

DIG-IN-KPI: Project 1st phase report

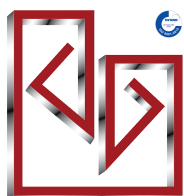
KEY INDICATORS FOR THE CONSTRUCTION SECTOR IN SLOVENIA, CROATIA AND NORTHERN MACEDONIA FOR THE YEAR 2021



Co-funded by
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DIG-IN-KPI



СТОПАНСКА КОМОРА
НА СЕВЕРНА МАКЕДОНИЈА
ECONOMIC CHAMBER
OF NORTH MACEDONIA

Gospodarska
zbornica
Slovenije



Chamber of Commerce
and Industry of Slovenia

Chamber of Construction
and Building Materials Industry
of Slovenia



CROATIAN
CHAMBER OF
ECONOMY

Digital transformation is making its way into businesses - developing key performance indicators to boost sector productivity

Erasmus+ programme, small-scale partnership

Project reference 2022-1-SI01-KA210-VET-000083218



March 2023

Photos: Depositphotos.com

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Key indicators for construction – NACE F, YEAR 2021

A. General indicators for construction

In the project DIG-IN-KPI we have prepared a situation analysis or a cross-section of the construction industry for three project countries (Slovenia, Croatia, both EU members with EUR currency, and Northern Macedonia), non-EU member and without EUR currency) and compared them with the EU-27 countries. We have chosen 2021 as the latest comparison year for which data was available for all countries at the time of writing. It is important to familiarise ourselves with the analysis of the situation of the construction industry, as well as with a somewhat longer time series of data. To further improve our findings, it is essential that we gain an understanding of the state of the construction industry. Longer-term trends in the data are also essential to further improve our findings.

Digitalization indicators are currently being developed and are part of the work programme and final outputs of this project. Therefore, there are not yet many consistent indicators available for the construction industry, but we have included them in this analysis for the three countries in the project.

The construction industry in Europe plays an important role in the economy. It not only creates new residential, industrial and commercial buildings for Europeans to work and live in, but also builds infrastructure and maintains and repairs older structures and buildings.

Construction is an important industry for the European Union for several reasons. First, construction is a significant industry, accounting for up to 10% of GDP in some countries (5.5% on average in the EU-27). This means that it has a direct impact on the economic growth of the countries as a whole. Construction is an important job creator both directly and indirectly. In the EU, the construction industry creates millions of jobs, many of them in skilled trades that require a high level of technical know-how. The construction industry is constantly developing new technologies and materials to increase efficiency and reduce costs. The construction industry makes an important contribution to the environment. Construction projects usually use materials that are designed to reduce energy consumption and pollution. This means that construction is an important sector for the development of green technologies and sustainable materials to reach SDGs.



1. Share of the value added of the construction in GDP

One way to measure the size of the construction sector (NACE Rev.2 F) is through the gross value added (GVA) generated by this economic activity as a share of total GVA. In 2021, the member states with the largest shares – all 7 % or more of total GVA – were Finland (7.7 %), Romania (7.3 %), Austria (7.2 %) and Lithuania (7.1 %).

Gross value added of the construction sector in the EU in 2021 was 5.5 % of GDP, in euro area 5.4 %, in Slovenija 6.2 %, Croatia (6 %) and in North Macedonia (5.8 %).

| <i>(in % of gross value added)</i> | 2017 | 2018 | 2019 | 2020 | 2021 |
|------------------------------------|------|------|------|------|------|
| European Union - 27 countries | 5.1 | 5.3 | 5.4 | 5.5 | 5.5 |
| Euro area | 5.0 | 5.1 | 5.2 | 5.3 | 5.4 |
| Albania | 10.5 | 10.3 | 9.8 | 10.3 | 10.9 |
| Kosovo | 10.1 | 10.4 | 10.1 | 9.3 | 10.6 |
| Finland | 7.2 | 7.4 | 7.4 | 7.7 | 7.7 |
| Serbia | 5.0 | 5.4 | 6.9 | 6.6 | 7.3 |
| Austria | 6.4 | 6.5 | 6.6 | 7.1 | 7.2 |
| Lithuania | 6.7 | 7.0 | 7.3 | 7.3 | 7.1 |
| Poland | 7.4 | 7.9 | 7.7 | 7.5 | 6.9 |
| Romania | 6.0 | 6.6 | 7.0 | 7.2 | 6.9 |
| Estonia | 6.7 | 6.9 | 6.9 | 6.8 | 6.7 |
| Sweden | 6.8 | 6.7 | 6.5 | 6.9 | 6.5 |
| Cyprus | 5.2 | 5.8 | 6.4 | 6.1 | 6.2 |
| Slovenia | 5.4 | 5.7 | 6.0 | 6.0 | 6.2 |
| Hungary | 4.2 | 5.1 | 5.7 | 5.7 | 6.1 |
| Croatia | 4.5 | 4.9 | 5.4 | 6.0 | 6.0 |
| Slovakia | 8.2 | 8.1 | 6.8 | 6.7 | 6.0 |
| Luxembourg | 5.3 | 5.3 | 6.0 | 5.6 | 5.8 |
| Montenegro | 6.9 | 7.0 | 7.9 | 7.3 | 5.8 |
| North Macedonia | 7.5 | 6.2 | 6.5 | 6.2 | 5.8 |
| France | 5.5 | 5.6 | 5.7 | 5.3 | 5.7 |
| Czechia | 5.5 | 5.6 | 5.6 | 5.6 | 5.6 |
| Denmark | 5.6 | 5.7 | 5.5 | 5.5 | 5.6 |
| Spain | 5.9 | 5.9 | 6.3 | 6.1 | 5.6 |
| Germany | 4.7 | 4.9 | 4.9 | 5.4 | 5.5 |
| Latvia | 5.8 | 6.4 | 6.5 | 6.3 | 5.5 |
| Belgium | 5.1 | 5.3 | 5.3 | 5.3 | 5.4 |
| Netherlands | 4.5 | 4.7 | 5.0 | 5.4 | 5.3 |
| Bosnia and Herzegovina | 4.8 | 4.8 | 5.0 | 5.4 | 5.2 |
| Italy | 4.2 | 4.2 | 4.3 | 4.4 | 5.0 |
| Portugal | 4.0 | 4.2 | 4.4 | 4.7 | 4.8 |
| Malta | 3.8 | 4.0 | 4.7 | 5.1 | 4.7 |
| Bulgaria | 4.1 | 4.2 | 4.5 | 4.9 | 3.8 |
| Ireland | 2.7 | 2.6 | 2.6 | 2.3 | 2.2 |
| Greece | 1.5 | 1.6 | 1.6 | 1.8 | 1.8 |

