



European Construction Sector Observatory

Country profile **Estonia**

December 2021



In a nutshell

In 2021, Estonia's GDP is expected to grow by 9.0% reaching EUR 25.8 billion. Estonia's GDP amounted to EUR 23.7 billion in 2020, marking a 3.0% decline over the previous year (EUR 24.4 billion).

This decline in GDP was mainly due to the impacts of the COVID-19 pandemic and the subsequent measures taken by the government to contain its spread.

The **number of enterprises** in the broad construction sector grew by 50.1% between 2010 and 2020, totalling 21,969. This growth was primarily driven by increases in the number of enterprises in the architectural and engineering activities (+91.8%), the narrow construction (+56.0%), the real estate activities (+36.9%), and the manufacturing (+16.8%) sub-sectors over the same reference period.

Number of enterprises in the broad construction sector between 2010 and 2020  **50.1%**

The **volume index of production** in the broad construction sector recorded an increase of 41.8% during 2015-2020. This was mainly driven by a 47.0% increase in the construction of buildings and a 21.6% growth in the construction of civil engineering, over the same reference period.

Volume index of production in the construction of buildings between 2015 and 2020  **47.0%**

Turnover in the broad construction sector marked a strong increase between 2010 and 2018 (+123.4%), reaching EUR 10.2 billion. It further increased to

EUR 10.8 billion in 2020, marking a 136.5% rise since 2010. This growth in turnover was driven by significant increases in all the four sub-sectors – the real estate activities (+159.5%), the narrow construction (+151.7%), architectural and engineering activities (+124.2%) and manufacturing (+94.3%) sub-sectors between 2010 and 2020.

Turnover in the narrow construction sub-sector between 2010 and 2020  **151.7%**

In parallel, the **gross operating rate** of the broad construction sector, which is used to assess the profitability of the sector, stood at 12.1% in 2018, 1.9 percentage points (pps) above the rate registered in 2010 (10.2%). The real estate activities sub-sector registered the largest profit margin on sales (34.6%) in 2018, followed by the architectural and engineering activities (20.5%), the manufacturing (7.7%), and the narrow construction (6.5%) sub-sectors.

In terms of employment, there were **90,122 persons employed** in the Estonian broad construction sector, registering a 26.4% increase in comparison to the 2010 level (71,298 persons). This was mainly driven by the growth registered in the number of persons employed in the architectural and engineering activities sub-sector (+31.3%), followed by the narrow construction (+30.0%), the manufacturing (+24.9%), and the real estate activities (+13.4%) sub-sectors over the 2010-2020 period.

Despite the COVID-19 pandemic, the residential construction sector was resilient in 2020. Demand for housing has increased in Estonia. Between 2015 and 2020, the house price index for existing

dwellings grew by 27.0%. According to the data published by the Eurostat¹, house prices in Estonia have risen sharply from 2010. In the first quarter of 2021 they rose by 130.0% compared to the first quarter of 2010. This is well above the EU-average of 30.0%.

In 2020, building permits were granted for the construction of 8,833 dwellings. The total number of dwellings completed in 2020 was 7,579, an increase of 8.1% from 2019 (7,014 dwellings).

In April and May 2021, a total of 659 low-income families with children applied for home grants from KredEx (a government owned foundation providing financial services). The total sum of the grants applied for amounted to approximately EUR 7.0 million.

The Recovery and Resilience Plan (RRP) of Estonia is funded by EUR 969.3 million in grants from the Recovery and Resilience Facility. 41.5% of this will go to support climate objectives and 21.5% will help foster the digital transition².

The RRP includes support for the green transition through investments of EUR 50.0 million into green hydrogen technologies, EUR 92.1 million in energy and energy-efficiency, as well as renovation measures, and EUR 31.0 million for the construction of the Rail Baltic multimodal terminal in Tallinn.

Estonia is also set to invest EUR 24.0 million in increasing connectivity with the deployment of very-high-capacity networks, EUR 97.0 million in the digital transformation of the public sector and a further EUR 83.0 million for the digitalisation of businesses, thus promoting the integration of digital technologies in SMEs. According to the RRP, the country will also invest EUR 100.0 million in the setting up of the Green Fund to support innovative green technologies³.

The **civil engineering** sector is expected to benefit from investments in transport infrastructure, which are required to implement the vision of the National Spatial Plan Estonia 2030+. The new Estonian government formed in January 2021 announced its plans to invest EUR 122.5 million in the

development of the country's rail infrastructure. The **Rail Baltica** project also plays a strategic role and will impact the Estonian construction sector in the coming years. In August 2021, Rail Baltica entered into the first two agreements for the construction of three railway crossings in Estonia. However, as per the Ministry of Economic Affairs and Infrastructure, the project will need an additional funding of around EUR 400.0 million and will be delayed by four years. Additionally, in October 2021, the government ensured of receiving the funding from the European Union for the construction of Tallinn hospital project which is planned to be operational in 2027.

Additionally, the Estonian Government adopted in June 2021, the **Long-Term View on Construction 2035**. The strategy conceives the built environment in Estonia as user-centred and aimed at creating a high-quality living environment. The vision for 2035 for the Estonian construction sector is an environmentally sustainable and efficient sector, at the forefront of new technological solutions. The strategy sets actions and initiatives involving both the public and private sector, including upskilling the workforce, fostering the use of BIM, and leveraging public procurement as a tool to digitize and make more sustainable the construction sector.

The Estonian construction sector's development is experiencing difficulties in terms of **labour and skills shortages**. Bottleneck vacancies in construction persist, representing a barrier to the sector's growth. Estonia is making efforts to reform its educational system, in particular vocational education training (VET) and reskilling and upskilling training programmes.

Overall, the Estonian construction sector has a positive outlook in the long-term. The policy and investment initiatives taken by the government in the infrastructure and housing markets are expected to drive growth in the construction sector. Investment in energy efficiency measures in apartment buildings, the digitalisation of economy and EU backed projects are expected to dominate the sector's growth.

Table of Contents

In a nutshell	2
1 Key figures	5
Construction market.....	5
Productivity.....	6
Turnover and profitability.....	6
Employment.....	7
2 Macroeconomic indicators	9
Economic development.....	9
Demography and employment.....	9
Public finance.....	10
Entrepreneurship and access to finance.....	10
3 Key economic drivers of the construction sector	11
Business confidence.....	11
Domestic sales.....	11
Export of construction-related products and services.....	12
Access to finance in the construction sector.....	13
Access to housing.....	13
Infrastructure.....	15
4 Key issues and barriers in the construction sector	16
Company failure.....	16
Trade credit.....	16
Late payment.....	17
Time and cost of obtaining building permits and licenses.....	17
Skills shortage.....	17
Sector and sub-sector specific issues.....	18
5 Innovation in the construction sector	20
Innovation performance.....	20
Eco-innovation and digitalisation.....	21
6 National and regional regulatory framework	23
Policy schemes.....	23
Building regulations.....	24
Insurance and liability related regulations.....	25
7 Current status and national strategies to meet Construction 2020 objectives	26
TO 1 – Investment conditions and volumes.....	26
TO 2 – Skills.....	28
TO 3 – Resource efficiency / Sustainable construction.....	29
TO 4 – Single Market.....	31
TO 5 – International competitiveness.....	31
8 Outlook	33

1

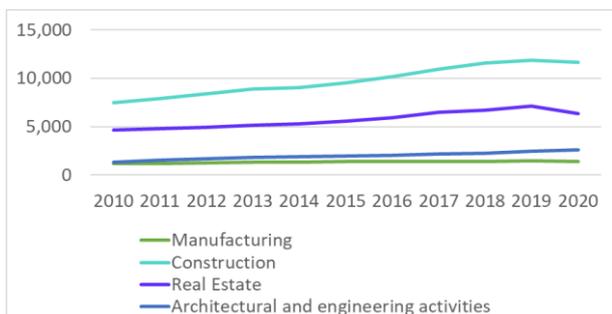
Key figures

Construction market

The **number of enterprises** in the broad construction sector in Estonia totalled 21,969 in 2020⁴ (Figure 1), representing a 50.1% increase compared to the 2010 level (14,633). This increase was mainly driven by the growth registered in the number of enterprises in the architectural and engineering activities sub-sector (+91.8%), followed by the narrow construction (+56.0%), the real estate activities (+36.9%) and the manufacturing (+16.8%) sub-sectors. The narrow construction sub-sector accounted for more than half (52.9%, i.e. 11,614) of the total enterprises in the broad construction sector in 2020. This was followed by the real estate activities (28.9%, i.e. 6,346), the architectural and engineering activities (12.0%, i.e. 2,628) and the manufacturing (6.3%, i.e. 1,382) sub-sectors.

Number of enterprises in the narrow construction sub-sector between 2010 and 2020 **↑ 56.0%**

Figure 1: Number of enterprises in the Estonian broad construction sector between 2010 and 2020



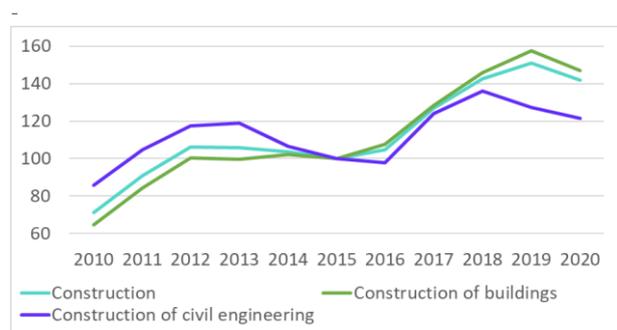
Source: Eurostat, 2021.

The **volume index of production** in the broad construction sector has been growing since 2015, increasing by 41.8% over the 2015-2020 period. This was primarily driven by the growth in the volume index of production in the construction of buildings (+47.0%) and the construction of civil engineering (+21.6%), over the same period (Figure 2).

Volume index of production in the construction of buildings between 2015 and 2020

↑ 47.0%

Figure 2: Volume index of production in the Estonian broad construction sector between 2010 and 2020 (2015=100)

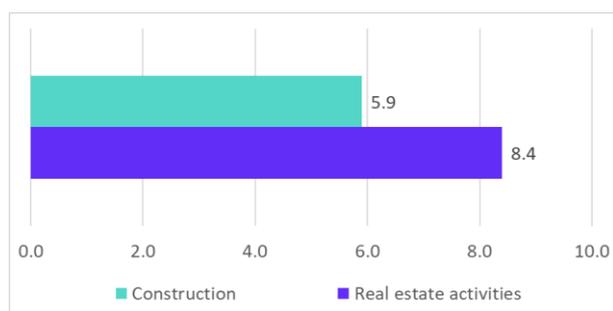


Source: Eurostat, 2021.

The **total value added at factor cost** of the broad construction sector amounted to EUR 3.0 billion in 2020⁵, representing a 143.4% increase since 2010. The narrow construction sub-sector accounted for 45.5% (EUR 1.4 billion) of the total added value in 2020, followed by the real estate activities (27.6%, i.e. EUR 825.2 million), the manufacturing (20.4%, i.e. EUR 609.1 million) and the architectural and engineering activities (6.5%, i.e. EUR 194.2 million) sub-sectors.

The **share of the gross value added⁶ (GVA)** of the broad construction sector in GDP stood at 17.7% in 2018⁷, above the 2010 level (16.4%). The share of GVA of the real estate activities sub-sector in GDP stood at 8.4% (EU-27 average 10.3%) in 2020, followed by the narrow construction sub-sector (5.9%), above the EU-27 average of 5.1% (Figure 3).

Figure 3: Gross value added as a share of GDP in the Estonian broad construction sub-sector in 2020 (%)



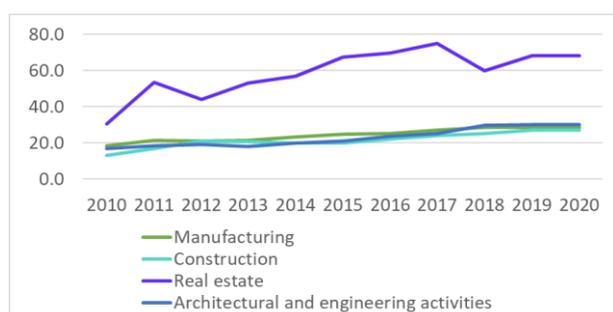
Source: Eurostat, 2021.

Productivity

Apparent labour productivity⁸ in the broad construction sector increased from EUR 17,219 in 2010 to EUR 31,144 in 2018⁹, representing an increase of 80.9% over the period. During the 2010-2020¹⁰ period, labour productivity in the real estate activities sub-sector reported an increase of 122.4%, the highest growth among all the sub-sectors, amounting to EUR 68,040 in 2020. This was followed by a 106.7% growth in the narrow construction sub-sector over the same period, ending at EUR 27,074. Similarly, labour productivity in the architectural and engineering activities and manufacturing sub-sectors increased by 76.2% and 56.4% in the same period, amounting to EUR 29,951 and EUR 28,614 respectively.

Apparent labour productivity in the narrow construction sub-sector between 2010 and 2020 **↑ 106.7%**

Figure 4: Labour productivity in the broad construction sector in Estonia between 2010 and 2020 (EUR k)



Source: Eurostat, 2021.

Turnover and profitability

The **total turnover** of the broad construction sector in 2018 amounted to EUR 10.2 billion, representing an increment of 123.4% compared to the 2010 level (EUR 4.6 billion). It further increased to EUR 10.8 billion in 2020¹¹, marking an increase of 136.5% over the 2010 amount. This growth was mainly driven by significant increases in all four sub-sectors – the real estate activities (+159.5%), the narrow construction (+151.7%), architectural and engineering activities (+124.2%) and manufacturing (+94.3%) sub-sectors over the same period.

In 2020, the largest share of the turnover came from the narrow construction sub-sector, which accounted for 56.6% (i.e. EUR 6.1 billion) of the total. It was followed by the manufacturing (22.1%, i.e. EUR 2.4 billion), the real estate activities (17.6%, i.e. EUR 1.9 billion), and the architectural and engineering activities (3.7%, i.e. EUR 399.6 million) sub-sectors.

Turnover in the narrow construction sub-sector between 2010 and 2020 **↑ 151.7%**

The **gross operating surplus** of the broad construction sector amounted to EUR 1.2 billion in 2018¹², 165.1% higher than the level registered in 2010 (EUR 466.6 million). The highest growth was registered by the narrow construction sub-sector (+371.7%) during the 2010-2018 period, followed by the architectural and engineering activities (+147.5%), the real estate activities (+136.0%) and the manufacturing (+85.2%) sub-sectors, over the same reference period.

The **gross operating rate** of the broad construction sector¹³, which gives an indication of the sector's profitability, stood at 15.5% in 2017, below the EU-27 average of 16.6%. It fell to 12.1% in 2018¹⁴, 1.9 pps above the rate registered in 2010 (10.2%). The real estate activities sub-sector registered the largest profit margin on sales (34.6%) in 2018, followed by the architectural and engineering activities (20.5%), the manufacturing (7.7%), and the narrow construction (6.5%) sub-sectors.

The **construction costs** index increased by 5.1% during the period 2015-2020, mainly due to a 12.7% rise in the labour costs index in construction (following an increase in wages). This was also

followed by a 1.8% increase in the input prices for materials in construction over the same reference period.

Labour costs index in construction between 2015 and 2020 **↑ 12.7%**

Figure 5: Construction cost index between 2010 and 2020 (2015=100)



Source: Eurostat, 2021.

