housing, Building and Planning and the Swedish Energy Agency have proposed use of the credit guarantees to stimulate renovation by expanding the area of use to also include specific renovation measures.

In October 2016, the government introduced an aid to support the energy efficient renovation of rental housing in socio-economically disadvantaged areas. The aid partially consists in a rent discount to tenants, as well as a grant to the landlord for the renovation and energy efficient upgrade of the property. The renovation support amounts to 20% of the costs incurred for the renovation works, up to a maximum of SEK 1,000 (EUR 106) per m², and is used to provide rent discounts to the tenants. Support for energy efficiency interventions is granted provided that a 20% reduction in energy consumption is achieved. This component of the aid cannot exceed SEK 500 (EUR 53) per m², covering up to 5% of the costs incurred for the works. The scheme benefits from a budget of SEK 778 million (EUR 82.2 million) per year from 2017 until 2019, for a total of SEK 1.4 billion (EUR 144.6 million).

A solar cell project has been developed in the north of Sweden, proving that electrical generation through solar power is possible even with the darker winters in the north. On an annual basis the same amount of electricity is produced as in the south of Sweden. Another project has seen some forty houses, two swimming and sports halls being fitted with photovoltaic panels, which have proven to yield approximately 15-20% of the yearly electricity demand.

In terms of energy efficiency in public sector infrastructure, the Government has introduced a subsidy for improving school premises for the 2015–2018 period. The initiative aims to give pupils a better learning and working environment and at the same time reduce the environmental impact of the premises, as well as reduce energy and water use. Grants for improvements to outdoor environments will be provided for up to 50 per cent of the total cost of the eligible measures.

The government also passed a raft of Acts to further decrease the impact of construction and the buildings on the environment. These include the Act on energy Measurement in Buildings (2014:367) and the Act of Certain Energy Efficient Goods, Services and Buildings by Government Agencies (2014:480). The Swedish Environmental Research Institute (IVL) has also established the BASTA system that aims to phase out hazardous materials through registration and certification of building products.

Furthermore, Near-zero energy regulations (nära-nollenergigiregler) were introduced in the Building Regulations on July 1, 2017. The background is that from 2021 all new completed buildings in Europe will be close to zero energy buildings according to the EU’s Energy Performance Directive. The aim of the new rules is to push the pace of development towards energy-efficient construction in Europe through high energy requirements (see Building regulations for more information on the overall regulatory framework).
Sweden reports a good performance with respect to the metrics of the EU Single Market Scoreboard, particularly in terms of Transposition of Law, Infringements and Internal Market Information System. Indeed, Sweden reports some of the highest residential construction prices in the EU and opening the housebuilding market to foreign companies could help bring costs down. The Swedish Association of Public Housing Companies (SABO) is therefore actively engaged in encouraging foreign firms to enter the Swedish residential construction market by organising trips and business meetings with companies from other EU countries, including Poland and the Baltic states. To facilitate this process, terms, rules and conditions should be internationalised, all correspondence and contracts should be available in English and information about Swedish building regulations should be gathered in a single and easily accessible place.

Another instance of competition issues, related to construction labour, is the Laval case. This entailed a blockade carried out by Swedish Trade unions against the Latvian company Laval working in Sweden, preventing it from operating. These were protesting against the lower wages being paid to the Latvian construction workers. The ruling by the Swedish Labour Court, requiring the trade unions to pay damages to Laval, has raised concerns by the trade unions that they will be less likely to enter into collective agreements with foreign companies. Conversely, the Confederation of Swedish Enterprise emphasises how important it is for Swedish trade unions to respect the free movement of services in the EU.

Finally, regarding the implementation of Eurocodes, all EN Eurocode parts have been published as National Standards, with 46 Parts being obligatory means for structural design, as stipulated in the BFS 2011:10 regulation. In addition, these Parts are enforced in public procurement by the Public Procurement Law (2007:1091). National Annexes are published on all of these 46 compulsory Parts, but not on the remaining 13 non-compulsory ones, and are available in English. No other national standards are used in parallel with Eurocodes.

TO 5 - International competitiveness

Sweden ranks 6th out of 138 economies in the 2016-2017 Global Competitiveness Report, an improvement compared to the previous edition (9th).

Moreover, its performance in terms of the internationalisation of its SMEs is above the EU average, with the time and cost of the administrative processes required for export-related documentation being below the EU average. Namely, the cost of export-related document compliance in 2016 was negligible, compared to the EU average of USD 16.4 (EUR 15.3), taking 1 day (against the EU average of 1.4).

In September 2015, the government announced the new export strategy to strengthen the country’s global exports and expand the presence of Swedish companies (both large firms and SMEs) in international markets, particularly the North American and Asian ones, since currently 70% of Swedish exports are directed to the EU market. The
strategy contains measures in 22 priority areas, and recognises the importance of investments in infrastructure and housing construction. The export strategy has a budget allocation of SEK 800 million (EUR 85.7 million) until the end of 2019.  

To support the internationalisation of Swedish SMEs, and particularly micro-SMEs, the Swedish Agency for Economic and Regional Growth (Tillväxtverket) offers Internationalisation Cheques (Checkar för internationalisering) to companies with 2-49 employees that have a product or service they wish to bring to foreign markets. The checks are used to hire external expertise to help businesses draft an internationalisation strategy, carry out market research, identify potential partners abroad and understand legislative and insurance requirements in the foreign country of interest. Moreover, they can also cover costs of traveling and trade fair participation, provided these do not exceed 20% of the total costs of the internationalisation efforts. Cheques can range between SEK 50,000 and SEK 250,000 (EUR 5,278-26,386), covering up to 50% of the total costs of the company's internationalisation plan, and are available to a broad range of sectors including construction and real estate businesses. Companies can receive a maximum of EUR 200,000 over three years. The total budget available for the scheme is SEK 50 million (EUR 5.3 million).  