Source: Eurostat https://ec.europa.eu/eurostat/databrowser/view/NAMA_10_A10_custom_3799699/default/table?lang=en

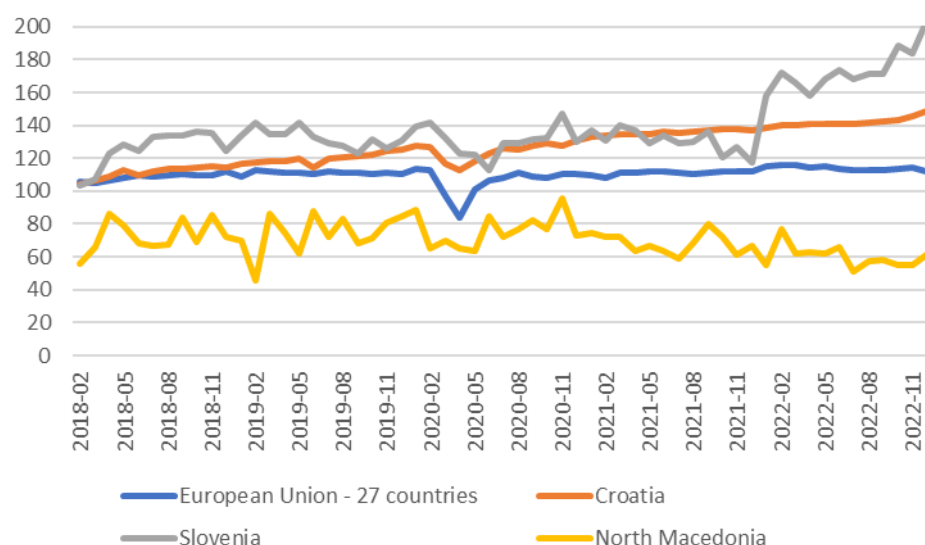
2. Indices of the value of construction put in place

The production index for construction (NACE Rev.2 F) is a business cycle indicator which measures changes in the price adjusted output of construction. In 2021, among the monitored countries, the value of construction put in place decreased by 11.4 % in North Macedonia, by 0.5 % in Slovenia, and increased by 9.3 % in Croatia. In 2021, EU countries increased the value of construction put in place by 4.9 %, in the euro area by 5.2 %.

| <i>Change in % compared to the previous year</i> | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|--|-------|------|------|-------|-------|-------|
| European Union - 27 countries | 3.9 | 2.7 | 2.5 | -5.0 | 5.0 | 2.7 |
| Euro area - 19 countries | 3.1 | 1.7 | 2.1 | -5.7 | 5.3 | 2.5 |
| Italy | 1.3 | 1 | 3 | -7.8 | 25.1 | 12.6 |
| Albania | 19.6 | 5.6 | -2.5 | 9.5 | 18 | 12.5 |
| Serbia | 7.5 | 14.8 | 34.6 | -1 | 16.5 | -12.5 |
| Hungary | 29.7 | 21.2 | 20.7 | -9.8 | 11.9 | 3.3 |
| France | 2.7 | -0.2 | 0.4 | -14.8 | 11.4 | 2.5 |
| Estonia | 21.5 | 12.3 | 5.8 | -6.1 | 9.4 | -1.2 |
| Croatia | 2 | 5.2 | 8.2 | 3.6 | 9.3 | 4.8 |
| Austria | 6.6 | 6.9 | 5.7 | -4.4 | 7.6 | 3.4 |
| Denmark | 4.4 | 3.3 | 1.9 | 2.7 | 7.2 | 5.5 |
| Greece | -18.2 | -14 | -6 | -9.6 | 6.8 | 24.4 |
| Luxembourg | 1.2 | 4.2 | 1.2 | -8.3 | 6.1 | 0.8 |
| Lithuania | 9.5 | 13.6 | 8.1 | -2.1 | 5.4 | 4.5 |
| Malta | -1.2 | 4.9 | 25.1 | 5.8 | 5.3 | 6.6 |
| Cyprus | 27.7 | 17.3 | 11.9 | -6.7 | 4.7 | : |
| Belgium | 0.6 | 1.6 | -0.3 | -8.2 | 4.2 | 1.5 |
| Finland | 5.2 | 2.3 | -0.2 | 0.3 | 3.5 | 2 |
| Portugal | 1.8 | 3.5 | 2.8 | -3.3 | 3 | 2 |
| Bulgaria | 5.2 | 1.5 | 3.9 | -5.5 | 2.6 | 0.8 |
| Czechia | 3.5 | 9.1 | 2.6 | -6.1 | 2.4 | 2.6 |
| Bosnia and Herzegovina | -1.1 | 0.4 | -2 | 0.3 | 2.4 | -0.2 |
| Poland | 14.2 | 19.6 | 3.7 | -4.3 | 1.5 | 8.2 |
| Sweden | 10.6 | 6.6 | 0.7 | -0.9 | 1.4 | 0.4 |
| Netherlands | 8.4 | 4.6 | 5.2 | -0.8 | 1.3 | 4.9 |
| Slovenia | 20.2 | 20 | 3.3 | -0.7 | -0.5 | 22.1 |
| Romania | -5.1 | -3.9 | 27.1 | 16 | -1 | 13.3 |
| Germany | 3.2 | 0.3 | 3.4 | 3 | -1.6 | -1.5 |
| Slovakia | 3.6 | 8 | -3.4 | -11.5 | -1.8 | -0.4 |
| Ireland | 13.1 | 10.2 | 5.8 | -9.3 | -3 | 2.1 |
| Montenegro | 52.2 | 26.9 | 10.5 | -4.3 | -3.3 | -7.7 |
| Latvia | 18.7 | 21.8 | 2.9 | 2.7 | -6.1 | -11.4 |
| Spain | -1 | 2 | -2 | -12.9 | -6.2 | -7.2 |
| North Macedonia | -27.1 | -6.9 | 3.9 | 1.3 | -11.4 | -11.9 |