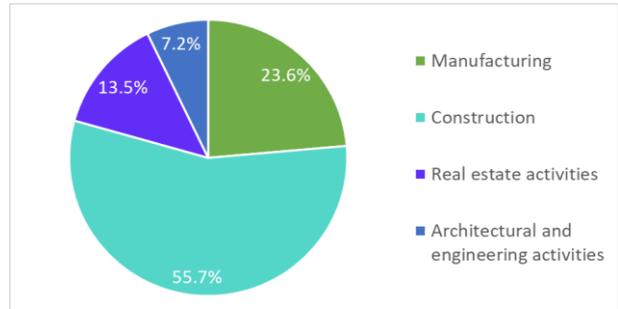
Employment

In 2020¹⁵, there were 90,122 **persons employed** in the Estonian broad construction sector, registering a 26.4% increase compared to the 2010 level (71,298 persons). In 2020, the narrow construction sub-sector employed 55.7% (50,225 persons) of the total workforce in the broad sector, marking an increment of 30.0% in terms of the number of employees between 2010 and 2020. The highest increment was observed in the architectural and engineering activities sub-sector (+31.3%) employing 6,482 persons in 2020. This was followed by the manufacturing (+24.9%) and the real estate activities (+13.4%) sub-sectors over the same period. These employed 21,287 and 12,128 persons respectively in 2020 (Figure 6).

In 2018¹⁶, **SMEs** in the broad construction sector employed almost 77.0% of the total number of persons employed in the sector. This is below the 2010 level of 79.2%.

Number of persons employed in the narrow construction sub-sector between 2010 and 2020 **↑ 30.0%**

Figure 6: Percentage of persons employed per construction sub-sectors in Estonia in 2020



Source: Eurostat, 2021.

Regarding **employment by specific occupation**, the manufacturing sub-sector has witnessed increased demand for workers. In this sub-sector, demand for professionals rose by 98.2% during the 2010-2020 period, followed by technicians and associate professionals (+86.9%), clerical support workers (+70.3%) and craft and related trades workers (+11.7%).

Demand for managers declined by 26.6% while elementary occupations and plant and machine operators recorded a decrease of 7.6% and 6.6%, respectively over the same period. In the narrow construction sub-sector, demand for technicians and associate professionals registered an increase of 185.7%, while the demand for plant and machine operators and elementary occupations both witnessed declines of 8.7% and 19.4% respectively between 2010 and 2020. In the real estate activities sub-sector¹⁷, demand for elementary occupations and technicians and associate professionals rose by 62.1% and 8.6% respectively over the same time period.

Demand for technicians and associate professionals in the narrow construction sub-sector during 2010-2020 **↑ 185.7%**

The number of **self-employed workers** in the narrow construction sub-sector represented 17.7% of total self-employed persons in the general economy in 2020. This is well above the 2010 level of 12.9% and the EU-27 average of 11.7%. In the real estate activities sub-sector, the share of self-employed workers fell to 2.1% in 2020 from 4.0% in 2010, above the EU-27 average of 1.6%.

During the 2010 – 2020 period, **full-time employment** in the narrow construction sub-sector decreased by 10.3% and the real estate activities sub-sector increased by 18.7%.

Part-time employment in the narrow construction and real estate activities sub-sectors grew by 3.5% and 29.7%, respectively, between 2010-2020.

Full-time employment in the narrow construction sub-sector between 2010 and 2020



10.3%

2

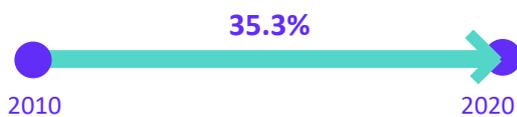
Macroeconomic indicators

Economic development

In 2020, Estonia's economy experienced a 3.0% contraction, mainly because of the COVID-19 pandemic and the subsequent measures adopted by the government to contain the virus.

Over the 2010-2020 period, Estonian GDP experienced growth of 35.3%, amounting to EUR 23.7 billion. However, in 2020 GDP declined by 3.0% over the previous year. Potential GDP in 2020 stood at EUR 25.0 billion, resulting in a negative output gap of 5.2%. In 2021, Estonian GDP is expected to grow by 9.0%, reaching EUR 25.8 billion.

Estonian GDP over 2010-2020

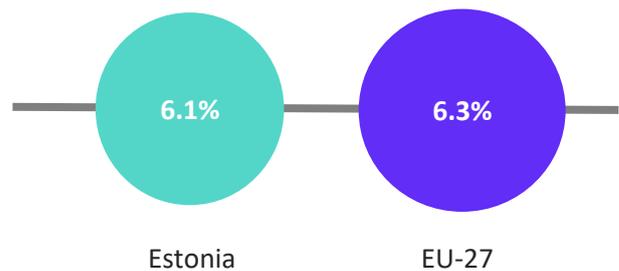


The **inflation rate** declined between 2010 (2.7%) and 2015 (0.1%), before picking up again in 2016 and reaching 2.3% in 2019. In 2020, inflation decreased by 0.6% mainly due to lower levels of demand induced by the COVID-19 pandemic and the subsequent lockdowns¹⁸.

Demography and employment

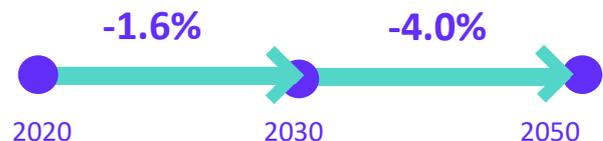
In 2020, the average **unemployment rate** (between 25-64 years) in Estonia stood at 6.1%, 9.2 pps below the 2010 level and also slightly below the EU-27 average of 6.3%. Unemployment has decreased continuously since the height of the financial crisis of 2008 when it reached 15.3% in 2010. The **youth unemployment rate** (below age of 25) reached 17.9% in 2020, below the 2010 level of 32.9% and slightly above the EU-27 average of 16.8%.

Unemployment rates in Estonia and the EU-27 in 2020



The **total population** in Estonia totalled 1.3 million people in 2020, decreasing marginally by 0.1% over the 2010-2020 period. It is projected to further decline by 1.6% by 2030 and 4.0% by 2050, reaching 1,256,223 inhabitants. While net migration has traditionally been negative, it turned positive in 2015 for the first time in a decade, reflecting in part the improved economic situation in the country and income growth. In 2020, net migration stood at 3,781 representing a 29.6% decline compared to 5,371 in 2019. Migration and labour mobility also contributed addressing labour and skills shortages.

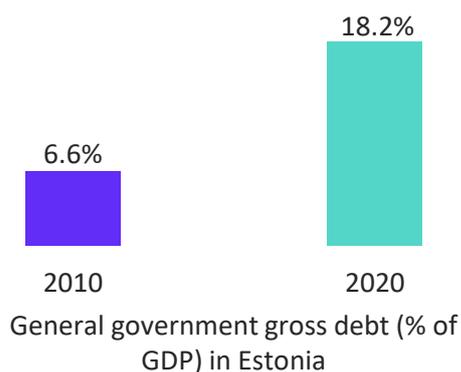
Projected population evolution in Estonia



The **working age population** in Estonia made up 63.5% of the total population in 2020, slightly below the EU-27 average of 64.3%. By 2050, the share of the working age population is expected to reduce to 57.5%, while people aged 65 or above will make up 28.2% of the overall population. This shift in terms of population may imply an increasing need for adequate care buildings and infrastructures. This in turn may generate more opportunities for the Estonian construction sector.

Public finance

In 2020, general **government expenditure** represented 45.1% of GDP, below the EU-27 average of 53.4%. **General government gross debt** amounted to 18.2% of GDP, higher than in 2010 (6.6%) but significantly below the EU-27 average of 90.7%. At the same time the **general government deficit** stood at -4.9% of GDP, lower than the EU-27 average of -6.9% in 2020.



Entrepreneurship and access to finance



According to the World Bank Doing Business 2020 report, Estonia ranked 14th out of 190 countries in ease of starting a business in 2019. This is an improvement in comparison with previous year's ranking (16th)^{19,20}.

As per the report, starting a business in Estonia requires 3 procedures, taking 3.5 days and 1.0% of income per capita²¹. In terms of entrepreneurship, in 2017²², 61.0% of Estonian adult population

perceived that there are good opportunities for starting a firm in the country, and 18.1% of the adult population, currently not involved in entrepreneurial activities, intended to start a business in the coming three years²³.

According to the 2021 SME Country Fact Sheet, in terms of entrepreneurship, Estonia is among the best performing countries in the EU. It has developed a highly dynamic ecosystem for start-ups, scale-ups and high-tech SMEs, supported by a special public agency **Startup Estonia** and several early-stage investment funds with public participation. As per the report, Estonia performs particularly well in areas such as 'Early-stage entrepreneurial activities, also for female population', 'Entrepreneurial education at basic schools' and 'Entrepreneurial Intentions'²⁴.

Estonia has one of the best start-up environments in the EU-28²⁵ and is implementing new measures to further improve it. An insolvency reform, launched in 2020, promises improvements for providing entrepreneurs with a 'second chance'. Similarly, amendments to the Bankruptcy Act will improve, simplify and speed-up bankruptcy procedures²⁶.

In 2020, the COVID-19 pandemic had a major impact on Estonian SMEs leading to a drop in SME value added and employment of 4.0% and 3.4%, respectively. However, with the government taking numerous policy measures to support the economy, these indicators are forecasted to grow by 5.5% and 0.2% respectively in 2021²⁷.

The government introduced several subsidies, grants and loans to support SMEs and companies during the COVID-19 crisis in 2020.

3

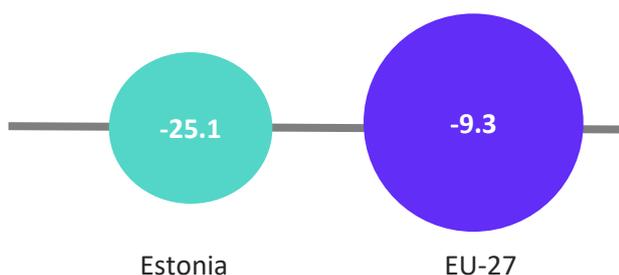
Key economic drivers of the construction sector

Business confidence

All the three business confidence indicators in Estonia remain in negative territory, with the industry confidence and construction confidence indicators showing the greatest declines over the 2010 – 2020 period.

The **consumer confidence** indicator improved from -13.5 in 2010 to -11.8 in 2020, above the EU-27 average of -14.6. The **construction confidence** indicator improved slightly from -26.3 to -25.1 over the 2010-2020 period, lower than the EU-27 2020 average of -9.3. The **industry confidence** indicator declined significantly to -13.6 in 2020 compared to 0.5 in 2010. This is slightly above the EU-27 average of -14.4 in 2020.

Estonian construction confidence index 2020



The **investment ratio** also improved from 19.7% in 2010 to 32.5% in 2020.

In parallel, **investment per worker** increased in 2019²⁸, reaching EUR 30,924 compared to EUR 12,521 in 2010, representing a growth of 147.0% over the period. In terms of sub-sectors, investment per worker in the real estate activities and narrow construction sub-sectors registered significant increases of 213.7% and 34.5% during

2010-2019, reaching EUR 64,300 and EUR 3,900 in 2019²⁹, respectively. Conversely, investment per worker in the architectural and engineering activities sub-sector decreased by 45.1% from EUR 5,100 in 2010 to EUR 2,800 in 2019³⁰.

Investment per worker
in the real estate
activities sub-sector
between 2010 and
2019

↑ 213.7%

Domestic sales

The top five **most domestically sold** construction products in Estonia have remained the same since 2012, although their rankings have seen fluctuations in recent years. Out of the top five products, three product groups showed significant increment in their sales value over the 2010 – 2020 period, namely, 'Windows, French windows and their frames' (+121.4%), 'Doors, windows and their frames' (+153.9%) and 'Prefabricated Structural components' (+109.2%).

The largest increase in sales was recorded for the product category 'Prefabricated buildings of metal' rising by 918.3% between 2010 and 2020, though it only accounted for EUR 50.4 million. However, this product group does not belong to the top five most domestically sold construction products. The top five most domestically sold construction products, accounting for 49.1% of the total of construction products sold domestically in 2020, are presented in Table 1, including a comparison with the most sold products in the EU-27 region.

Table 1: Five most domestically sold construction products in Estonia and in the EU in 2020

Estonia				EU-27
	Product	Value (EUR m)	Share in construction product domestic sales (%)	Product
1	Builders' joinery and carpentry (group 162319)	116.6	13.1	Other structures and parts of structures (group 251123)
2	Other structures and parts of structures (group 251123)	106.6	11.9	Ready-mixed concrete (group 236310)
3	Windows, French windows and their frames (group 162311)	82.9	9.3	Doors, windows and their frames (group 251210)
4	Doors, windows and their frames (group 251210)	72.4	8.1	Prefabricated buildings of metal (group 251110)
5	Prefabricated structural components (group 236112)	60.0	6.7	Prefabricated structural components (group 236112)

Source: PRODCOM, 2021.

Export of construction-related products and services

The ranking of the **most exported products** has experienced fluctuations since 2010. However, there has been no change in the ranking of the top five most exported construction products since 2018. Most of the products strongly increased in terms of the sales value of exports between 2010 and 2020. Indeed, robust exports have been a driving factor in the country's economic upswing. The largest increase in export value was in the categories "Prefabricated buildings of metal" (+296.0%), "Doors, windows and their frames" (+294.4%), "Tiles, flagstones, bricks and similar articles" (+282.5%) and "Other worked ornamental or building stone" (+277.3%). All four of these products, however, represent only 7.4% of total construction products exports and were also not in the top five list. The top five most exported

construction products from Estonia and the EU-27 are summarised in Table 2. Together, these made up 69.9% of all construction products exports in 2020.

Table 2: Five most exported construction products in Estonia and in the EU in 2020

Estonia				EU-27
	Product	Value (EUR m)	Share in construction product export sales (%)	Product
1	Prefabricated wooden buildings (group 162320)	390.4	27.1	Ceramic tiles and flags (group 233110)
2	Windows, French windows and their frames, etc. (group 162311)	186.0	12.9	Other structures and parts of structures, etc. (group 251123)
3	Pellets and briquettes, of pressed and agglomerated wood (group 162915)	162.1	11.3	Fibreboard of wood etc. (group 162115)
4	Builders' joinery and carpentry, etc. (group 162319)	149.0	10.4	Doors, windows and their frames (group 251210)
5	Other plywood, veneered panels (group 162118)	117.5	8.2	Builders' joinery and carpentry (group 162319)

Source: PRODCOM, 2021.

In terms of the **cross-border provision of construction services**³¹, Estonia exported EUR 429.3 million worldwide in 2020, a substantial increase of 166.0% compared to the 2010 level (EUR 161.4 million). 88.9% of total exports (EUR 381.8 million) went to the EU-27 countries in 2020, compared to 83.0% (EUR 134.0 million) in 2010. In parallel, Estonia imported EUR 126.2 million worth of construction services in 2020, marking an increase of 54.3% over the 2010 level (EUR 81.8 million). 75.5% of total imports (EUR 95.3 million) came from the EU-27 countries in 2020, compared to 89.2% (EUR 73.0 million) in 2010. Estonia thus generated a **trade surplus** of EUR 303.1 million in 2020.

Estonia's export of construction services worldwide between 2010 and 2020  **166.0%**

Access to finance in the construction sector

In Estonia, **access to finance** remains the most important concern for 8.9% of SMEs, below the EU-27 average of 9.9%, as per the Survey on the Access to Finance of Enterprises (SAFE) 2020 report³². According to the report, bank loans are still the main source of financing for 33.6% of SMEs in Estonia, below the EU-27 average of 47.6%. Between the period of April to September 2020, 18.9% of Estonian SMEs applied for a bank loan, while 6.4% did not because of fear of rejection. Out of those who applied for a bank loan, 68.2% received everything they requested, which is slightly below the EU-27 average of 69.7%³³.