In the context of the industry-wide Fossilfri Sweden initiative, the construction sector has begun work to develop a roadmap for a climate-neutral and competitive value chain in the construction industry by 2045. The work was initiated by Skanska and the aim is to define a common roadmap towards a shift to a climate-neutral and competitive Sweden together with construction sector actors across the value chain, politicians and decision makers. The roadmap will be presented in spring 2018.
The Swedish economy has been growing steadily since 2010, with growth being expected to continue in the coming years. Indeed, Sweden’s GDP is forecast to increase by 2.6% in 2017 compared to 2016 and by a further 2.2% in 2018, reaching SEK 4,222 billion (EUR 426 billion), i.e. 19.9% above the 2010 value. Similarly, the Swedish construction sector is expected to continue along its growth path over the coming years, sustained by significant planned investments in housing and infrastructure. Thus, growth is forecast at 5.9% in 2017 compared to 2016, with growth over 2018-2022 expected to moderate to 3.9% annually, before tapering further to 2.6% over 2023-2027.135

Residential construction has picked up since the drops in activity observed in 2009 and 2010. This momentum is also expected to continue in 2017, but at a slower pace compared to the increases observed in 2016, and will be the main driver of growth for the Swedish construction sector. Thus, in 2017, total housing starts are estimated to amount to 72,000 dwellings, 58,000 of which will be for new apartment buildings, 14,000 for single-family houses and the remaining 4,000 for conversions. The projections for 2018 are for 73,500 new dwelling construction starts. However, the trend of demand in 2018 is difficult to assess, with uncertainty brought about by the slow down in price increases towards the end of 2017. Nevertheless, capacity is expected to remain a major obstacle to the development of the housing sector.136

With regard to the non-residential market, and particularly the office segment, a pipeline of residential conversion projects is expected for 2017-2018. For instance, in Stockholm, up to 8 large reconversion projects and several smaller ones will see the conversion of over 300,000 m² of office area into residential dwellings, thus adding increased pressure on the already heated office market in the capital. Moreover, the expected supply of new office space for 2017-2018 is forecast at about 220,000 m², well below the converted area. For 2017, the total volume of sale transactions in the real estate market (including both residential and non-residential), though lower than 2016, will remain strong, amounting to SEK 150-180 billion (EUR 16-19 billion).137

Finally, the infrastructure segment is expected to benefit from strengthened public support, as announced in the latest infrastructure bill, which will see a total allocation of SEK 622.5 billion (EUR 65.8 billion) for the 2018-2029 period. The significant planned investments in this segment are also set to result in positive spillover effects on other markets of the construction sector, including the concrete industry. Indeed, the forecast increase in the output of civil engineering activities is predicted to continue boosting production and sales of concrete in 2017.138
The outlook for the Swedish construction sector is therefore bright, with residential construction and infrastructure driving its growth in the coming years. Nevertheless, there are still various issues that the Swedish government will have to tackle, before the construction supply can reach the required levels. These include high land prices and the complexity of the planning and building regulations. Given the current skills shortages experienced by construction sector companies and the projected recruitment need for 40,000 people over the next five years, it will be important for the public and private sector to work together on finding effective solutions.
1 Please note that the share of each sub-sector in the value added of the broad construction sector should not be compared to the shares of the Gross Value Added in the GDP, since the GDP also includes taxes and excludes subsidies.


5 No data is available after 2014.

6 The gross operating rate is the ratio of Gross Operating Surplus to Turnover, and is an indicator of profitability.

7 No data is available after 2014.

8 No data available prior to 2010.

9 The share of construction-related industries in the total number of persons employed in the total economy is based on 2015 estimates.

10 No data is available after 2014.

11 No data available after 2014.

12 No data available prior to 2010.


24 The housing cost overburden rate is the percentage of the population living in households where the total housing costs represent more than 40% of disposable income.


26 The overcrowding rate is defined as the percentage of the population living in an overcrowded household.


28 Eurostat, Severe housing deprivation rate is defined as the percentage of population living in the dwelling which is considered as overcrowded, while also exhibiting at least one of the housing deprivation measures. Housing deprivation is a measure of poor amenities and is calculated by referring to those households with a leaking roof, no bath or shower and no indoor toilet, or a dwelling considered too dark.


31 No data available after 2014.


Fakta om utrikes födda i byggbranschen, July 2017. https://www.sverigesbyggnadstjänst.se/fakta-om-utrikes-fodda-i-byggbranschen__7294


No data available for real estate. Data for other sub-sectors is incomplete.

No data available for real estate. Data for other sub-sectors is incomplete.

A full-time equivalent (FTE) is a unit to measure employed persons in a way that makes them comparable, although they may work a different number of hours per week. The unit is obtained by comparing an employee’s average number of hours worked to the average number of hours of a full-time worker. A full-time person is therefore counted as one FTE, while a part-time worker gets a score in proportion to the hours worked.

No other data on FTE available for this sub-sector.

No other data available for other years for this sub-sector.

Byggnation, http://www.byggnationen.se/se/node/402


Swedish government, Stimulans för okat byggande. http://www.regeringen.se/pressmeddelanden/2015/03/stimulans-for-okat-byggande/