Source: Eurostat https://ec.europa.eu/eurostat/databrowser/view/STS_COPR_A_custom_5962705/default/table?lang=en

Construction production, 2005-2022 (2015=100)



Source: Eurostat, calendar and seasonally adjusted data (2015=100) https://ec.europa.eu/eurostat/databrowser/view/sts_copr_m/default/table?lang=en

| Change in % compared to the previous year | Construction | | Buildings | | Civil engineering works | |
|--|--------------|-------|-----------|------|-------------------------|-------|
| | 2021 | 2022 | 2021 | 2022 | 2021 | 2022 |
| European Union - 27 countries | 5.5 | 2.7 | 6.2 | 2.7 | 2.5 | 2.5 |
| Euro area - 19 countries | 5.9 | 2.5 | 6.4 | 2.4 | 3.1 | 2.0 |
| Italy | 25.1 | 12.6 | : | : | : | : |
| Albania | 18 | 12.5 | : | : | : | : |
| Serbia | 16.5 | -12.5 | : | : | : | : |
| France | 13.8 | 2.5 | 14.4 | 3 | 9.3 | -2.2 |
| Hungary | 11.9 | 3.3 | 16.4 | 6.6 | 6.5 | -1.1 |
| Estonia | 9.4 | -1.2 | : | : | : | : |
| Croatia | 9.3 | 4.8 | 9.9 | 6.5 | 8.4 | 2 |
| Austria | 7.7 | 3.4 | 7 | 2.9 | 12.2 | 5.7 |
| Denmark | 7.2 | 5.5 | 7.3 | 4.8 | 6.8 | 12.3 |
| Greece | 6.8 | 24.4 | 15.1 | 17.2 | 1.7 | 29.4 |
| Luxembourg | 6.1 | 0.8 | : | : | : | : |
| Lithuania | 5.4 | 4.5 | 13.1 | 5 | -3.4 | 3.6 |
| Malta | 5.3 | 6.6 | : | : | : | : |
| Cyprus | 4.7 | : | 4.7 | : | 5.3 | : |
| Belgium | 4.2 | 1.5 | 4.6 | 0.6 | 4.8 | 2.5 |
| Finland | 3.5 | 2 | 4 | 2.9 | 0.7 | -3.6 |
| Portugal | 3 | 2 | 1.4 | 2.1 | 5.6 | 2 |
| Bulgaria | 2.7 | 0.8 | 0.7 | 2 | 5.3 | -0.6 |
| Bosnia and Herzegovina | 2.4 | -0.2 | : | : | : | : |
| Czechia | 2.3 | 2.6 | 3.5 | 2.3 | -0.3 | 3.2 |
| Poland | 1.5 | 8.2 | 3 | 11.1 | -0.3 | 3.3 |
| Netherlands | 1.3 | 4.9 | : | : | : | : |
| Slovenia | -0.5 | 22.1 | 13.7 | -5.4 | 5.9 | 13.4 |
| Romania | -1 | 13.3 | : | : | : | : |
| Germany | -1.6 | -1.5 | -2 | -2.1 | 0.9 | 3.1 |
| Slovakia | -1.9 | -0.4 | -2.8 | -0.2 | -9.5 | 0.1 |
| Ireland | -3 | 2.1 | -5.5 | 3 | 13.4 | -2.7 |
| Montenegro | -3.5 | -7.7 | -17.1 | -9.7 | 7.2 | -3.4 |
| Latvia | -6.1 | -11.4 | -10.6 | -9.8 | -5 | -13.1 |
| Spain | -6.2 | -7.2 | -4.6 | -8.8 | -14.8 | 2.4 |
| North Macedonia | -11.4 | -11.9 | -9.3 | -3 | -12.7 | -18.5 |

Source: Eurostat https://ec.europa.eu/eurostat/databrowser/view/STS_COPR_A_custom_5962705/default/table?lang=en

3. Investment in construction

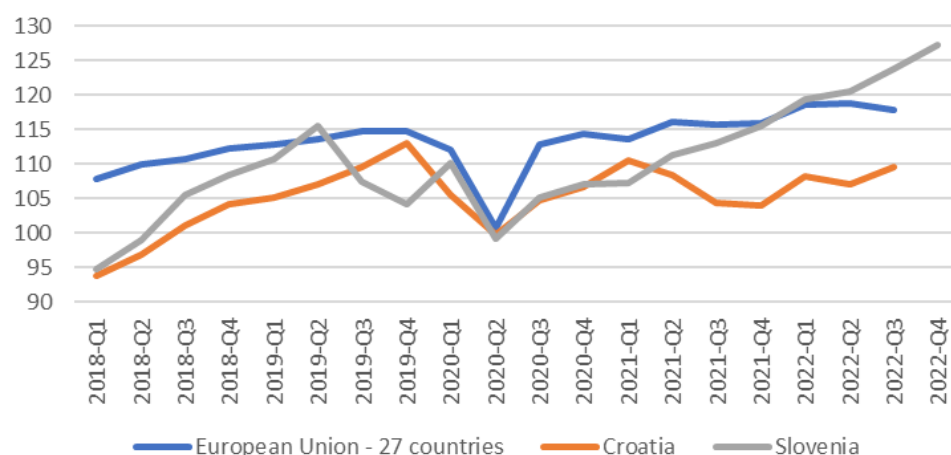
Gross fixed capital formation, abbreviated as GFCF, consists of resident producers' investments, deducting disposals, in fixed assets during a given period. Fixed assets consist dwellings and other buildings. In 2021, 11.1% of GDP on average in EU27 was invested in construction. This share varies between member states, with 8.8% in Slovenia, 10.9% in Croatia, and 12.5% in North Macedonia.