The EIB Investment Survey (EIBIS) 2020 report shows that most firms in Estonia are satisfied with the type, amount, cost, and maturity of the funding received. The survey also suggests that 7.0% of all Estonian firms are financially constrained, which is in line with the EU-27 average. Moreover, the availability of finance is considered a long-term barrier to investment by 29.0% firms in the construction sector³⁴.



As per EIBIS 2020 report, **17.0% of firms in the construction sector are dissatisfied with the cost of finance, 8.0% for collateral requirements, 8.0% for type of finance received and 11.0% with the amount of financing**³⁵.

The European Investment Fund (EIF) supports SMEs in the Estonian construction sector via the **BaltCap Private Equity Fund III**. This venture capital investment fund aims to generate long-term capital gains from equity and quasi-equity investments in SMEs, mainly in Estonia, Latvia, and Lithuania³⁶.

In October 2019, LHV Asset Management (LHV), a fund management company in Estonia, invested EUR 126.0 million in the BaltCap Private Equity Fund III (BPEF III) on behalf of its pensions, along with SEB pension funds in Estonia, Latvia and Lithuania³⁷.

In March 2020, the Nordic Investment Bank (NIB) and the Republic of Estonia entered into EUR 750.0 million 15-year COVID-19 mitigation loan agreement to finance the measures taken to mitigate the impact of the pandemic on the economy³⁸.

The European Investment Fund (EIF) and Finora Capital entered into a new transaction in April 2021 with EUR 2.0 million of funding to support at least 100 micro borrowers in Estonia and Lithuania. The long-term working capital loans offered by Finora will be essential in providing liquidity to companies in the post-COVID-19 recovery³⁹.

In December 2020, The EIB Group through a synthetic securitisation transaction issued a guarantee to Luminor Bank AS to support additional lending to SMEs and mid-caps. The guarantee structure can support at least EUR 660.0 million of additional loans and leases to companies in Estonia, Latvia and Lithuania⁴⁰.

Access to housing

The **number of households** in Estonia has increased steadily, reaching 619,100 in 2020 from 549,600 in 2010 (+12.6%). The share of **people living in cities** increased from 41.8% in 2010 to 44.2% in 2018⁴¹. While 45.7% of the population lived in densely populated areas in 2010, it went up to 60.4% in 2020. In parallel, the share of the population living in intermediate urbanised areas increased to 9.3% in 2020 from 3.4% in 2010.

Number of households between 2010 and 2020  **12.6%**

Estonian **mean equivalised net income** has grown by 102.1% over the 2010-2020 period, reaching EUR 13,705.0 in 2020. In 2019, it amounted to EUR 12,780.0, below the EU-27 average of 19,567.0.



Total **outstanding residential loans to households** increased by 35.9% from EUR 5,973 million in 2010 to EUR 8,119 million in 2019⁴². This is supported by declining **interest rates on mortgages** (for loans over 5 years of original maturity), standing at 2.0% in 2020 compared to 2.6% in 2010 (Figure 7). Although interest rates have remained low compared to 2010-2011, they have been increasing since 2016.

Figure 7: Mortgage rates for loans over 5 years original maturity (%) between 2010 and 2020

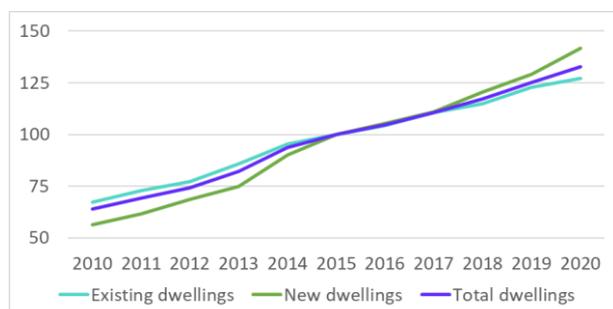


Source: Eurostat, 2021.

The **house prices index** for existing dwellings grew by 27.0% between 2015 and 2020. As per the data published by the Eurostat, house and rental prices in Estonia have risen sharply since 2010. In the first quarter of 2021 house prices rose by 130.0% compared to the first quarter of 2010. This is well above the EU-average of 30.0%. Rental prices increased by 140.0% over the same period, significantly above the EU-average of 15.0%⁴³.

House prices index for existing dwellings between 2015 and 2020 ↑ 27.0%

Figure 8: House price index in Estonia between 2010 and 2020 (2015=100)



Source: Eurostat, 2021.

Regarding the **building permits** index for residential dwellings, Estonia witnessed a substantial increase of 58.1% between 2015 and 2020. Notably, there was an 14.5 index points (ip) increase between 2019

and 2020. Similarly, building permits for one-dwelling buildings rose by 42.5% over the same reference period. The biggest increment was seen in building permits for two or more dwelling buildings, rising by 63.2% between 2015 and 2020.

Despite the COVID-19 pandemic, the residential construction sector has been resilient in 2020. Building permits were granted for the construction of 8,833 dwellings. The total number of dwellings completed in Estonia was 7,579, an increase of 8.1% from 2019 (7,014 dwellings)⁴⁴. In the first quarter of 2021, building permits were granted for the construction of 2,089 dwellings, which is 3.0% more than in the first quarter of 2020⁴⁵.

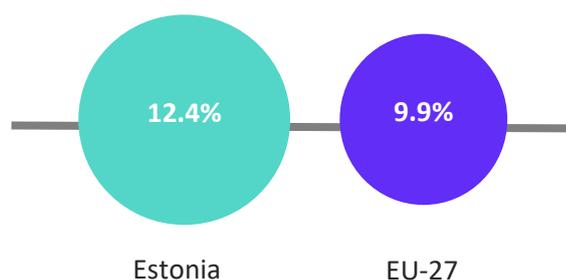
Building permits index for residential dwellings between 2015 and 2020 ↑ 58.1%

The majority of Estonian **building stock** is owner-occupied, with 81.4% owners and 18.6% tenants occupying buildings in 2020. This can be partly attributed to policies that favour home ownership, as well as the country's culture of home ownership. However, there has been a change in this trend over the last decade and the shift has gone towards housing rental, where the share of tenants increased by 4.1 pps between 2010 and 2020.

The distribution of owners and tenants appears to be influenced by income level. The population earning above 60.0% of **median equivalised income** is more likely to own its own dwelling (84.4% on average), against 69.8% for the population earning below 60.0% of median equalised income. This trend has remained stable since 2010.

The **overcrowding rate**⁴⁶ in Estonia stood at 13.9%⁴⁷ in 2019, below the EU-27 average of 17.1%. In 2020, it decreased to 12.7%. Similarly, the **severe housing deprivation rate**⁴⁸ in 2019 stood at 2.7%⁴⁹, lower than the EU-27 average of 4.0%. This rate decreased slightly to 2.1% in 2020, the lowest since 2011. The **housing cost overburden rate**⁵⁰ significantly increased to 12.4% in 2020, the highest since 2011, above the EU-27 average of 9.9%.

Housing cost overburden rate in 2020



Infrastructure

As per the 2019 Global Competitiveness Report⁵¹, Estonia ranks 45th out of 141 economies in terms of infrastructure.

In particular, it ranks 8th with respect to the efficiency of seaport services and 20th in terms of train services. It also performs moderately well in terms of road connectivity (35th), railroad density (38th) and quality of road infrastructure (42nd). In contrast, efficiency of air transport services and airport connectivity lag behind, ranking 69th and 92nd, respectively⁵². The country's road density in 2019⁵³ remained at 4.0km/km² since 2017. It increased by 33.3% from 3.0 km/km² in 2010. Its railroad density increased by 28.6% over the same period, totalling 27.0 km/km² in 2019.

Estonia's ranking in transport infrastructure can mainly be attributed to the development of the maritime and rail infrastructures. Estonia has not made particular progress so far in completing the TEN-T⁵⁴ core network. Due to insufficient funding, road works in Estonia's state road management plans are running later than anticipated. In fact, development works worth EUR 689.0 million have not been carried out in 2020 and this backlog is expected to rise to EUR 2.2 billion by 2030. The Estonian Road Administration also warned that, at the current level of investment, it is not possible to maintain the country's roads at an acceptable level⁵⁵. The development of *Rail Baltica*, planned for 2026, remains a priority for Estonia to tackle congestion and connectivity challenges of the internal market⁵⁶. However, the Supreme Audit Institutions of Estonia, Latvia and Lithuania have raised concerns on the implementation of this project in relation to cost and schedule⁵⁷. As per the Estonian Ministry of Economic Affairs and Infrastructure, the project will need additional

funding of EUR 400.0 million and will be delayed by four years⁵⁸.

In August 2021, Rail Baltica entered into the first two construction agreements for the construction of three railway crossings. The contracts are for the construction of the Loone ecoduct⁵⁹ railway crossing, Künka road overpass and the Tagadi road overpass in Kohila. The projects involve a total construction cost of EUR 7.6 million. Thus, the Rail Baltica project will impact the Estonian construction sector in the coming years⁶⁰.

In 2019, the building and modernisation of 201 kilometres of roads was completed. The EU Connecting Europe Facility allocated EUR 221.8 million to specific projects on strategic transport networks. With a view to alleviating congestion at the border between the two member states, the construction of the lines comprising the third electricity connection between Estonia and Latvia was completed in December 2020⁶¹. In August 2021 construction work was completed, and the newly built 330 kV electricity transmission line from Estonia to Riga CHP-2 in Latvia was put into operation⁶².

The new Estonian government formed in January 2021 announced its plan to invest EUR 122.5 million in the development of the country's rail infrastructure. Among the projects planned are the further electrification railways, the construction of the international passenger terminals of Tallinn and Pärnu, the construction of the undersea tunnel to Finland and the acquisition of electric trains⁶³.

The Recovery and Resilience Plan of Estonia includes investments in infrastructure which are expected to contribute to the Estonian 2035 Strategy⁶⁴ and the sustainable mobility targets set out in the Transport and Mobility Development Plan 2021-2035⁶⁵. A total investment of EUR 96.0 million is available, which will be used for projects such as the construction of a section of the westbound Tallinn-Rohukula railway (EUR 34.0 million), the construction of the rail Baltic multimodal joint terminal in Tallinn (EUR 31.0 million), the construction of the Tallinn old port tram line (EUR 26.0 million) and investments in cycle paths and walkways (EUR 5.0 million)⁶⁶.

4

Key issues and barriers in the construction sector

Company failure

Over the 2010 to 2019 period⁶⁷, **business demography** in the broad construction sector changed considerably. The number of company births in the narrow construction sub-sector increased by 103.9%, from 771 to 1,572. In the real estate activities sub-sector it went up by 73.0%, from 352 to 609. The architectural and engineering activities sub-sector also increased, with the number of births growing by 47.4%, from 137 to 202.

The number of **company deaths** increased by 7.3% in the narrow construction sub-sector from 1,165 in 2010 to 1,250 in 2019⁶⁸. Further, the number of deaths in the real estate activities sub-sector increased by 46.9%, from 433 to 636. The architectural and engineering activities sub-sector also experienced an increase in company deaths of 52.2%, growing from 138 to 210.

According to the Euler Hermes Insolvency Estimates, the number of companies that declared bankruptcy in Estonia increased to 341 in 2020 from 271 in 2019. However, due to the recovery in the aftermath of the COVID-19 pandemic, it is forecasted that this number will fall to 330 by the end of 2022⁶⁹.

Estonia is planning to establish an insolvency service by January 2022 to make bankruptcy proceedings more effective. An average of 40.0% of claims are satisfied in current bankruptcy proceedings in Estonia. The new insolvency service, made up of four employees, would run special audits to chart the ways by which companies are emptied of assets⁷⁰.

Trade credit

According to the Survey on the Access to Finance of Enterprises (SAFE) 2020 report, trade credit constitutes a relevant source of financing for 22.0% of Estonian SMEs, below the EU-27 average of 27.7% in 2020⁷¹.

As per the 2020 report, 19.4% of SMEs had obtained trade credit from their business partners in the last six months as compared to the EU-27 average of 13.6%, and 38.5% of SMEs had applied for trade credit in the same period, above the EU-27 average of 31.4%. Out of this 38.5%, 87.0% received everything they applied for (above the EU-27 average of 67.3%). In addition, 73.8% of SME respondents consider that the availability of trade credit has remained unchanged over the past six months and 71.8% of SMEs expect trade credit financing to remain unchanged in the coming six months⁷².



Late payment

As per the SAFE 2020 report, 10.8% of SMEs reported facing late payment issues on a regular basis, below the EU-27 average (13.2%)⁷³.

23.8% of SMEs reported that their payments to suppliers have been affected as a result of late payments by customers. For 24.2% of SMEs, late payment affected production or operations, and for 22.5% it impacted investments or new hiring. 18.3% of SMEs also reported that their loan repayments have been delayed, or they have had to seek additional financing, as a result of late payments⁷⁴.

As per the European Payment report 2021, nearly 58.0% of Estonian businesses are told to accept longer payment terms than they are comfortable with from SMEs. On average, business-to-business (B2B) customers in Estonia are allowed 41 days to pay dues, on par with the EU-28⁷⁵ average of 41 days. In practice, Estonian B2B customers took an average of 55 days to pay dues in 2021, above the EU-28⁷⁶ average of 52 days⁷⁷.

37.0% of Estonian companies consider that late payments lead to loss of income and prohibit growth potential, with 44.0% of companies believing that the financial difficulties of debtors are the main cause of the problem⁷⁸.

With the ongoing COVID-19 pandemic, the situation has become difficult. According to the European Payment Report 2021, 53.0% of respondents expect debtors' liquidity challenges, due to the impact of COVID-19, to affect late payments. This is higher than the EU-28⁷⁹ average of 48.0%⁸⁰.

Additionally, 37.0% of respondents in Estonia ranked "Risk of a pan-European recession" as one of the main challenges in terms of their customers paying on time and in full over the next 12 months⁸¹. This is below the EU-28⁸² average of 40.0%. At the same time, 65.0% respondents are more concerned than ever before about debtors' ability to pay on time, above the EU-28 average of 62.0%. Lastly, 84.0% of respondents believe debtors paying after the due date is problematic, above the EU-28 average⁸³ of 79.0%⁸⁴.

Time and cost of obtaining building permits and licenses

According to the World Bank's Doing Business 2020 Report⁸⁵, Estonia ranked 19th out of 190 economies in terms of 'dealing with construction permits', a decline from 14th place in 2019⁸⁶.

As per the report, it requires ten procedures and 103 days in total to complete the formalities to build a warehouse⁸⁷. This is lower than the OECD high-income average (12.7 procedures and 152.3 days) (Table 3). In addition, the cost of obtaining a building permit for a warehouse represents 0.2% of the value of the warehouse, below the OECD high-income average of 1.5%⁸⁸.

Table 3: Construction procedures timing and costs in Estonia

Procedure	Time to complete	Associated costs
Obtain project clearance from Fire Department	30 days	no charge
Obtain project clearance from Environment Department	29 days	no charge
Obtain project clearance from Health Care Department	28 days	no charge
Obtain project clearance from Labour Inspections Department	27 days	no charge
Obtain building permit ⁸⁹	25 days	EUR 585
Receive on-site inspection by Municipality	1 day	no charge
Receive on-site inspection by Estonian Technical Surveillance Authority	1 day	no charge
Apply for permit of use and request final inspection from Municipality	1 day	EUR 64
Receive final inspection from Municipality and obtain permit of use	25 days	no charge
Obtain water and sewerage connection	20 days	EUR 1,131

Source: Doing Business overview for Estonia, World Bank, 2020⁹⁰.

Skills shortage



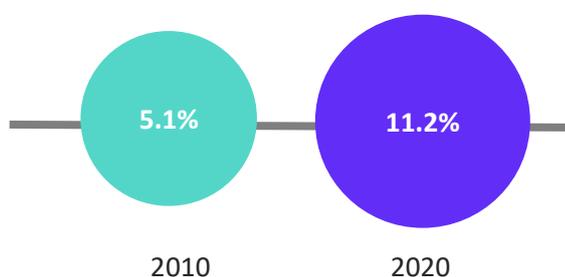
The number of job vacancies in the narrow construction sub-sector experienced a decrease of 21.4% from 264 in 2010 to 208 in 2020.