Investment in construction sector (% of GDP)

| <i>% of GDP</i> | 2017 | 2018 | 2019 | 2020 | 2021 |
|-------------------------------|------|------|------|------|------|
| European Union - 27 countries | 9.8 | 10.2 | 10.5 | 10.7 | 11.1 |
| Albania | 18.8 | 17.9 | 17 | 17.8 | 18.9 |
| Finland | 13.6 | 14.4 | 14.4 | 14.6 | 14.4 |
| Hungary | 10 | 12 | 13.6 | 13.8 | 14.2 |
| France | 11.9 | 12.1 | 12.5 | 11.8 | 12.9 |
| Estonia | 14.5 | 14.8 | 14.3 | 14.3 | 12.8 |
| Romania | 13 | 11.9 | 12.9 | 14.5 | 12.6 |
| Austria | 10.6 | 11 | 11.4 | 11.8 | 12.5 |
| North Macedonia | 13.9 | 11.5 | 12.1 | 12.6 | 12.5 |
| Cyprus | 8.7 | 10.5 | 11.6 | 12.4 | 12.4 |
| Bosnia and Herzegovina | 11.2 | 11.5 | 12 | 12.9 | 12.4 |
| Belgium | 11 | 11.4 | 11.7 | 11.6 | 11.7 |
| Germany | 9.8 | 10.3 | 10.5 | 11.3 | 11.6 |
| Denmark | 9.7 | 10 | 10.3 | 10.9 | 11.4 |
| Netherlands | 9.7 | 10.2 | 10.6 | 11.3 | 11.3 |
| Lithuania | 10.3 | 11 | 11.7 | 11.7 | 11.2 |
| Czechia | 10.1 | 10.7 | 11.1 | 11.3 | 11.1 |
| Portugal | 8.3 | 8.7 | 9.4 | 10.4 | 11 |
| Sweden | 11 | 11.1 | 10.8 | 11.1 | 11 |
| Croatia | 9.4 | 10.1 | 11 | 11.8 | 10.9 |
| Latvia | 10.4 | 12.1 | 12.3 | 11.7 | 10.4 |
| Serbia | 7 | 8 | 10.2 | 9.6 | 10.4 |
| Spain | 9 | 9.7 | 10.4 | 10.5 | 10 |
| Malta | 9.2 | 8.9 | 9.8 | 10.5 | 9.9 |
| Luxembourg | 9.9 | 9.7 | 10.5 | 9.9 | 9.8 |
| Italy | 7.8 | 7.9 | 8 | 8.1 | 9.6 |
| Poland | 8.6 | 9.5 | 9.8 | 9.5 | 9 |
| Slovenia | 7.5 | 8.1 | 8.4 | 8.4 | 8.8 |
| Slovakia | 9.1 | 9 | 8.7 | 9.4 | 8.8 |
| Bulgaria | 8.7 | 8.6 | 7.8 | 8 | 6.7 |
| Ireland | 6.6 | 7 | 7.2 | 6.4 | 6.1 |
| Greece | 4.8 | 4.2 | 3.5 | 4.1 | 4.4 |

Source: Eurostat https://ec.europa.eu/eurostat/databrowser/view/NAMA_10_AN6_custom_5962724/default/table?lang=en

Investment in constructions (2015=100)



Source: Eurostat, seasonally and calendar adjusted data

In 2021, 5.6% of GDP was invested in housing in the EU. This share varied among member states, ranging from 7.6% in Cyprus and 7.2% in Germany and Finland to 1.3% in Greece, 2.1% in Ireland, 2.2% in Latvia, and 2.3% in Poland. Slovenia invested 2.4% of GDP in housing in 2021, Croatia 3% and North Macedonia 3.9% of GDP.

Investment in Dwellings - gross (% of GDP)

| | % of GDP | 2017 | 2018 | 2019 | 2020 | 2021 |
|-------------------------------|----------|------|------|------|------|------|
| European Union - 27 countries | | 5.0 | 5.1 | 5.2 | 5.4 | 5.7 |
| Albania | | 9.7 | 10.8 | 10.8 | 10.7 | 10.3 |
| Cyprus | | 5 | 6.5 | 7.6 | 8.1 | 7.6 |
| Germany | | 6 | 6.3 | 6.4 | 7 | 7.2 |
| Finland | | 6.8 | 7.2 | 7 | 7 | 7.2 |
| France | | 6.3 | 6.3 | 6.5 | 6.1 | 6.9 |
| Belgium | | 5.7 | 5.9 | 6.1 | 6.1 | 6.3 |
| Denmark | | 4.6 | 4.8 | 5.2 | 5.7 | 6 |
| Netherlands | | 4.5 | 4.9 | 5.1 | 5.4 | 5.5 |
| Spain | | 4.8 | 5.4 | 5.8 | 5.9 | 5.4 |
| Austria | | 4.5 | 4.5 | 4.7 | 5 | 5.3 |
| Sweden | | 5.7 | 5.2 | 4.7 | 4.9 | 5.3 |
| Estonia | | 4.6 | 4.5 | 4.9 | 5.4 | 4.9 |
| Italy | | 4 | 4.1 | 4 | 4 | 4.8 |
| Czechia | | 4.2 | 4.3 | 4.4 | 4.6 | 4.7 |
| Malta | | 3.6 | 4.2 | 4.5 | 4.5 | 4.6 |
| Hungary | | 2.7 | 3 | 3.2 | 4.1 | 3.9 |
| Slovakia | | 3.1 | 3.3 | 3.3 | 3.8 | 3.9 |
| North Macedonia | | 4.2 | 3.9 | 3.9 | 4.1 | 3.9 |
| Portugal | | 2.8 | 3.1 | 3.2 | 3.4 | 3.8 |
| Luxembourg | | 3.6 | 3.8 | 4 | 3.8 | 3.3 |
| Romania | | 2.7 | 2.1 | 2.3 | 2.4 | 3.1 |
| Croatia | | 2.4 | 2.6 | 2.8 | 3.1 | 3 |
| Lithuania | | 2.7 | 2.7 | 3 | 3.2 | 3 |
| Bulgaria | | 2.8 | 2.7 | 2.8 | 2.9 | 2.8 |
| Bosnia and Herzegovina | | 3.4 | 3.3 | 3.4 | 2.8 | 2.6 |
| Slovenia | | 2.1 | 2.1 | 2.2 | 2.3 | 2.4 |
| Poland | | 2.2 | 2 | 2.1 | 2.2 | 2.3 |
| Latvia | | 2.1 | 2.5 | 2.7 | 2.6 | 2.2 |
| Ireland | | 2.1 | 2.3 | 2.3 | 2.1 | 2.1 |
| Serbia | | 1.3 | 1.4 | 1.6 | 1.7 | 1.9 |
| Greece | | 0.6 | 0.7 | 0.8 | 1.1 | 1.3 |