The **job vacancy rate** was 0.5% in the narrow construction sub-sector and 0.8% in the real estate

activities sub-sector in 2020. The number of **tertiary students** in engineering, manufacturing and construction experienced a 0.3% decrease between 2010 and 2019⁹¹, reaching 1,222 from 1,226.

Adult participation in education and training in the narrow construction sub-sector increased from 5.1% in 2010 to 11.2% in 2020, while for the real estate activities sub-sector⁹² the participation rate stood at 16.0% in 2020. Estonia's performance in **tertiary educational attainment** (46.2%) is above the EU-27 average of 40.3%, but high dropout rates from higher education and declining enrolment rates may worsen the situation in the longer term⁹³.

Adult participation in education and training in the narrow construction sub-sector



The Vocational Education and Training (VET) system of Estonia has witnessed extensive reforms and developments in recent years. As a result, 25.0% of students at the upper secondary level are enrolled in a vocational programme, which is delivered by 30 different VET providers⁹⁴.

The number of adults with no secondary or professional education in Estonia remains relatively high despite policy efforts to reduce it. To mitigate the skills mismatch, in 2020 almost 600 publicly funded non-formal training courses were planned to be provided to 7,300 adults in vocational education institutions. These courses are further complemented by courses given by the Unemployment Insurance Fund focusing particularly on risk groups, either employed or unemployed⁹⁵.

The **employment rate of recent graduates** by educational attainment stood at 83.3% in 2019, slightly above the EU-27 average of 80.9%. A performance-based funding was introduced by the government in 2017 to promote innovation and enhanced cooperation between schools and companies. However, of the EUR 12.0 million

initially expected, only EUR 0.5 million was allocated for this purpose in 2019⁹⁶. This highlights the difficulties in coordinating public and private sector actors, as well as their needs and interests, when it comes to skills development.

As per the European Commission's Education and Training Monitor Report 2020, 84.0% of the firms in Estonia have identified skills shortage as one of the main obstacles to investment⁹⁷.

According to EIB Investment Survey 2020 report, 82.0% respondents in the construction sector cited availability of skilled staff as a long-term barrier to investment in Estonia⁹⁸.

In Estonia, skills shortages have emerged mainly due to rapidly changing labour market trends and technological advancements, putting pressure on firms' cost competitiveness⁹⁹.

To address these challenges, inter-alia, the New Education Strategy 2021-2035 was formulated and will come into force from 2021¹⁰⁰. The Estonian government has also implemented a talent policy to attract top specialists to the Estonian labour market. The increase of foreign short-term workers has eased the labour shortage in sectors like construction, agriculture, and manufacturing in particular¹⁰¹.

Sector and sub-sector specific issues

Material efficiency and waste management

Due to increased economic activity, **waste generated by the construction sector** has increased in recent years. In the European Union, construction and demolition waste (CDW) constitutes one of the most important waste streams, accounting for approximately 25% - 30% of all waste generated in the EU. CDW mainly consists of several materials, including concrete, bricks, gypsum, wood, glass, metals, plastic, solvents, asbestos and excavated soil, many of which can be recycled¹⁰².

In 2018¹⁰³, mineral waste from construction and demolition activities in Estonia totalled at 779,233 tonnes, a considerable increase of 282.3% over the 2010 level (203,822 tonnes).

Mineral waste from construction and demolition in Estonia between 2010 and 2018

 **282.3%**

The central piece of legislation in Estonia for waste treatment is the Waste Act (RT I 2004, 9, 52)¹⁰⁴, adopted in 2004, and subsequent amendments therein. The Waste Act, which transposes the EU Waste Framework Directive into national law, sets the rules for all waste streams and treatment operations.

Furthermore, a National Waste Management Plan (WMP) for the period 2014-2020 was adopted, focusing on promoting financial support to waste management companies to enhance their performance and treatment capacity. This WMP aims at a 75.0% recovery of total CDW by 2020. Considering the fact that Estonia had already reached the recycling target of the Waste Framework Directive (WFD) (2008/98/EC)¹⁰⁵ as early as 2011, when it attained recovery rate of 72.0%, it is most likely that this 2020 target will be achieved. This again gets reflected in the Estonian Environmental Strategy 2030, which sets out that by 2030 waste disposed to landfills will have decreased by 30.0% and the harmfulness of waste generated will have been reduced significantly¹⁰⁶.

Estonia is planning to fully digitise its waste management monitoring system. The data will be received in real-time making it possible to quickly see where problems occur and then fix them. The new system will also be more transparent for the public. The data will help create new business models of waste management and for companies to better plan their own activities. It will help in achieving Estonia's goal of recycling 55.0% of municipal waste by 2025¹⁰⁷.

Climate and energy

Emissions of greenhouse gases (carbon monoxide and dioxide, methane and nitrous oxides) from the narrow construction sub-sector and real estate activities sub-sector in Estonia amounted to a total of 131,251.2 tonnes and 53,668.0 tonnes, respectively, in 2019¹⁰⁸. Emissions in the narrow construction sub-sector increased by 9.9% between 2010 and 2019, whereas emissions in the real estate activities sub-sector decreased by 41.5% in the same period.

Emissions in the real estate activities sub sector between 2010 and 2019

 **41.5%**

The Recovery and Resilience Plan of Estonia allocates 41.5% of the plan's total budget to climate objectives and the green transition. The plan supports Estonia's decarbonisation and energy transition objectives, as set out in the National Energy and Climate Plan and is expected to contribute to reaching Estonia's 2030 and 2050 climate and energy targets.¹⁰⁹

Some of the measures include the investment of EUR 220.0 million for the green transition of businesses and EUR 50.0 million for the development of renewables-based green hydrogen technologies. These measures are expected to contribute to the transition to a circular economy while mitigating climate change, reduce the carbon footprint of companies as well as improve productivity and competitiveness. Additionally, the measures are also aimed at encouraging the introduction of sustainable production through improved recycling of waste and the use of bio-resources¹¹⁰.

5

Innovation in the construction sector

Innovation performance

According to the European Innovation Scoreboard 2021¹¹¹, Estonia is classified as a strong innovator. Its overall score in 2021 stood at 128, above the EU-28 average of 114¹¹².

As per the report, the strongest innovation dimensions for Estonia are linkages, innovators and intellectual assets. The top 3 indicators include trademark applications, innovative SMEs collaborating with others and non-R&D innovation expenditures. The country has an above average share of in-house product innovators without market novelties and it is showing close to average scores on the climate change related indicators.

Business enterprise R&D (BERD) expenditure for professional, scientific and technical activities sub-sector dropped from EUR 3.5 million in 2010 to EUR 2.4 million in 2019¹¹³ – a significant decline of 32.2%. Furthermore, there was no BERD investment recorded in the real estate activities sub-sector over the 2010-2019 period.

BERD in the narrow construction sub-sector stood at EUR 0.3 million in 2019¹¹⁴ – a decrease of 9.1% compared to 2011¹¹⁵ (EUR 0.4 million) (Figure 9).

BERD in the narrow construction sub-sector between 2011 and 2019

↓ 9.1%

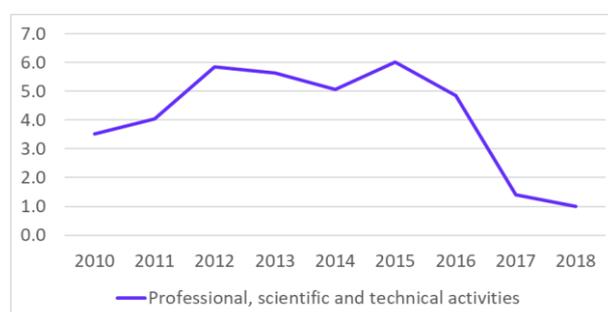
Total R&D personnel (full-time equivalents – FTE¹¹⁶) in the professional, scientific and technical activities (except scientific research and development) experienced a decline of 80.7%, from 114 personnel in 2010 to 22 in 2018¹¹⁷, after reaching 141 in 2015. There was 16 R&D FTE personnel in the narrow construction sub-sector in 2018.

The number of researchers (FTE) also witnessed a decline of 76.0% in the professional, scientific and technical activities sub-sector (except scientific research and development), going from 96 in 2010

to 23 in 2018. This number stood at 8 in the narrow construction sub-sector for the year 2018. For the real estate activities sub-sector both these numbers (R&D FTE and researchers FTE) were negligible, in line with its BERD expenditure.

Estonia is underperforming in public and private R&D expenditure. According to the latest data by Eurostat¹¹⁸, R&D investments represented 1.8% of GDP in 2020, far below the 2020 target of 3.0% set in the Enterprise Growth Strategy 2020. This is also below the EU average of 2.3%. However, the government's budget has set out an increase in public R&D expenditure to 1.0% of GDP during 2021, which should push the total amount closer to 3.0%¹¹⁹.

Figure 9: Business enterprise R&D expenditure (BERD) per construction sub-sector in Estonia between 2010 and 2018¹²⁰ (EUR m)



Source: Eurostat, 2021.

During the period 2010-2020, a total of 25 **construction-related patent applications** were registered in Estonia, with only two such applications recorded for 2020 (against three patent applications in 2010). No Estonian construction & materials firms rank within the top 1,000 EU companies by R&D (industrial sector ICB-3D), according to the 2020 EU R&D Scoreboard¹²¹.

Estonia has taken several measures to further strengthen its R&D system over the past years. A significant step towards achieving better coordination between research and innovation

policies was the process of writing a single strategy - **TAIES** – merging the national entrepreneurship strategy and the research and development strategy¹²².

In July 2021, the Estonian government approved a joint development plan for research and development, innovation and entrepreneurship for 2021-2035. The strategy sets common goals for R&D, innovation and entrepreneurship for the next 15 years. The development plan focuses on increasing the influence of science and on the use of research in solving Estonia's development needs. In supporting businesses, the focus will shift from export-intensive to knowledge-intensive, innovation, and increases value-added¹²³.

Eco-innovation and digitalisation

As per the 2019 Eco-Innovation Scoreboard (Eco-IS), Estonia scored 73 in comparison to the EU-28¹²⁴ average of 100 and was classified in 'Countries catching up with Eco-IS performers'¹²⁵.

As per the report, Estonia's score was below the EU-28¹²⁶ average on three out of five indicators, namely, eco-innovation activities, eco-innovation outputs and resource efficiency outcomes, with the latter being the worst performer. However, it outperformed the EU average on the eco-innovation inputs and the socio-economic outcomes fronts.

In the **European Commission Digital Economy and Society Index (DESI) 2021**, Estonia is ranked seventh out of the 27 EU member states with an overall score of 59.4, compared to the EU-27 average score of 50.7. Estonia outperformed the EU-27 average on three out of four indicators, namely, digital public services, human capital and integration of digital technology with digital public services being the best performance area. The country scored marginally below the EU-27 average in terms of connectivity¹²⁷.

For the purposes of improving the digitisation of SMEs, Estonia implemented the **Digital Diagnostics** measure towards the end of 2018 to facilitate companies in getting access to ICT experts. The aim was to help them exploit opportunities for improving productivity and growth through the uptake of digital technologies. Also, for the purpose of reaping the full benefits of smart specialisation,

Cohesion Policy programmes for Estonia have been allocated EU funds of EUR 1.0 billion¹²⁸.



According to the EIBS 2020 report, the share of Estonian construction firms using digital technologies is low. 39.0% of construction firms in Estonia use Internet of Things, followed by 18.0% using drones, 3.0% using augmented or virtual reality and 1.0% using 3-D printing¹²⁹.

To boost innovation in the Estonian construction sector and bring about the scaling-up of innovation from the company level to the market level, several initiatives have been launched. For instance, the Estonian research, development & innovation (R&D&I) strategy **Knowledge Based Estonia 2014-2020**¹³⁰ aims to create favourable conditions for an increase in productivity and development in the country. This strategy is based in four major pillars: (1) ensuring a high level and diversity of research, (2) increasing the economic and social benefits of R&D&I, (3) making the structure of the economy more knowledge-intensive through smart specialisations and (4) increasing the visibility of Estonia in international R&D&I cooperation. In addition, this strategy outlines the importance of innovative construction, i.e. the development of smart houses¹³¹.

In addition to these general innovation programmes, other initiatives have been launched on specific topics, such as the integration of new technologies in day-to-day project management. The **Mobi3Con** system enables users to access real-time information about building designs and features, which was not accessible before. **Mobi3Con** is based on the BIM (Building Information Model) and aims to see it put to practical use, particularly during the construction phase of projects. This is of particular importance as the experience of Estonian construction companies with such technology remains limited¹³².

The **Mobi3Con¹³³ project, conducted by the Estonian Innovation Institute, provides end-user communities with a low-cost mobile system for data management in construction sites¹³⁴.**

BIM is gaining the attention of Estonian construction practitioners. Nevertheless, there are many challenges which affect BIM adoption in

Estonia such as the lack of training, education, and the lack of government support¹³⁵.

The Estonian Digital Construction Cluster is a volunteer-based, non-profit organisation. It creates information and communication technologies for the construction sector, including virtual design, construction and management products and an e-construction portal¹³⁶.

The objective of the cluster is to support the adoption of smart construction solutions, to digitalise and automate processes in the sector. It has a total investment budget of EUR 863,505 and benefits from additional European Regional Development Fund (ERDF) funding of EUR 303,000 through the Cohesion Policy Funding Operational Programme for the 2014-2020 period (*Operational Programme for Cohesion Policy Funding 2014-2020*)¹³⁷.

The Estonian Digital Construction Cluster has conducted research into BIM resulting in its further development, most notably in the creation of an Estonia specific tool for use with Revit, an engineering design and modelling software. The tool was launched by the cluster partner, AruCAD Süsteemid to help architects and engineers adapt BIM methods and work more efficiently with constructors¹³⁸.

Estonia is adopting a BIM-based building permit process which is contributing to the development of

a national 3D digital twin. The objective behind this initiative is to increase the productivity of the construction sector. The objective of the digital permitting process is to speed up permitting and raise the level of compliance enforced by the process. The digital permitting application accepts BIM models in the Industry Foundation Classes (IFC) format and applies rule-based and algorithm-based checks to ensure compliance with national standards¹³⁹.

The Recovery and Resilience Plan of Estonia devotes 21.5% of the total allocation to digital transition. The contribution focuses mainly on two priorities: the digital transformation of enterprises and the further modernisation of digital public services. With an estimated cost of EUR 116.2 million the proposed measures will provide financial support to SMEs and micro enterprises of all sectors, at different stages of their digital transformation, as well as specific contributions to the adoption and deployment of digital solutions in the construction and road freight transport sectors. In addition, it aims to develop an e-construction platform¹⁴⁰ and related public services aiming at developing and prototyping innovative private services connected to the national e-construction platform¹⁴¹.

6

National and regional regulatory framework

Policy schemes

Housing policy in Estonia is under the responsibility of the construction and housing sector of the Ministry of Economic Affairs and Communications. The main objectives of the Estonian housing policy are to support housing supply, housing quality and the sustainability of housing stock, as well as the diversity and sustainability of residential areas.

The ministry offers several support schemes, focusing on the renewal of residential heating systems, demolition of unused buildings and reconstruction of apartment buildings¹⁴².

The support measure for the renewal of heating systems targets small residential housing. It aims at replacing old heating systems using liquid fuels, with others that rely on renewable energy. During 2018, **KredEx** (a financing institution, founded by the Estonian government in 2001 to offer financial solutions) issued two types of grants for small residential buildings. One of them was designed for updating oil-powered heating systems and the other for renovating housing. However, KredEx discontinued the grants for replacing oil burning boilers with a more energy-efficient heating device in 2018¹⁴³.

The scheme **Housing Support for Families with Multiple Children** (*Kodutoetus lasterikastele peredele*) provides a grant to families for the modernisation and improvement of their dwelling. Eligible activities covered by the grant include the construction, renovation or expansion of a dwelling, the replacement of utility systems, the purchase of housing, and the repayment of mortgage instalments. The maximum amount of the subsidy is EUR 7,000, which can be doubled to EUR 14,000 if a household has eight or more children¹⁴⁴. The

scheme is open to households whose monthly income does not exceed EUR 355.0¹⁴⁵. In 2020, 374 homeowners renovated their home or improved its level of energy efficiency with the support provided by KredEx for a total grant of EUR 3.4 million¹⁴⁶.



During April and May 2021, a total of 659 low-income families with children applied for a home grant. The total sum of the grants applied was approximately EUR 7.0 million¹⁴⁷.

Similarly, KredEx offers a **Housing Loan Guarantee** scheme (*Eluasemelaenu käendus*), which contributes to the repayments of housing loans of beneficiaries who wish to borrow to purchase a new dwelling or renovate an existing one. The scheme is open to a variety of applicants, including young families with at least one child up to 15 years of age, young professionals (up to 35 years) and veterans of the Estonian Defence Forces. Applicants must provide a down payment equal to 10.0% of the value of the property and take out a loan repayable over 30 years¹⁴⁸.

KredEx offers a loan guarantee of up to 24.0% of the value of the loan collateral, with a cap of EUR 20,000. This amount increases to EUR 50,000 in the case of the acquisition of an energy efficient property or the energy efficient renovation of the existing one¹⁴⁹.

Schemes tailored specifically to apartment associations or cooperatives also exist, offering both guarantees on loans and grants. For instance, the **Apartment Building Loan Guarantee** (*Korterelamulaenu käendus*) is designed for associations wishing to take out a loan for the reconstruction/renovation of the apartment building where the associated risk is deemed to be

higher than the average (e.g. in case the building is located in a low market value area, or if the cost of the works per m² is higher than the average). The value of these guarantees can reach up to 75.0% of the amount of the bank loan¹⁵⁰.

Similarly, the **Reconstruction Grant** (*Rekonstrueerimise toetus*) is available to associations and cooperatives wishing to reconstruct their apartment buildings. The grant can cover 30.0%, 40.0% or 50.0% of the total cost of the construction works, depending on the location of the apartment. The grant covers a different percentage of the costs in different urban and rural areas. It goes up to 30.0% and cannot exceed EUR 30,000 in Tallinn. In the other main cities, the grant can cover up to 40% and cannot exceed EUR 40,000, and goes up to 50% and cannot exceed EUR 50,000 in the remaining parts of the country¹⁵¹. This can include the insulation of the building envelope, replacement of windows, front doors, heating systems and ventilation systems, the installation of renewable energy systems and design/project management costs^{152,153}. The total budget available amounts to EUR 102.0 million, which will enable interventions on about 1,000 apartment buildings¹⁵⁴. The maximum amount of support is EUR 1.0 million per project¹⁵⁵.



In May 2020, the Estonian government allocated an additional EUR 71.0 million for the reconstruction of apartments to alleviate the consequences of the COVID-19 pandemic¹⁵⁶.

The **Support Measure for the Demolition of Unused Buildings** (*Lammutustoetus kohalikele omava*) focuses on helping local authorities demolish buildings that have fallen out of use, have become an eyesore, dangerous (e.g. likely to collapse or catch fire) and whose renovation is not feasible. The recovered plot of land could then be used by the local government for agricultural purposes or turned into public space. The grant scheme covers up to 70.0% of the demolition costs, up to a maximum of EUR 60,000 per applicant, requiring the applicant to self-finance at least 30.0% of the works¹⁵⁷. The total budget available for the programme is EUR 700,000¹⁵⁸.

In July 2020, The Estonian government approved the long-term building renovation strategy, with the goal to cost-effectively renovate approximately 80.0% of the existing building stock into nearly zero-energy buildings by 2050¹⁵⁹.

The strategy proposes to employ state funded financial mechanisms in the form of loans, guarantees and support, as well as the introduction of new technologies, information measures and research and development. The strategy is a part of Estonia's national energy and climate plan. It will see around 54 million square meters of property renovated by 2050, with 100,000 detached houses, 14,000 apartment buildings and 27,000 non-residential buildings included¹⁶⁰.

In May 2021, 37 apartment associations from Estonia made an application to KredEx for the innovative reconstruction of a factory into a five-storey apartment building. KredEx will allocate approximately EUR 17.0 million for the new type of reconstruction. The reconstruction work will take place in 2022¹⁶¹.

Building regulations

In Estonia, construction activities are governed by two main pieces of legislation, the new **Building Code** and the Planning Act, revised and adopted in 2015 into the **new Building Code**.

The revised Building Code entered into force in 2015, unifying regulation previously divided across different laws. It consists of a general and a special part. The general part of the code sets out the basic guidelines and requirements for buildings, thus simplifying the regulative burden by collecting all relevant rulings in one document. The special part is dedicated to buildings that have different requirements. The code provides the simplification and a speeding up of procedures related to the issuing of building permits and design of construction projects. Under it, the construction of buildings may simply require the filing of a notice regarding the start of the works¹⁶², as opposed to applying for a building permit, depending on the size of the building (e.g. construction/renovation/extension of a dwelling between 20-60 m² only requires the notice). Some smaller buildings do not require notification at all, thus further simplifying building procedures¹⁶³. Also, filing the notice is without fee, which

minimises the workload for administrations, and the response time for authorities to decide whether to issue the permit has been shortened to ten days. Finally, under the code, design specifications are only obligatory for construction activities requiring a building permit, such as the construction or the expansion of a building¹⁶⁴.

The **Planning Act** (*Planeerimisseadus*) sets out the principles and requirements for planning, to achieve long-term sustainable and balanced spatial development, land use, and built environment. Planning principles are defined at the national, regional and local government levels¹⁶⁵.

Insurance and liability related regulations

In Estonia, as stipulated by the Building Act, **liability insurance** is mandatory for certification/inspection bodies which carry out conformity assessments on construction products. The minimum amount insured is set at EUR 31,955, which covers damages caused to third parties during the inspections. As for contractors, they commonly take out Contractor All Risk (CAR) insurance, which covers third party

liability and damage to the construction works during the construction phase. Professionals such as designers, constructors, consultants and supervisors are required by the client to be covered by a **professional civil liability insurance**¹⁶⁶.

The **construction contract** details the requirements of the final construction, and in the case of non-compliance with such requirements, is governed by contractual liability. The limitation period in this case is five years (and up to 10 years if the obligations under the contract were wilfully breached). Otherwise, if the requirements are not specified in the contract, the Building Act stipulates that the work completed must preserve its safety and quality for a statutory warranty period of at least two years starting from the date of completion. During this time the contractor is required to repair the defects that became apparent. Furthermore, the Building Act also explains liability under delict, which applies when the plaintiff is not contractually bound to the defendant or if the damage incurred is not included in the contractual obligations of the defendant. In this case, the duration of liability amounts to three years¹⁶⁷.

7

Current status and national strategies to meet Construction 2020 objectives

TO 1 – Investment conditions and volumes

Total investments by the narrow construction sub-sector¹⁶⁸ fluctuated throughout the period 2010-2020, witnessing a significant increase of 260.9%, from EUR 46.0 million in 2010 to EUR 166.0 million in 2020. Similarly, the real estate activities sub-sector experienced a growth, with investments rising by 159.1% over the same period, from EUR 525.1 million to EUR 1.4 billion.

Investment by the narrow construction sub-sector between 2010 and 2020

↑ 260.9%

Investment by the real estate activities sub-sector between 2010 and 2020

↑ 159.1%

Figure 10: Investment by the Estonian broad construction sector between 2010 and 2019 (EUR million)



Source: Eurostat, 2021.

In parallel, investments in machinery and intellectual property in the narrow construction sub-sector amounted to EUR 60.2 million and

EUR 3.1 million, respectively, in 2020. This is 218.5% and 72.2% higher than in 2010. Also, investments in machinery and intellectual property in the real estate activities sub-sector stood at EUR 49.5 million (+542.9% over 2010) and EUR 1.5 million (+114.3% over 2010), respectively. These developments are in line with business confidence in the construction sector and Estonia's strong economic performance.

The investment index in the broad construction sector¹⁶⁹ increased by 19.1% over the 2015-2020 period (Figure 11). This growth was primarily driven by investments in dwellings by the whole economy, which experienced growth of 60.5% over the 2015-2020 period, as well as non-residential construction and civil engineering, which grew by 0.9% over the same period. In absolute terms, investments in the broad construction sector totalled EUR 3.4 billion in 2018¹⁷⁰, out of which EUR 1.2 billion were invested in dwellings and EUR 2.2 billion were devoted to non-residential and civil engineering¹⁷¹.

Investments in dwellings by the whole economy between 2015 and 2020

↑ 60.5%

Figure 11: Investment index in the Estonian construction sector between 2010 and 2020 (2015=100)



Source: AMECO, 2021.

Total inland infrastructure investment¹⁷² as a share of GDP stood at 0.9% in 2019¹⁷³, below the 2010 level of 1.2%. This was mainly due to significant declines in investments in sea infrastructure (-87.2%), followed by rail infrastructure (-5.7%) between 2010 and 2019. Investment in sea infrastructure declined from EUR 39.0 million in 2010 to EUR 5.0 million in 2019. Similarly, investment in rail infrastructure decreased to EUR 33.0 million in 2019 from EUR 35.0 million in 2010. On the other hand, investment in air transport infrastructure grew substantially from EUR 3.0 million in 2010 to EUR 14.0 million in 2019, up by 366.7%. Road infrastructure also grew from EUR 137.0 million in 2010 to EUR 220.0 million in 2019, representing a 60.6% growth.

Air transport infrastructure investment between 2010 and 2019

↑ 366.7%

Household renovation spending in Estonia increased by 79.1% over 2010-2020, rising from EUR 16.3 in 2010 to EUR 29.2 million in 2020. **Renovation spending as a share of disposable income** remained constant and stood at 0.2% throughout the period of 2010-2019¹⁷⁴, below the EU-27 average of 0.9% in 2019.

According to the EIB Investment Survey 2020 report, firms in the Estonian construction sector decreased their investments in 2020. The net balance of firms expecting to increase rather than decrease investment has declined by 59.0%. Construction sector firms see themselves most affected by COVID-19 with two-thirds of them (68.0%) stating that they expect to invest less. Also, the construction sector has the highest share of firms reporting that they will abandon or delay

investments (56.0%)¹⁷⁵.

Estonia defines its vision for transport in the **National Spatial Plan Estonia 2030+**, whereby the backbone of the transport network will be railroads¹⁷⁶. Furthermore, railway infrastructure is key to connecting Estonia to the European rail network. In this regard, the **Rail Baltica** project plays a strategic role. It includes five EU countries, and in total, the railway will run over 700 km, with 200 km on Estonian territory. The actual development of the Rail Baltica project remains a priority as it will help improve congestion, sustainability and connectivity with the internal market. However, the Supreme Audit Institutions raised concerns in relation to the cost and schedule of the project in their January 2020 report. With the design work already underway on the Tallinn-Rapla and Rapla-Tootsi sections, the construction of railway in Estonia, as part of the Rail Baltica project, is now expected to begin in 2022 or late 2021¹⁷⁷.

Investment requirements in the transport sector are increasing with total estimated investment needs of EUR 2.0 billion for the corridor network, EUR 1.6 billion for Rail Baltica and further funds for the upgradation of major roads¹⁷⁸.

Estonia's transport investment depends heavily on EU funds. EU funding of EUR 1.1 billion has been allocated for sustainable growth and sustainable transport by the Cohesion Policy programmes for Estonia¹⁷⁹.

In June 2020, the European Investment Bank (EIB) made available EUR 95.0 million in loans for the modernisation and upgrade of the Estonian railway network, including the upgrade of tracks, signalling and traffic control systems¹⁸⁰.

All interventions are located on the TEN-T, including on the North Sea – Baltic Corridor. The above loan agreement was signed with the Estonian national railway company Eesti Raudtee. Being a beneficiary of EU programmes such as the **Connecting Europe Facility**, Estonia was allocated EU funding of EUR 221.8 million to specific projects on strategic transport networks¹⁸¹.

To counter the impact of the COVID-19 emergency, the Estonian government, in May 2020, approved the allocation of EUR 71.0 million to the construction sector for the reconstruction of apartment buildings. This came as part of the EUR 100.0 million support allocated by the

government to support the renovation of apartment buildings, of which EUR 28.5 million was announced previously. This will help the construction sector in increasing job opportunities, despite the crisis, and make homes more energy efficient and safer¹⁸².

Estonia also benefited from investments from the **European Fund for Strategic Investments (EFSI)**. As of January 2021, financing under EFSI amounted to EUR 264.0 million and is set to trigger additional investments of EUR 2.4 billion. Under the infrastructure and innovation window, nine projects have been approved, amounting to EUR 201.0 million, which are set to trigger EUR 1.1 billion in total investments. Under the SME window, 10 agreements have been approved, involving a total financing of EUR 63.0 million, and are set to trigger investments of up to EUR 1.3 billion¹⁸³.

In 2020, the EIB Group invested close to EUR 120.0 million in Estonian infrastructure¹⁸⁴.

The Estonian Transport Administration (ETA) will be investing EUR 253.0 million on the development of the national road network in 2021. Construction and repairs will be carried out on a total of 2081 kilometres of national roads and 20 kilometres of new roads will be built. In addition, a total of 322 kilometres of gravel roads will be sealed¹⁸⁵.

In October 2021, the Nordic Investment Bank (NIB) financed the city of Pärnu's urban development programme for 2021–2026 with EUR 35.0 million. The programme includes the construction of the new city bridge, light traffic infrastructure and street lighting, as well as investments in the education sector. The total costs of the programme is estimated at around EUR 72 million¹⁸⁶.

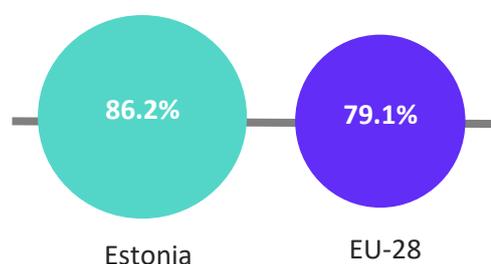
The NIB and the city of Tartu also entered into an agreement to finance the city's development programme for 2020-2030. The agreement allows Tartu to borrow up to EUR 18.8 million from NIB, out of which EUR 9.2 million has been disbursed. Projects include investments in social, sports and traffic infrastructure as well as in childcare and the education sector. Social infrastructure projects include the construction of a new elderly home and a new social housing as well as the reconstruction of Tartu's homeless shelter¹⁸⁷.

In October 2021, the Tallinn hospital project, which costs around EUR 520.0 million, will receive the funding from the European Union as declared by the Mayor of Tallinn. Over half of the project's allocation (EUR 280.0 million) will come from the Recovery and Resilience Plan of Estonia. Tallinn city government has also promised to contribute EUR 100.0 million. It will be one of the largest hospitals ever built in Estonia. The new hospital is planned to be opened in 2027¹⁸⁸.

TO 2 – Skills

In 2018¹⁸⁹, 40.1% of Estonian students attended vocational education programmes (VET), below the EU-28¹⁹⁰ average of 48.4%. Furthermore, though the **share of VET students enrolled in programmes with workplace-based learning experience** has doubled, it was still limited, standing at 6%. There was a notable growth in the **employability level of recent VET graduates**, increased to 86.2% in 2019 as compared to 76.6% in 2018, with EU-28¹⁹¹ average standing a bit above at 79.1%¹⁹².