Source: Eurostat https://ec.europa.eu/eurostat/databrowser/view/NAMA_10_AN6_custom_5962724/default/table?lang=en

4. Construction cost for new residential buildings

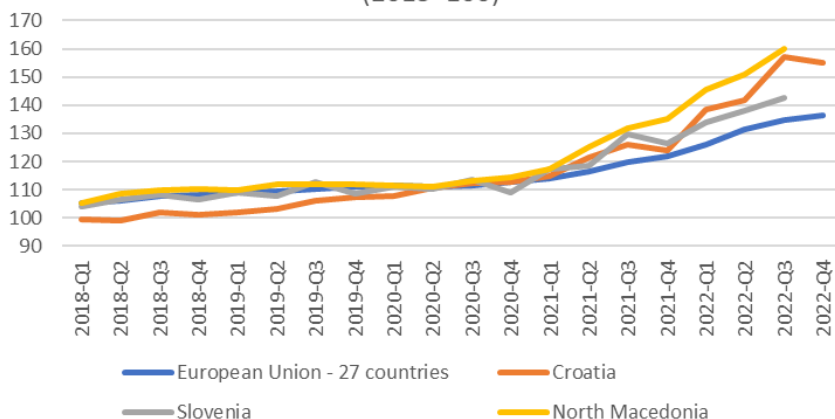
The construction cost index (CCI) or producer prices is a European Union (EU) business cycle indicator showing the trend in the cost for new residential buildings. Countries that do not have data on construction costs may use the construction producer price indices (CPPI, sometimes also referred to as “construction output price index”) as an approximation. Some countries produce both - cost and price - indicators.

Construction output price (Construction cost)

| Change in % compared to the previous year | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|--|------|------|------|-------|------|------|
| European Union - 27 countries | 2.3 | 3.4 | 3.0 | 1.7 | 5.6 | 11.9 |
| Euro area - 19 countries | 2.4 | 3.3 | 2.9 | 1.7 | 5.6 | 11.5 |
| Montenegro | 6.5 | 3.6 | 7 | -10.8 | 17.4 | : |
| North Macedonia | 4.9 | 6 | 2.6 | 1.2 | 13.1 | : |
| Malta | 1.7 | 1.2 | 1 | 0.4 | 12.4 | : |
| Hungary | 7 | 10.2 | 9.6 | 7.2 | 12.2 | 24 |
| Bulgaria | 2.8 | 2.9 | 5.6 | 2.3 | 11 | 53.6 |
| Slovenia | 4.8 | 2.7 | 3.1 | 1.3 | 10.7 | : |
| Croatia | -0.3 | 1.7 | 4.4 | 5.9 | 9.6 | 21.8 |
| Estonia | 1.2 | 1.9 | 1.9 | 0.5 | 9.4 | : |
| Romania | 7.8 | 11.7 | 9.8 | 2 | 9.2 | : |
| Spain | 2.1 | 2.5 | 1.1 | -0.8 | 8.4 | 13.1 |
| Austria | 2.8 | 3.6 | 3.3 | 3.2 | 8 | 15 |
| Germany | 3 | 4.5 | 4.4 | 2.9 | 7.7 | 16.4 |
| Latvia | 2.5 | 4.5 | 4.8 | 7.3 | 6.8 | : |
| Lithuania | 4.2 | 3.5 | 4.9 | 2 | 6.6 | 18 |
| Luxembourg | 1.9 | 1.8 | 3 | 3.1 | 6.5 | 14.1 |
| Cyprus | 0.1 | 1.3 | 2.2 | 0.3 | 6.4 | : |
| Sweden | 2.6 | 3.9 | 2.8 | -0.2 | 6.3 | 12.2 |
| Czechia | 1.9 | 3.6 | 4.6 | 3.4 | 5.8 | 13 |
| Portugal | 1.8 | 2.3 | 2.4 | 1.9 | 5.8 | 11.9 |
| Bosnia and Herzegovina | 0.8 | 1 | 1 | 1.2 | 5.8 | 17.6 |
| Belgium | 1.3 | 2.5 | 2.5 | 1.7 | 5.7 | : |
| Ireland | 1.3 | 4 | 2.3 | 1.1 | 5.4 | 10.7 |
| Finland | 0.3 | 2.3 | 1 | -0.2 | 5.4 | 8.2 |
| Slovakia | 2.8 | 3.8 | 4.5 | 2.9 | 5.1 | 21.7 |
| France | 1.9 | 2.3 | 2.7 | 1.4 | 4.7 | : |
| Poland | 0.8 | 3.1 | 4.2 | 2.9 | 4.5 | : |
| Denmark | 0.8 | 1.8 | 0.8 | 0.8 | 4 | : |
| Netherlands | 6.3 | 8.8 | 7 | 4.4 | 3.9 | : |
| Greece | -0.2 | 0.4 | -0.4 | -0.1 | 2.3 | 6.8 |
| Italy | 1.2 | 1.6 | 0.1 | 0.4 | 1.9 | 7.9 |