Employment rate of recent VET graduates, 2019



In 2019, **early leavers from education and training** stood at 9.8% compared to the EU-27 average of 10.2%. This has led to an insufficient number of tertiary graduates, whose competencies are not aligned with labour market needs. The **participation of adults in learning** continued to increase. In 2019, 20.2% of adults (aged between 25-64) had learning experience. This was almost double compared to the EU-27 average of 10.8%¹⁹³.

Estonia needs to reform its schooling system considering the demographic trends of a rapidly decreasing and ageing population and adapt the VET system to technological developments. In the academic year 2018-19, there were 32 vocational educational institutions and six professional higher institutions in Estonia that offer a variety of 160 specialities¹⁹⁴.

The Tallinn Construction School (TCS), founded in 1947, is the state financed vocational study institution administered by the Estonian Ministry of Education and Research. It offers sustainable vocational training in the fields of construction, electrical trades and woodworking in Estonia¹⁹⁵.

Until the end of the academic period 2019/2020, the development of career management skills took place in vocational education, both through vocational training and generic skills modules. Since autumn 2020, a new module ‘Learning path and working in a changing environment’ has been implemented. According to national curricula, the module is compulsory at level 4 (vocational secondary education) and recommended at levels 2-5¹⁹⁶.

The aim of the studies is for students to be capable of developing their careers in a modern economic, entrepreneurial and working environment based on the principles of lifelong learning. The module will help learners acknowledge professional studies as one step in their career path and take responsibility for their learning and development. The implementation of the module is decided by the educational institutions themselves¹⁹⁷.

The government has developed an education strategy for 2021-2035, which is expected to benefit from EU funding between 2021 and 2027. Coming into force from 2021, its primary objective is to bring changes to the present system, such as revising the curriculum and introducing a new approach to learning¹⁹⁸.

The strategy seeks to foster more flexible transitions and more permeability between educational levels by improving cooperation between educational institutions through the ‘Consortium’ approach. It sets out the key educational goals for the next 15 years and is the follow-up to the Estonian Lifelong Learning Strategy 2020¹⁹⁹.

The Recovery and Resilience Plan of Estonia includes reforms and investments to address skills shortages and foster innovation aimed at improving the capacity and labour market relevance of the education and training system. The plan involves an investment of EUR 10.0 million on skills reform for the digital transformation of businesses and EUR 15.0 million on the green skills to support the green transition of enterprises²⁰⁰.

To ensure that the skills of the workforce support the green and digital transition, training curricula will be modernised, and skills upgrading and support will be organised through flexible reskilling and upskilling programmes. To support continuous employment and the transition to higher-skilled jobs and sectors with high or stable labour needs, reskilling and upskilling opportunities are offered to people with skills that are outdated or in low demand. The plan includes a reform of the qualifications system and measures to support adult participation in education, the development of skills and enabling of better quality non-formal training systems and flexible learning pathways²⁰¹.

TO 3 – Resource efficiency / Sustainable construction

Estonia’s energy efficiency is improving, driven by Cohesion Policy investments in energy efficiency for public and residential infrastructures. The allocation for these objectives over the 2014-2020 period amounts to EUR 247.0 million²⁰². The Estonian energy saving policy is defined through the Estonian Energy Sector Development Plan until 2030 (*Energiamajanduse arengukava aastani 2030*). The objective of the plan is to achieve the use of renewable energy for 50% of domestic electricity consumption and 80% of domestic heat generation by 2030²⁰³.

It also includes the national final energy consumption targets, which should not exceed 2,818 ktoe by 2020, with renewable energy accounting for 25.0% of this total also by 2020 (10.0% in the final energy consumption in the transport sector)²⁰⁴. The plan also highlights the importance of energy efficiency in the housing sector specifically since it accounts for about 33.0% of the national energy consumption.

In Estonia, the first energy efficiency requirements for buildings, based on primary energy use, were introduced in 2008. In 2013, the requirements became stricter and, from 2019-2020, NZEB²⁰⁵ (nearly zero-energy buildings) requirements were established, which became applicable to public buildings in 2019 and then residential properties in 2020²⁰⁶.

A recent study conducted by an international group of building scientists concluded that Estonia is among the countries with the most energy-efficient buildings in Europe²⁰⁷.

KredEx, through its loan guarantees, enables the purchase of a home with a smaller deposit and ensures the preservation and energy efficiency of residential buildings. KredEx established the **KredEx Revolving Fund** in 2009 to boost the energy efficient renovation of residential properties²⁰⁸.

In 2018, KredEx provided eight types of measures to improve energy efficiency or develop the housing sector. Grants for the reconstruction of apartment buildings were in high demand. Because of this, KredEx had to close the receipt of applications in September 2017 as the budget (totalling EUR 37.0 million in 2018) was exhausted²⁰⁹.

In August 2020, the Estonian Ministry of Economic Affairs and Communications (MoEAC) and KredEx prepared a pilot project, which aims to enable apartment buildings to be renovated under the KredEx-sponsored arrangement using prefabricated elements²¹⁰.

Established in 2015, grants for the **Renovation of Electrical Installations** (*Elektripaigaldiste renoveerimise toetus*) provide support to apartment associations and non-profit organisations for the replacement of old voltage systems (3x220 V) with the new system (3x230/400 V) in the city of Tallinn. During 2018, applications were submitted for the renovation of the electrical installations of 179 buildings totalling EUR 466,000. In the coming years, KredEx will continue to issue this grant²¹¹.

In 2018, the Ministry of Economy and Communications announced further changes. From 2020 onwards, building permits will only be issued for nearly Zero-Energy Buildings (nZEB), in keeping with the EU Energy Efficiency Directive (2010/31/EU)²¹².

However, this requirement may contribute to making construction more expensive. To address this, the European Union recommended its member states to consider the local situation when implementing the energy efficiency requirements²¹³.

The Long-Term Renovation Strategy of Estonia assesses that the need for annual reconstruction funding will rise by almost five times, from less than EUR 200.0 million per year to EUR 900.0 million per year. Estonia has set an objective to renovate 3.0% per year of the floor area of public buildings, altogether 170,000 square meters by 2030, and to increase the energy efficiency of residential buildings and offices²¹⁴.

The Recovery and Resilience Plan of Estonia allocates EUR 92.1 million towards sustainable energy and energy efficiency. It aims at addressing the challenge of decarbonising the energy sector, increasing energy efficiency and reducing the dependency on oil shale. This will be done by incentivising the uptake of renewable energy and improving the energy efficiency of buildings. It also targets the renovation of apartment buildings and private dwellings by providing financial support²¹⁵.

Through the renovation of multi-apartment dwellings and small residential buildings, Estonia is expected to reduce its final energy consumption leading to heating, electricity and CO2 emission savings, as well as improve the living conditions of residents of such buildings. Additionally, Estonia intends to increase the capacity of production and storage of green energy, including through the deployment of a smart energy system. In particular, the plan includes an investment of EUR 44.7 million for the renovation of apartment buildings and EUR 2.4 million for the renovation of small residential buildings²¹⁶.

TO 4 – Single Market

As per the 2020 EU Single Market Scoreboard metrics, Estonia performed well with respect to Internal Market Information Systems, Point of Single Contact and Trade Integration in the Single Market for goods and services²¹⁷.

With a transposition deficit of 0.5%, Estonia has achieved its proposed target with regard to the transposition of EU directives into national law. The average delay now stands at 8.4 months, which is below the EU-28²¹⁸ average of 11.5 months. However, overdue directives have now increased from three to five and the conformity deficit has also increased to 1.4% compared to EU-28²¹⁹ average of 1.2%. In terms of infringements, Estonia reported 12 pending cases compared to the EU average of 29 cases. The average case duration has also reduced significantly to 16.1 months (EU average 34.8 months) from 25.6 months as previously reported²²⁰.

Estonia performed very well in terms of Internal Market Information Systems, with all five indicators standing above the EEA (European Economic Area) average. It also shows a high level of trade integration in the single market for goods and services, both being well above the EU-28²²¹ average²²².

In addition, Estonia's performance in Public Procurement is satisfactory, especially in terms of the publication rate, and cooperative procurement. It also has a satisfactory performance with respect to decision-making speed, SME contractors and SME bids²²³. In terms of increasing transparency in the public procurement process, the Public Procurement State Register provides online procurement services such as company registration and a procurement portal. Companies are also recommended to use a specialised public procurement due diligence tool in order to mitigate the corruption risk associated to public procurement in Estonia. Facilitation payments are also criminal offence in Estonia²²⁴.

However, around one-third of the companies in Estonia perceive corruption as common practice in the public procurement process and believe that corruption has prevented them from winning a contract. In this regard, the Estonian government approved the Anti-Corruption Strategy 2013-2020,

which provides training courses to all council and parliament members to help them identify any potential conflicts of interest²²⁵.

In June 2020, the standard for the design of buildings and the organisation of public procurement of construction works was renewed.

The standard consists of two separate parts – the first part deals with public procurement of design and the second part with public procurement of construction works. This revision was made with the purposes of avoiding the mistakes that have become inherent in public procurement and to provide recommendations and guidelines for organising procurements in accordance with good practices. Training on the introduction of the standard is underway²²⁶.

Estonia ranks high in ease of access to markets for new and growing firms. Various key support services and structures are put in place in this regard such as a single point of contact, a **SOLVIT** centre (a service provided by the national administrators in each EU Member State that helps people and businesses who encounter difficulties in another Member State when public authorities do not apply EU legislation correctly) and an internal market information system. SMEs in Estonia are assisted in adhering to European standards by the Estonian Centre for Standardisation. However, awareness as to the existence of these services is not high in the business community and efforts are warranted to ensure more active use of these resources²²⁷.

As for the regulatory environment governing housing planning and construction, it is not considered to be particularly restrictive and therefore does not necessarily constitute a barrier to the sector²²⁸. The revision of the **Building Code** also contributed to reducing the administrative burden related to building permits and planning.

TO 5 – International competitiveness

According to the World Bank Doing Business 2020 report, Estonia ranked 17th out of 190 countries in ease of trading across borders in 2019²²⁹.

As per the report, in Estonia it takes 1 hour and 2 hours to be documentary and border compliant,

respectively. In terms of costs, business need to spend nil for both documentary compliance and border compliant²³⁰.

The **internationalisation of construction products** in the Estonian construction sector has shown signs of growth for the past few years. **The export values of all construction-related products** increased from EUR 0.7 billion in 2010 to EUR 1.4 billion in 2020 marking an increase of 118.4%. Moreover, Estonia's share of exports of all construction-related products stood at 76.5% of the total production value in 2019, slightly above the 2010 level of 76.2% and well above the EU-27 average of 11.3%. This declined to 73.4% in 2020.

Export value of all construction-related products between 2010 and 2020  **118.4%**

The export value of architectural services decreased to EUR 4.0 million in 2020, compared to EUR 60.6 million in 2010. This represents a decline of 93.4% during the period.

Export value of all architectural service between 2010 and 2020  **93.4%**

In the context of **inward FATS (foreign affiliates statistics)**²³¹, value added at factor cost and turnover in the manufacturing sub-sector increased by 50.9% and 45.7% between 2010 and 2018²³², reaching EUR 87.7 million and EUR 386.2 million respectively. However, the number of persons employed, it experienced a decrease of 22.3%, reaching 2,427 in 2018 from 3,123 in 2010.

According to the Small Business Administration (SBA) Fact Sheet report 2019, the Estonian

government has taken three new measures in recent times with regard to internationalisation. Firstly, a digital platform, **visiidid.ee**, was developed in 2018 within the framework of the Estonian business diplomacy strategy. Its objective was to improve the coordinated development of Estonian foreign trade which will lead to the wider export of Estonian enterprises and increase foreign investments, presenting Estonia as a reliable export partner²³³.

The second measure includes the provision of grants for participating in foreign fairs (**Messitoetus**) which is targeted at SMEs in the manufacturing sector. It is managed by Enterprise Estonia and funded from the EU Structural Funds with a total allocation of EUR 3.0 million. The limit of the grant is EUR 50,000 and at least 20.0% of the project must be self-financed²³⁴.

The third measure is the 'Business diplomacy strategy of Estonia' (**Eesti äridiplomaatia strateegia**)²³⁵. The strategy's objective is to increase foreign direct investments in the country and establish targeted and coordinated government support for Estonian companies' exports. The strategy mainly outlines a framework for government institutions to coordinate activities in foreign markets, for example, business delegations to foreign markets and different information channels. The success of the strategy will be measured by a set of achievement-oriented indicators²³⁶.

Financial support to exporters is also provided by KredEx, which offers export loans, credit insurance, investment insurance and production risk insurance. In 2019, KredEx concluded one loan agreement for financing export transactions to the sum of EUR 300,000²³⁷.

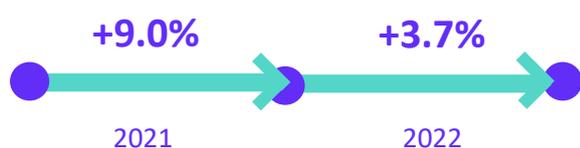
8

Outlook

After witnessing a decline of 3.0% in 2020 due to the COVID-19 pandemic, the Estonian economy is expected to revive and register growth driven by significant developments in private consumption and investments.

Estonia's GDP is expected to increase by 9.0% in 2021 and then grow by 3.7% in 2022, reaching EUR 26.8 billion.

Expected GDP growth in 2021 and 2022



The **volume index of production** in the broad construction sector is expected to increase by 7.1 ip in 2021, mainly due to a 2.9 ip and 8.6 ip decline in the construction of buildings and the construction of civil engineering in 2021, respectively.

Turnover in the broad construction sector is forecast to increase by 5.3% in 2021, reaching a value of EUR 11.4 billion. Similarly, the **total value added** of the broad construction sector is expected to grow by 5.6% in 2021, reaching EUR 3.2 billion in 2021.

Following the same trend, the number of **persons employed** in the broad construction sector is also expected to increase by 5.4% to 94,949 in 2021. This growth is projected to come from all sub-sectors including the architectural and engineering activities (+7.4%), the real estate activities (+7.1%), the narrow construction (+5.0%) and the manufacturing (+4.5%) sub-sectors in 2021.

With regard to the **housing market**, the Estonian government has announced some initiatives to promote the sector. Under its Recovery and Resilience Plan, Estonia has allocated EUR 44.7

million for the renovation of apartment buildings and EUR 2.4 million for the renovation of small residential buildings. Additionally, in May 2021, 37 apartment associations across the country applied to KredEx for the innovative factory reconstruction grant. KredEx will allocate approximately EUR 17.0 million for the new type of reconstruction.

The **civil engineering** sector is expected to be driven by the government's focus on the development of transport infrastructure, particularly railway, with the EU's support. The development of the **Rail Baltica** project remains a priority. When completed, the project will improve congestion, sustainability, and connectivity with the internal market. It will also fuel growth rates in Estonia's broad construction sector in the coming few years. Further, the Nordic Investment Bank (NIB) financed the city of Pärnu's urban development programme for 2021–2026 with EUR 35.0 million. The programme includes the construction of the new city bridge, light traffic infrastructure and street lighting, as well as investments in the education sector.

The Recovery and Resilience Plan aims to help Estonia's transition to a more resilient and sustainable economy, to contribute to the achievement of the UN Sustainable Development Goals, to support the green and digital transition and to increase growth potential and competitiveness by investing in innovation, skills and capital. The measures and reforms in the plan are expected to promote the economic growth potential of Estonia.

In conclusion, the outlook for the Estonian construction sector is positive in the mid to long-term, particularly due to long-term infrastructure projects and investments in housing. Also, the projections of GDP recovery, increasing turnover and employment make the construction sector optimistic and promising.

References

- 1 Eurostat, House price Index- quarterly data <https://ec.europa.eu/eurostat/databrowser/view/tipsho40/default/table?lang=en>
- 2 European Commission, Estonia's recovery, and resilience plan
https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility/estonias-recovery-and-resilience-plan_en
- 3 Ibidem
- 4 Please note that this 2020 data is a nowcast - please refer to the methodology notes for further details.
- 5 Please note that this 2020 data is a nowcast - please refer to the methodology notes for further details.
- 6 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.
- 7 Data unavailable for subsequent years.
- 8 Apparent labour productivity refers to the gross value added per person employed.
- 9 Data unavailable for subsequent years.
- 10 Please note that this 2020 data is a nowcast - please refer to the methodology notes for further details.
- 11 Please note that this 2020 data is a nowcast - please refer to the methodology notes for further details.
- 12 Data unavailable for subsequent years.
- 13 The gross operating rate is the ratio of Gross Operating Surplus to Turnover and is an indicator of profitability.
- 14 Data unavailable for subsequent years.
- 15 Please note that this 2020 data is a nowcast - please refer to the methodology notes for further details.
- 16 Data unavailable for subsequent years.
- 17 Data on employment by occupation is not available for the architectural and engineering activities sub-sector.
- 18 SwedBank, Consumer prices down by 0.4% in 2020, January 2021
https://www.swedbank-research.com/english/flash_estonia/2021/21-01-08/index.csp
- 19 World Bank Doing Business 2020 Report, Economic Profile Estonia, 2020.
<https://www.doingbusiness.org/content/dam/doingBusiness/country/e/estonia/EST.pdf>
- 20 As the publication of the WB Doing Business report 2021 was not available at the time of writing, this report relies on the data provided by the 2020 edition.
- 21 World Bank Doing Business 2020 Report, Economic Profile Estonia, 2020.
<https://www.doingbusiness.org/content/dam/doingBusiness/country/e/estonia/EST.pdf>
- 22 Data unavailable for subsequent years.
- 23 Global Entrepreneurship Monitor, Entrepreneurial Behaviour and Attitudes, 2020.
<https://www.gemconsortium.org/data/key-aps#>
- 24 European Commission, 2021 SME Country Fact Sheet's Background document- Estonia.
https://ec.europa.eu/growth/smes/sme-strategy/sme-performance-review_en
- 25 As the EU-27 average data was not available, the EU-28 average was used for comparative purposes.
- 26 European Commission, 2021 SME Country Fact Sheet's Background document- Estonia.
https://ec.europa.eu/growth/smes/sme-strategy/sme-performance-review_en
- 27 Ibidem.
- 28 Data unavailable for subsequent years.
- 29 Data unavailable for subsequent years.
- 30 Data unavailable for subsequent years.
- 31 According to Eurostat, construction services comprises Construction Abroad (code 250) and Construction in the Compiling Economy (code 251). They do not include architectural services, or engineering services.
- 32 European Commission, Survey on the Access to Finance of Enterprises, Results by country 2020
<https://ec.europa.eu/docsroom/documents/43871>
- 33 Ibidem.
- 34 EIBIS 2020 - Estonia overview. December 2020. https://www.eib.org/attachments/efs/eibis_2020_estonia_en.pdf
- 35 Ibidem.
- 36 BaltCap Private Equity Fund III. 2019. <https://www.ebrd.com/work-with-us/projects/psd/baltcap-private-equity-fund-iii.html>
- 37 Estonia's LHV, SEB invest in new regional private equity fund. October 2019. <https://www.ipe.com/countries/cee/estonias-lhv-seb-invest-in-new-regional-private-equity-fund/www.ipe.com/countries/cee/estonias-lhv-seb-invest-in-new-regional-private-equity-fund/10034024.fullarticle>
- 38 Nordic Investment Bank, NIB provides COVID-19 mitigation loan to Republic of Estonia, March 2020
<https://www.nib.int/releases/nib-provides-covid-19-mitigation-loan-to-republic-of-estonia>
- 39 European Commission, Estonian and Lithuanian micro-enterprises to receive European support with Finora Capital, April 2021
https://ec.europa.eu/commission/presscorner/detail/en/IP_21_1601
- 40 European Commission, EU and Luminor support Baltic SMEs and Mid-caps, December 2020
https://ec.europa.eu/commission/presscorner/detail/en/ip_20_2476

- 41 Data unavailable for subsequent years.
- 42 Data unavailable for 2019.
- 43 ERR News, Estonia house prices, rents grew most across EU over past decade, July 2021
<https://news.err.ee/1608272079/report-estonia-house-prices-rents-grew-most-across-eu-over-past-decade>
- 44 Statistics Estonia, Construction volumes fell, but demand for new buildings remains high, February 2021
<https://www.stat.ee/en/node/183355>
- 45 Statistics Estonia, In the first quarter, construction volume fell by 7%, May 2021
<https://www.stat.ee/en/node/183356>
- 46 The overcrowding rate is defined as the percentage of the population living in an overcrowded household
- 47 Eurostat, Overcrowding rate. http://ec.europa.eu/eurostat/product?code=ilc_lvho05a&language=en&mode=view
- 48 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/shower and no indoor toilet, or a dwelling considered too dark.
- 49 Eurostat, Severe housing deprivation rate by age, sex and poverty status - EU-SILC survey.
http://ec.europa.eu/eurostat/product?code=ilc_mdho06a&language=en&mode=view
- 50 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
- 51 World Economic Forum, The Global Competitiveness Report 2019.
http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf
- 52 Ibidem.
- 53 Data unavailable for 2020.
- 54 Trans-European Transport Network (TEN-T
- 55 Baltics News Network, Estonian roads to lack repairs worth EUR 2.0 billion by 2030, September 2020.
<https://bnn-news.com/estonian-roads-to-lack-repairs-worth-eur-2-bn-by-2030-217127>
- 56 European Commission, Country Report Estonia 2020, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020SC0505&from=EN>
- 57 Ibidem
- 58 ERR News, Estonia needs additional EUR 400.0 million for construction of Rail Baltic, October 2021
<https://news.err.ee/1608356702/estonia-needs-additional-400-million-for-construction-of-rail-baltic>
- 59 A wildlife bridge, also known as an 'ecoduct', is an overpass that allows animals to cross a road or a railway
- 60 Rail Baltica, the first rail baltica construction contracts for 2021 were signed in Estonia, August 2021
<https://www.railbaltica.org/the-first-rail-baltica-construction-contracts-for-2021-were-signed-in-estonia/>
- 61 AST, The development project "Estonia-latvia 3rd interconnection" commissioned by BVKB, March 2021
<https://ast.lv/en/events/development-project-estonia-latvia-3rd-interconnection-commissioned-bvkb>
- 62 AST, Latvia-Estonia third interconnection <https://www.ast.lv/en/transmission-network-projects/latvia-estonia-third-interconnection>
- 63 Railtech.com, Estonia invests EUR 122.5 million in rail in 2021, January 2021
<https://www.railtech.com/policy/2021/01/29/estonia-invests-122-5-million-in-railway-in-2021/?gclid=accept>
- 64 Estonia 2035 Strategy sets out five long term strategic goals for the country. In order to reach the goals, it is necessary to take into account Estonia's development needs, global trends, the policy framework of the European Union, and the global objectives of sustainable development.
- 65 In September 2020, Minister of Economic affairs and Infrastructure signed the draft transport and mobility master plan for Estonia for the next 15 years which plans to make the transport system more sustainable and safer and pay more attention to the strategic development of mobility.
- 66 European Commission, Commission staff working document, Analysis of the recovery and resilience plan of Estonia
https://ec.europa.eu/info/sites/default/files/swd2021_285_en.pdf
- 67 Data for subsequent years not available.
- 68 Ibidem.
- 69 Euler Hermes, Insolencies: we'll be back, October 2021
https://www.eulerhermes.com/content/dam/onemarketing/ehndbx/eulerhermes_com/en_gl/erd/publications/pdf/2021_10_06_Insolency.pdf
- 70 The Baltic Course- Estonia to establish insolvency service to make bankruptcy proceeding more effective, July 2020. <http://www.baltic-course.com/eng/finances/?doc=156772#:~:text=According%20to%20a%20bill%20to,to%20the%20public%20broadcaster%20ERR>
- 71 European Commission, Survey on the access to finance for SMEs, Results by country 2020.
<https://ec.europa.eu/docsroom/documents/43871>
- 72 Ibidem.
- 73 European Commission, Survey on the access to finance for SMEs, Results by country 2020.
<https://ec.europa.eu/docsroom/documents/43871>
- 74 Ibidem.
- 75 As the EU-27 average data was not available, the EU-28 average was used for comparative purposes.
- 76 Ibidem.
- 77 Intrum, European Payment Report 2021.
<https://www.intrum.com/publications/european-payment-report/european-payment-report-2021/>

- 78 Ibidem.
- 79 As the EU-27 average data was not available, the EU-28 average was used for comparative purposes.
- 80 Intrum, European Payment Report 2021.
<https://www.intrum.com/publications/european-payment-report/european-payment-report-2021/>
- 81 Intrum: European Payment Report 2021, <https://www.intrum.com/publications/european-payment-report/european-payment-report-2021/>
- 82 As the EU-27 average data was not available, the EU-28 average was used for comparative purposes.
- 83 Ibidem.
- 84 Intrum: European Payment Report 2021, <https://www.intrum.com/publications/european-payment-report/european-payment-report-2021/>
- 85 World Bank Doing Business 2020 Report, Economic Profile Estonia, 2020.
<https://www.doingbusiness.org/content/dam/doingBusiness/country/e/estonia/EST.pdf>
- 86 World Bank Doing Business 2019 Report.
https://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB2019-report_print-version.pdf
- 87 The warehouse in this example is defined as a structure for general storage activities, with two stories, above ground and with total constructed area of approx. 1,300 square meters. The ground, on which the warehouse is built is owned by the company that will use it and valued at 50 times income per capita. There are architectural and technical plans prepared for the warehouse, which are also taken into account and counted as procedures if their preparation requires obtaining further documentation or getting prior approvals from external agencies. Finally, in this example the warehouse takes 30 weeks to construct, excl. all delays due to administrative and regulatory requirements.
- 88 World Bank Doing Business 2020 Report – Estonia.
<https://www.doingbusiness.org/content/dam/doingBusiness/country/e/estonia/EST.pdf>
- 89 Obtain a building permit refers to a sub-process of the building permit system, that needs to be completed in order to obtain the actual building permit. This information is provided to allow comparability between the countries. For more precise information, the reader is invited to consult the methodology (hyperlink of WB methodology) and the conditions of the concrete case.
- 90 Ibidem.
- 91 Data unavailable for 2020.
- 92 Data unavailable for the period 2010-2013 and 2015-2017.
- 93 European Commission, Country Report Estonia 2020,
<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020SC0505&from=EN>
- 94 OECD Reviews of Vocational Educational and Training, Estonia, 2019 –
<https://www.oecd-ilibrary.org/docserver/g2g9fac9-en.pdf?expires=1602834236&id=id&accname=guest&checksum=24E1DC4D28F4B541F3082EE401B700FD>
- 95 European commission, Education and Training Monitor 2020, Estonia
<https://op.europa.eu/en/publication-detail/-/publication/8d1877f8-2495-11eb-9d7e-01aa75ed71a1>
- 96 European commission, Education and Training Monitor 2019, Estonia- https://ec.europa.eu/education/sites/education/files/document-library-docs/et-monitor-report-2019-estonia_en.pdf
- 97 European commission, Education and Training Monitor 2020, Estonia
<https://op.europa.eu/en/publication-detail/-/publication/8d1877f8-2495-11eb-9d7e-01aa75ed71a1>
- 98 EIB Investment Survey, Estonia Overview, December 2020. https://www.eib.org/attachments/efs/eibis_2020_estonia_en.pdf
- 99 European Commission, Country Report Estonia 2020,
<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020SC0505&from=EN>
- 100 CEDEFOP, ReferNet Estonia, 2020
https://cumulus.cedefop.europa.eu/files/vetelib/2020/vocational_education_training_future_work_Estonia_Cedefop_ReferNet.pdf
- 101 European Commission, Country Report Estonia 2020,
<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020SC0505&from=EN>
- 102 European Commission- Construction and Demolition Waste (CDW), December 2019.
https://ec.europa.eu/environment/waste/construction_demolition.htm
- 103 Data unavailable for subsequent years.
- 104 Waste Act (RT I 2004, 9, 52) <https://www.riigiteataja.ee/en/eli/ee/520012015021/consolide>
- 105 Directive 2008/98/EC on waste (Waste Framework Directive) <http://ec.europa.eu/environment/waste/framework/>
- 106 Construction and Demolition Waste management in Estonia http://ec.europa.eu/environment/waste/studies/deliverables/CDW_Estonia_Factsheet_Final.pdf
- 107 ERR News, Estonia planning national real-time waste management monitoring system, May 2021
<https://news.err.ee/1608207373/estonia-planning-national-real-time-waste-management-monitoring-system>
- 108 Data for subsequent years not available.
- 109 European Commission, Commission staff working document, Analysis of the recovery and resilience plan of Estonia
https://ec.europa.eu/info/sites/default/files/swd2021_285_en.pdf
- 110 Ibidem.
- 111 European Commission - European Innovation Scoreboard 2021 – Estonia
<https://ec.europa.eu/docsroom/documents/45912>
- 112 As the EU-27 average data was not available, the EU-28 average was used for comparative purposes.
- 113 Data for subsequent years not available.
- 114 Insufficient data available for previous years and for subsequent years.

115 Data for 2010 not available.

116 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.

117 Data for subsequent years is unavailable.

118 Eurostat, Gross Domestic Expenditure on R&D (GERD) https://ec.europa.eu/eurostat/databrowser/view/t2020_20/default/table?lang=en

119 European Commission, 2021 SME Country Fact Sheet's Background document- Estonia. https://ec.europa.eu/growth/smes/sme-strategy/sme-performance-review_en

120 Data for subsequent years is unavailable.

121 The 2020 EU Industrial R&D Investment Scoreboard. <https://iri.jrc.ec.europa.eu/scoreboard/2020-eu-industrial-rd-investment-scoreboard>

122 European Commission, Country Report Estonia 2020, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020SC0505&from=EN>

123 The Baltic times, Estonian government endorses development plan on R&D, innovation, and business https://www.baltictimes.com/estonian_govt_endorses_development_plan_on_r_d_innovation_and_business/

124 As the EU-27 average data was not available, the EU-28 average was used for comparative purpose.

125 European Commission, Eco-Innovation Scoreboard, 2019. https://ec.europa.eu/environment/ecoap/indicators/index_en

126 As the EU-27 average data was not available, the EU-28 average was used for comparative purposes.

127 Estonia in the Digital Economy and Society Index (DESI), 2021. - <https://digital-strategy.ec.europa.eu/en/policies/desi-estonia>

128 European Commission, Country Report Estonia 2020, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020SC0505&from=EN>

129 EIB Investment Survey, Estonia Overview, December 2020. https://www.eib.org/attachments/efs/eibis_2020_estonia_en.pdf

130 European Commission: Research and Innovation Observatory – Horizon 2020 Policy Support Facility, RD&I strategy "Knowledge Based Estonia 2014-2020" <https://rio.jrc.ec.europa.eu/en/library/rdi-strategy-knowledge-based-estonia-2014-2020>

131 Estonian Research and Development and Innovation Strategy 2014-2020 "Knowledge-based Estonia" https://www.hm.ee/sites/default/files/estonian_rdi_strategy_2014-2020_en.doc

132 Mobi3Con - Developing mobile 3D data collection, processing, and dissemination solution for construction SME-s. <http://www.mast.ee/EI/mobi3con.html>

133 Mobi3con website: <http://mobi3con.eii.ee/>

134 FIEC: Mobi3con <http://www.fiec.eu/en/fiec/projects/completed-projects/mobi3con.aspx>

135 An Overview of BIM Adoption in the Construction Industry: Benefits and Barriers, 2019. <https://www.emerald.com/insight/content/doi/10.1108/S2516-28532019000002052/full/pdf?title=an-overview-of-bim-adoption-in-the-construction-industry-benefits-and-barriers>

136 European Commission- Estonian cluster promotes ICT use, collaboration in the building sector. https://ec.europa.eu/regional_policy/en/projects/estonia/estonian-cluster-promotes-ict-use-collaboration-in-the-building-sector

137 Ibidem.

138 Ibidem.

139 Between the Poles, Estonia developing a national digital twin to increase construction productivity, December 2020 <https://geospatial.blogs.com/geospatial/2020/12/estonia-developing-a-digital-twin-to-increase-construction-productivity.html>

140 To increase the Estonian construction sector's productivity by 2030, the platform aims to be the centre of information exchange between participants in the lifecycle of a building and the public sector. The platform does not store the information itself but consolidates the information from different databases and displays it as a 3D model.