Source: Eurostat https://ec.europa.eu/eurostat/databrowser/view/sts_copi_a/default/table?lang=en

Construction producer prices or costs (2015=100)



Source: Eurostat, seasonally and calendar adjusted data https://ec.europa.eu/eurostat/databrowser/view/sts_copi_a/default/table?lang=en

5. Labour input in construction

Hourly labour costs - The labour cost survey (LCS) provides structural information on labour costs. The labour cost index (LCI) is a short-term indicator showing the development of hourly labour costs incurred by employers. It is calculated by dividing the labour costs by the number of hours worked. Total labour costs consist of costs for wages and salaries, plus non-wage costs (such as employer's social contributions).

In 2021, average hourly labour costs in construction in the European Union (EU) were €26, with the lowest hourly labour costs recorded in Bulgaria (€5.6) and Romania (€6.4) and the highest in Denmark (€43.1), the Netherlands and Sweden (€39.3).

| Hourly labour costs in EUR in construction | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|------|------|------|------|------|
| European Union - 27 countries | 23.5 | 24.2 | 24.9 | 25.6 | 26 |
| Euro area - 19 countries | 26.8 | 27.5 | 28.1 | 29 | 29.3 |
| Denmark | 39.8 | 41.2 | 41.2 | 41.3 | 43.1 |
| Netherlands | 35.8 | 36.5 | 37.1 | 39.7 | 39.3 |
| Sweden | 37.5 | 37.2 | 36.3 | 36.7 | 39.3 |
| Austria | 33.5 | 34.5 | 35.7 | 37.2 | 37.6 |
| Belgium | 35.1 | 35.5 | 36.4 | 36.9 | 37.3 |
| Finland | 33.5 | 34.6 | 35 | 35.1 | 36.4 |
| France | 31.9 | 32.5 | 33.3 | 34.5 | 34.5 |
| Germany | 28 | 28.9 | 29.7 | 30.6 | 31.4 |
| Luxembourg | 26.7 | 27.2 | 28.1 | 28.4 | 28.7 |
| Ireland | 26 | 27 | 28 | 26.2 | 27.1 |
| Italy | 23.4 | 24 | 24.2 | 24.5 | 24.3 |
| Spain | 19.8 | 19.9 | 20.1 | 20.6 | 20.5 |
| Slovenia | 14.1 | 14.4 | 15.3 | 16 | 17.1 |
| Cyprus | 14 | 14.3 | 15.1 | 14.7 | 16.3 |
| Estonia | 12.5 | 13.2 | 14.6 | 14.9 | 15.9 |
| Czechia | 10.4 | 11.6 | 12.5 | 12.6 | 13.5 |
| Malta | 11.3 | 11.4 | 10.8 | 11.1 | 11.6 |
| Latvia | 8.3 | 9.5 | 10.4 | 11.5 | 11.4 |
| Portugal | 9.8 | 10 | 10.2 | 10.5 | 11.2 |
| Greece | 12 | 11.1 | 10.3 | 10.8 | 10.9 |
| Poland | 8.9 | 9.6 | 10.1 | 10.2 | 10.6 |
| Slovakia | 9.1 | 9.7 | 10.3 | 10.1 | 10.6 |
| Lithuania | 7.9 | 8.8 | 8.4 | 9.1 | 10.3 |
| Croatia | 9.1 | 10.1 | 9.9 | 9.7 | 10 |
| Hungary | 7.1 | 7.5 | 8.3 | 8.5 | 8.9 |
| Romania | 4.5 | 5.2 | 6.1 | 6.3 | 6.4 |
| Bulgaria | 4 | 4.3 | 4.8 | 5 | 5.6 |
| North Macedonia | : | : | : | : | : |

Source: Eurostat; enterprises with 10 or more employees

https://ec.europa.eu/eurostat/databrowser/view/LC_LCI_LEV_custom_5962776/default/table?lang=en

Employment (number of persons employed), percentage change compared to same period in previous year in construction sector (NACE Rev.2 F).

| <i>Change in % compared to the previous year</i> | 2017 | 2018 | 2019 | 2020 | 2021 |
|--|-------|------|-------|-------|-------|
| European Union - 27 countries | 2.0 | 3.6 | 3.0 | 0.5 | 2.5 |
| Euro area - 19 countries | 2.1 | 3.2 | 2.4 | 0.5 | 2.8 |
| Montenegro | 6 | 12.4 | 16.4 | -20.7 | 14 |
| Italy | -1.5 | 0.1 | 1 | 2.3 | 6.2 |
| Estonia | 6.4 | 5 | 3.5 | -5.1 | 5.9 |
| Hungary | 3.7 | 9.1 | 18.9 | -1.6 | 5.8 |
| Romania | -0.9 | 6.2 | 5.2 | 3.4 | 5.2 |
| Serbia | 1.2 | 8 | 9.7 | 9.1 | 4.8 |
| Croatia | 3.5 | 5.2 | 7.2 | 6.8 | 4.7 |
| Denmark | 3.4 | 3.9 | 1.8 | 1.3 | 4.6 |
| Slovenia | 3.4 | 4.8 | 9.4 | 2.5 | 4.4 |
| Belgium | 2.2 | 2.7 | 2.6 | -1.1 | 4.2 |
| France | 0.8 | 2.1 | 3.8 | 2.2 | 4.1 |
| Spain | 5.1 | 8.3 | 4.6 | -2.6 | 3.8 |
| Austria | 2.8 | 4.5 | 5.1 | 1.7 | 3.8 |
| Albania | 2.8 | 3.9 | 2 | 2.7 | 3.4 |
| Ireland | 8.2 | 12.1 | 5.3 | -4.7 | 3.1 |
| Netherlands | 3 | 3.5 | 3.4 | 2 | 2.3 |
| Cyprus | 15 | 13.9 | 9.6 | 3.8 | 2.1 |
| Lithuania | 1.7 | 4.3 | 1.9 | -1.2 | 2 |
| Bulgaria | 3.8 | 0.8 | 3 | -11 | 1.9 |
| Sweden | 3.6 | 5.2 | 2.4 | 1.1 | 1.9 |
| Portugal | 1.8 | 2.3 | 2.2 | -0.3 | 1.8 |
| Germany | 2.3 | 2 | 1.8 | 1.3 | 1.5 |
| North Macedonia | -3 | -4.9 | -10 | -3.3 | 0.9 |
| Luxembourg | 3.1 | 2.2 | 2.4 | -3.3 | 0.3 |
| Latvia | 4.3 | 7.4 | 3.7 | -3.1 | 0.2 |
| Malta | -15.2 | -1 | 6.1 | 5.2 | 0.2 |
| Poland | 2.2 | 4.3 | 5 | 0.4 | -0.5 |
| Finland | 5 | 5.4 | -3 | 0 | -3.1 |
| Slovakia | 2.5 | 3.4 | 6.4 | -6 | -3.8 |
| Czechia | 1.3 | 1.4 | 1.8 | 0.5 | -4.2 |
| Greece | 4.8 | 5.6 | -19.7 | -9.8 | -16.2 |

Source: Eurostat https://ec.europa.eu/eurostat/databrowser/view/sts_colb_a/default/table?lang=en

Volume of work done (hours worked), percentage change compared to same period in previous year (calendar adjusted data) in construction (NACE Rev.2 F).

| <i>Change in % compared to the previous year</i> | 2017 | 2018 | 2019 | 2020 | 2021 |
|--|-------|------|------|-------|------|
| European Union - 27 countries | 1.8 | 3.0 | 3.1 | -3.3 | 5.2 |
| Euro area - 19 countries (2015-2022) | 2.2 | 2.6 | 2.1 | -4.0 | 6.0 |
| Italy | 1 | 0.8 | 4.1 | -6.3 | 20.2 |
| France | -0.6 | 2.2 | 3.5 | -5.4 | 12.7 |
| Cyprus | 18.4 | 16.1 | 12.4 | -3 | 9.3 |
| Latvia | 6.2 | 3.8 | 3.2 | -6 | 8 |
| Croatia | -2.8 | 4.8 | 20.5 | 8.4 | 7.7 |
| Austria | 3 | 4.2 | 4.7 | -2.1 | 7.7 |
| Belgium | 2.8 | 3.5 | 0.6 | -9.2 | 7.5 |
| Hungary | 2.7 | 8.9 | 20.6 | -3.3 | 7.1 |
| Estonia | 6.2 | 8.5 | 2.7 | -7.3 | 6.6 |
| Denmark | 3.1 | 1.7 | 1.4 | 1.5 | 6.1 |
| Romania | -2.5 | 6.1 | 4.5 | 2.4 | 6.1 |
| Netherlands | 3.6 | 3.4 | 3.6 | -4 | 6 |
| Luxembourg | 1.3 | 4 | 1.7 | -9.9 | 5.8 |
| Sweden | 2.6 | 0.8 | 7.5 | -5.8 | 3.7 |
| Portugal | 1.2 | 2.1 | 2.1 | -2.6 | 3 |
| Ireland | 7.9 | 13.7 | 2.8 | -3 | 2.5 |
| Serbia | 0.8 | -0.2 | 8.7 | -4.4 | 2.3 |
| Slovenia | -0.4 | -1.2 | -0.1 | -0.1 | 1.4 |
| Spain | 4.5 | 2.8 | -0.1 | -9.3 | 1.3 |
| Bulgaria | 1.3 | 2.3 | 2.7 | -13.1 | 1.2 |
| Montenegro | 26.5 | 13.8 | 3.6 | -2.9 | 0.9 |
| Germany | 1.8 | 1.4 | 1.6 | 0.9 | 0.1 |
| Poland | 0.3 | 5.8 | 3.9 | -0.4 | 0 |
| Malta | -17.7 | -0.6 | 10 | 2.8 | -0.3 |
| Lithuania | 0.4 | 5.8 | 3.5 | -7 | -0.4 |
| North Macedonia | -3.9 | -6.2 | -9.9 | -4.5 | -0.9 |
| Slovakia | 2.5 | 1.6 | 7.2 | -8.7 | -3.9 |
| Czechia | 1.9 | 0.8 | 0.5 | -4 | -5.3 |
| Finland | 9.8 | 6 | -5.3 | 0.3 | -8.9 |
| Greece | 20.2 | 7.9 | -9.8 | -1.8 | -9.3 |

Source: Eurostat https://ec.europa.eu/eurostat/databrowser/view/sts_colb_a/default/table?lang=en

B. Construction statistics according to the national methodology - Slovenia

- The value of construction

The value of construction in EUR (2020 - last available data for Slovenia). Include construction works and services, which the companies and establishments engaged in construction activity perform as the main contractor, cobuilder or subcontractor.

| Year, 2020 | Type of construction activity, in mio EUR | | |
|---|---|-----------------|----------------|
| In mio EUR | Investor -TOTAL | Legal person | Natural person |
| Classification of type of construction (CC-SI) | 3,534.90 | 2,906.80 | 628.1 |
| 1 BUILDINGS | 2,145.40 | 1,562.80 | 582.6 |
| 11 Residential buildings | 1,048.90 | 519.3 | 529.6 |
| 12 Non-residential buildings | 1,096.50 | 1,043.50 | 53,0 M |
| 2 CIVIL ENGINEERING WORKS | 1,389.50 | 1,344.00 | 45,5 M |
| 21 Transport infrastructures | 832.9 | 810 | 22,9 M |
| 22 Pipelines, communication and electricity lines | 420.8 | 416.2 | 4,7 M |
| 23 Complex construction on industrial sites | 47,0 M | 35,7 M | N |
| 24 Other civil engineering works | 88.8 | 82,1 M | 6,6 M |