141 European Commission, Commission staff working document, Analysis of the recovery and resilience plan of Estonia https://ec.europa.eu/info/sites/default/files/swd2021_285_en.pdf

142 Ministry of Economic Affairs and Communications, Housing, <https://www.mkm.ee/en/objectives-activities/construction-and-housing-sector/housing>

143 KredEx Annual Report 2018. https://kredex.ee/sites/default/files/2019-05/Fund_KredEx_Annual_Report_2018.pdf

144 Ministry of Economic Affairs and Communications, Kodutoetus lasterikastele peredele. <https://www.mkm.ee/et/eesmargid-tegevused/ehitus-ja-elamumajandus/elamumajandus#kodutoetus-lasterikastele-peredele3>

145 KredEx, Nõuded taotlejale. <http://kredex.ee/eraisik/eraisiku-laenu-ja-teenused/kodutoetus-lasterikastele-peredele-2/toetus-tingimused-5/>

146 ERR News, 374 private homes renovated with the help of Kredex grant in 2020, February 2021 <https://news.err.ee/1608114202/374-private-homes-renovated-with-help-of-kredex-grant-in-2020>

147 KredEx, A total of 659 low-income families with many children applied for a home grant, June 2021. <https://kredex.ee/en/node/2142>

148 KredEx, Housing loan guarantee. <http://kredex.ee/en/private-person/laenukaendus-ja-toetus/eluasemelaenu-kaendus/>

149 Ibidem.

150 KredEx, Apartment building loan guarantee. <http://kredex.ee/en/apartment-association/laen-ja-kaendus-2/korterelamulaenu-kaendus/>

151 See more information at: https://kredex.ee/sites/default/files/2020-06/V%C3%A4ikeelamute%20energiat%C3%B5hususe%20suurendamise%20toetus%20kasutamise%20tingimused%20ja%20kord_0.pdf

152 KredEx, Reconstruction grant. <http://kredex.ee/en/apartment-association/toetus/rekonstrueerimise-toetus/>

153 Conditions and procedure for granting support for the reconstruction of apartment buildings, August 2020. <https://www.riigiteataja.ee/akt/109042019006?leiaKehtiv=>

- 154 Ministry of Economic Affairs and Communications, Korterelamute rekonstrueerimise toetamine. <https://www.mkm.ee/et/eesmargid-tegevused/ehitus-ja-elamumajandus/elamumajandus#korterelamute-rekonstrueerimise-toetamine2>
- 155 Conditions and procedure for granting support for the reconstruction of apartment buildings, August 2020. <https://www.riigiteataja.ee/akt/109042019006?leiaKehtiv=>
- 156 Estonian Association of Construction Entrepreneurs- The state allocated an additional 71 million euros for the reconstruction of apartment buildings, May 2020. https://translate.googleusercontent.com/translate_c?depth=1&pto=ae&rurl=translate.google.co.in&sl=auto&sp=nmt4&tl=en&u=http://eeel.ee/riik-eraldas-korterelamute-rekonstrueerimiseks-taiendavalt-71-miljonit-eurot/&usg=ALkIrhg_R75sFk4NZ9xll3pqFfg5H-253Q
- 157 KredEx, Lammutustoetus kohalikele omavalit. <http://kredex.ee/toetus/kohalikule-omavalitsusele-2/lammutustoetus-kohalikele-omavalitsusele-2/>
- 158 Ministry of Economic Affairs and Communications, Support measure for demolition of unused buildings. <https://www.mkm.ee/en/objectives-activities/construction-and-housing-sector/housing#support-measure-for-demolition-of-unused-buildings1>
- 159 ERR news, 80 percent of all Estonian buildings to be renovated by 2050, July 2020 <https://news.err.ee/1110847/80-percent-of-all-estonian-buildings-to-be-renovated-by-2050>
- 160 Ibidem.
- 161 KredEx, 37 apartment associations across Estonia apply for the innovative factory reconstruction grant, May 2021 <https://kredex.ee/en/node/2130>
- 162 Majandus- Ja Kommunikatsiooni-Ministeerium, Ehitisregister <https://www.mkm.ee/et/ehitisregister>
- 163 Reform of Planning and Building law in Estonia. October 2015. http://www.mju.gov.si/fileadmin/mju.gov.si/pageuploads/SO/2015/modernizacija_javne_uprave_gradivo/Reform_of_Planning_and_Building_law_in_Estonia_Sadna_Mikli.pdf
- 164 Bnt, Estonia's new Building Code enters into force in July. June 2015. <https://www.bnt.eu/en/legal-news/1967-estonia-s-new-building-code-enters-into-force-in-july>
- 165 Riigi Teataja, Planeerimisseadus. 2015. <https://www.riigiteataja.ee/akt/Plan5>
- 166 Elios, Liability and insurance regimes in the construction sector: national schemes and guidelines to stimulate innovation and sustainability, April 2010. <http://www.elios-ec.eu/sites/default/files/pdf/EliosSpecialReporton27MemberStates.pdf>
- 167 Ibidem.
- 168 This includes total investment by the construction and real estate sub-sectors, defined as gross fixed capital formation, i.e. acquisitions minus disposal, of total fixed assets (e.g. machinery and equipment, vehicles, dwellings and other buildings).
- 169 This includes total investment (i.e. gross fixed capital formation) in dwellings and non-residential construction and civil engineering by investors in the general economy (e.g. industry, financial and non-financial services, households, agricultural sector, etc.).
- 170 No data available for subsequent years.
- 171 The indicator gross fixed capital formation in non-residential and civil engineering refers to the Eurostat indicator «Other buildings and structures»
- 172 According to the OECD, inland infrastructure includes road, rail, inland waterways, maritime ports and airports and takes account of all sources of financing.
- 173 Data for subsequent years not available.
- 174 Data unavailable for 2020.
- 175 EIB Investment Survey, Estonia Overview, December 2020. https://www.eib.org/attachments/efs/eibis_2020_estonia_en.pdf
- 176 Estonian Ministry of the Interior, National Spatial Plan Estonia 2030+, 2013. <https://eesti2030.files.wordpress.com/2014/02/estonia-2030.pdf>
- 177 Baltic News Network, Construction of Rail Baltica railway in Estonia could begin in 2022, January 2020. <https://bnn-news.com/construction-of-rail-baltica-railway-in-estonia-could-begin-in-2022-firm-says-209200>
- 178 European Commission, Country Report Estonia 2020, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020SC0505&from=EN>
- 179 Ibidem.
- 180 European Investment Bank, European support for Estonian railway upgrade, 2020. <https://www.eib.org/en/press/all/2020-131-european-support-for-estonian-railway-upgrade>
- 181 European Commission, Country Report Estonia 2020, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020SC0505&from=EN>
- 182 Additional EUR 71.0 million for reconstruction of apartment buildings, May 2020 <https://translate.google.com/translate?depth=1&pto=ae&rurl=translate.google.co.in&sl=auto&sp=nmt4&tl=en&u=http://eeel.ee/riik-eraldas-korterelamute-rekonstrueerimiseks-taiendavalt-71-miljonit-eurot/>
- 183 European Commission, Investment Plan: Estonia – January 2021. https://ec.europa.eu/info/strategy/priorities-2019-2024/economy-works-people/jobs-growth-and-investment/investment-plan-europe/investment-plan-results/investment-plan-estonia_en
- 184 European Commission, Estonia and the EIB. <https://www.eib.org/en/projects/regions/european-union/estonia/index.htm>
- 185 Republic of Estonia Transport Administration, record 253 million euros to be spent on development of Estonian road network in 2021, March 2021 <https://www.transpordiamet.ee/en/news/record-253-million-euros-be-spent-development-estonian-road-network-2021>
- 186 Nordic Investment Bank, Estonia-City of Parnu, October 2021 <https://www.nib.int/loan/city-of-parnu-35510>
- 187 Nordic Investment Bank, NIB finances urban developments in Tartu, Estonia, November 2021 <https://www.nib.int/releases/nib-finances-urban-developments-in-tartu-estonia>

- 188 ERR News, Tallinn mayor, EU funding for construction of Tallinn hospital certain, October 2021
<https://news.err.ee/1608361650/tallinn-mayor-eu-funding-for-construction-of-tallinn-hospital-certain>
- 189 Data for subsequent years not available.
- 190 As the EU-27 average data was not available, the EU-28 average was used for comparative purposes.
- 191 As the EU-27 average data was not available, the EU-28 average was used for comparative purposes.
- 192 European commission, Education and Training Monitor 2020, Estonia- <https://op.europa.eu/en/publication-detail/-/publication/8d1877f8-2495-11eb-9d7e-01aa75ed71a1>
- 193 Ibidem
- 194 Vocational education. <https://www.hm.ee/en/activities/vocational-education>
- 195 Tallinn Construction School (TCS), <https://www.ehituskool.ee/home/>
- 196 Euro guidance, Lifelong guidance in Estonia 2021
https://eeagentuur.ee/wp-content/uploads/2021/04/veebi_lifelongguidancezinestoniaz21zveebz03-19z3.pdf
- 197 Ibidem
- 198 Education and Training Monitor 2019. Estonia. https://ec.europa.eu/education/sites/education/files/document-library-docs/et-monitor-report-2019-estonia_en.pdf
- 199 Euro guidance, Lifelong guidance in Estonia 2021
https://eeagentuur.ee/wp-content/uploads/2021/04/veebi_lifelongguidancezinestoniaz21zveebz03-19z3.pdf
- 200 European Commission, Commission staff working document, Analysis of the recovery and resilience plan of Estonia
https://ec.europa.eu/info/sites/default/files/swd2021_285_en.pdf
- 201 Ibidem.
- 202 European Commission, Energy Union Factsheet Estonia.
https://ec.europa.eu/commission/sites/beta-political/files/energy-union-factsheet-estonia_en.pdf
- 203 Estonian Windpower Association, The Estonian Energy development plan until 2030, <http://www.tuuleenergia.ee/en/2017/10/the-government-approved-the-estonian-energy-development-plan-until-2030/>
- 204 Ministry of Economic Affairs and Communications, Eesti energiamajanduse arengukava 2030+.
https://www.mkm.ee/sites/default/files/elfinder/article_files/energiamaajanduse_arengukava_2030.pdf
- 205 A NZEBs is defined as a building that has a very high energy performance.
- 206 Estonian World- Study: Estonia has the most energy-efficient buildings in Northern Europe, February 2020.
<https://estonianworld.com/knowledge/study-estonia-has-the-most-energy-efficient-buildings-in-northern-europe/>
- 207 Estonian World- Study: Estonia has the most energy-efficient buildings in Northern Europe, February 2020.
<https://estonianworld.com/knowledge/study-estonia-has-the-most-energy-efficient-buildings-in-northern-europe/>
- 208 KredEx Annual Report 2018. https://kredex.ee/sites/default/files/2019-05/Fund_KredEx_Annual_Report_2018.pdf
- 209 Ibidem.
- 210 MKM and KredEx to enable renovations for Soviet-era apartment buildings, August 2020. <https://news.err.ee/1127264/mkm-and-kredex-to-enable-renovations-for-soviet-era-apartment-buildings>
- 211 Estonian World- Study: Estonia has the most energy-efficient buildings in Northern Europe, February 2020.
<https://estonianworld.com/knowledge/study-estonia-has-the-most-energy-efficient-buildings-in-northern-europe/>
- 212 Postimees- Excessive requirements to new buildings, May 2020. <https://news.postimees.ee/4458089/excessive-requirements-to-new-buildings>
- 213 Ibidem.
- 214 European Commission, Commission staff working document, Analysis of the recovery and resilience plan of Estonia
https://ec.europa.eu/info/sites/default/files/swd2021_285_en.pdf
- 215 Ibidem.
- 216 Ibidem.
- 217 European Commission, EU Single Market Scoreboard. Estonia, 2020.
https://ec.europa.eu/internal_market/scoreboard/docs/2020/07/member-states/ee_en.pdf
- 218 As the EU-27 average data was not available, the EU-28 average was used for comparative purposes.
- 219 As the EU-27 average data was not available, the EU-28 average was used for comparative purposes.
- 220 European Commission, EU Single Market Scoreboard. Estonia, 2020.
https://ec.europa.eu/internal_market/scoreboard/docs/2020/07/member-states/ee_en.pdf
- 221 As the EU-27 average data was not available, the EU-28 average was used for comparative purposes.
- 222 European Commission, EU Single Market Scoreboard. Estonia, 2020.
https://ec.europa.eu/internal_market/scoreboard/docs/2020/07/member-states/ee_en.pdf
- 223 European Commission, EU Single Market Scoreboard. Estonia, 2020.
https://ec.europa.eu/internal_market/scoreboard/docs/2020/07/member-states/ee_en.pdf
- 224 Ibidem.
- 225 GAN Risk and Compliance Portal, Estonia Corruption Report, 2018- <https://www.ganintegrity.com/portal/country-profiles/estonia/>
- 226 The standard for the design of buildings and the organization of public procurement of construction works was renewed, June 2020.
<https://translate.google.com/translate?depth=1&pto=aue&rurl=translate.google.co.in&sl=auto&sp=nmt4&tl=en&u=http://eel.ee/ehitiste-projekteerimise-ja-ehitustoode-riigihangete-korraldamise-standard-uuenes/>
- 227 SBA Fact Sheet 2019- Estonia. https://ec.europa.eu/growth/smes/sme-strategy/performance-review_en
- 228 Reducing Bureaucracy and a Simpler State – the Zero Bureaucracy Project (EE0040).
<https://www.opengovpartnership.org/members/estonia/commitments/EE0040/>

- 229 World Bank Doing Business 2020 report, Economy Profile Estonia
<https://www.doingbusiness.org/content/dam/doingBusiness/country/e/estonia/EST.pdf>
- 230 Ibidem.
- 231 Inward FATS describe the overall activity of foreign affiliates resident in the compiling economy. A foreign affiliate within the terms of inward FATS is an enterprise resident in the compiling country over which an institutional unit not resident in the compiling country has control.
- 232 Data unavailable for subsequent years.
- 233 European Commission, SBA Fact Sheet 2019- Estonia.
<https://ec.europa.eu/growth/smes/business-friendly-environment/performance-review/>
- 234 Ibidem.
- 235 Ibidem.
- 236 European Commission, SBA Fact Sheet 2019- Estonia,
<https://ec.europa.eu/docsroom/documents/32581/attachments/9/translations/en/renditions/native>
- 237 KredEx Annual report 2019. <https://kredex.ee/sites/default/files/2020-05/Fund%20KredEx%20Annual%20report%202019.pdf>