Source: Statistical Office of the Republic of Slovenia

Statistical signs: M - less reliable estimate – use with caution; N - too unreliable estimate to be published

- Structure of employees

Structure of employees (by education, age, gender). Persons in employment are persons in paid employment and self-employed persons who have compulsory social insurance.

| Persons in employment in construction (NACE Rev.2 F), annual average | | | | | |
|---|---------------|--------------|---------------|---------------|---------------|
| | 2017 | 2018 | 2019 | 2020 | 2021 |
| 1 Persons in employment | 55,726 | 58,39 | 63,855 | 64,914 | 67,762 |
| 11 Persons in paid employment | 46,117 | 48,555 | 53,717 | 54,469 | 56,734 |
| 12 Self-employed persons | 9,609 | 9,836 | 10,138 | 10,445 | 11,028 |

Source: Statistical Office of the Republic of Slovenia

| Persons in employment in construction (NACE Rev.2 F), annual average | | | | | |
|---|---------------|--------------|---------------|---------------|---------------|
| | 2017 | 2018 | 2019 | 2020 | 2021 |
| 1 Persons in employment - TOTAL | 55,726 | 58,39 | 63,855 | 64,914 | 67,762 |
| 11 Citizens of Slovenia - TOTAL | 37,288 | 36,999 | 37,638 | 37,508 | 38,420 |
| 12 Foreign citizens - TOTAL | 18,438 | 21,392 | 26,218 | 27,406 | 29,343 |
| 121 Citizens of EU Member States | 2,411 | 2,343 | 2,154 | 1,911 | 1,964 |
| 122 Citizens of other countries | 16,027 | 19,049 | 24,063 | 25,495 | 27,378 |

*Numbers may not add to totals due to rounding; Annual average.

Source: Statistical Office of the Republic of Slovenia

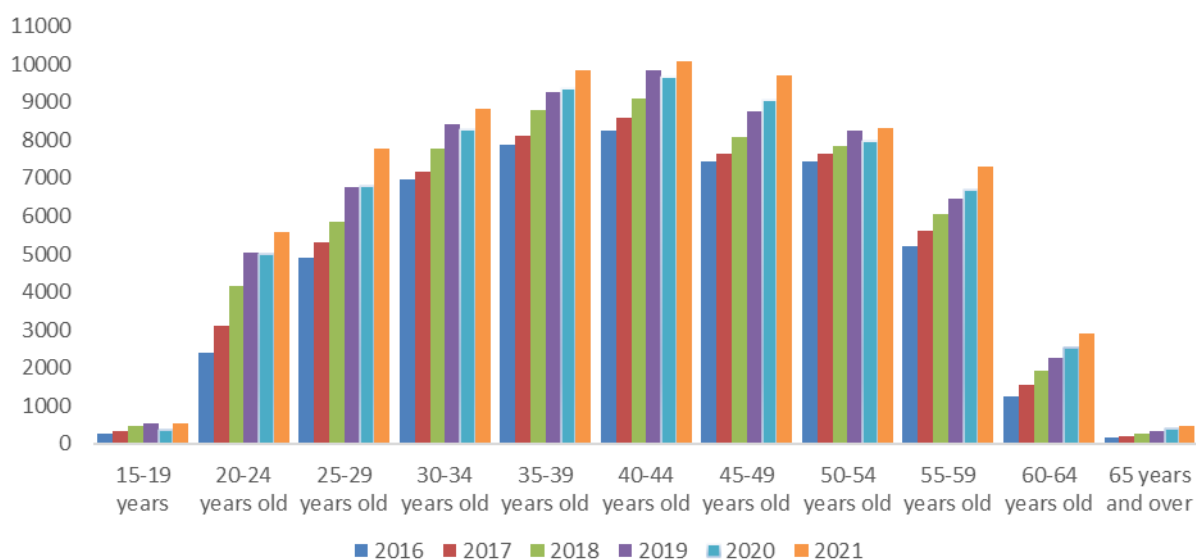
| Working population in construction (NACE Rev.2 F), balance as of 13.12. | | | | | |
|--|---------------|---------------|---------------|---------------|---------------|
| | 2017 | 2018 | 2019 | 2020 | 2021 |
| Education - TOTAL | 55,281 | 60,282 | 65,907 | 66,130 | 71,346 |
| Elementary school or less | 9,119 | 10,560 | 11,947 | 11,854 | 14,569 |
| High school | 40,439 | 43,733 | 47,521 | 47,722 | 49,830 |
| Higher education, higher education | 5,723 | 5,989 | 6,439 | 6,554 | 6,947 |

Source: Statistical Office of the Republic of Slovenia

| Working population in construction (NACE Rev.2 F), balance as of 13.12. | | | | | |
|--|--------|--------|--------|--------|--------|
| | 2017 | 2018 | 2019 | 2020 | 2021 |
| Age - TOTAL | 55,281 | 60,282 | 65,907 | 66,130 | 71,346 |
| 15-19 years | 315 | 475 | 528 | 359 | 535 |
| 20-24 years old | 3,104 | 4,150 | 5,023 | 5,004 | 5,563 |
| 25-29 years old | 5,292 | 5,841 | 6,773 | 6,779 | 7,769 |
| 30-34 years old | 7,180 | 7,765 | 8,430 | 8,284 | 8,834 |
| 35-39 years old | 8,125 | 8,785 | 9,280 | 9,354 | 9,854 |
| 40-44 years old | 8,599 | 9,091 | 9,831 | 9,660 | 10,082 |
| 45-49 years old | 7,639 | 8,098 | 8,747 | 9,079 | 9,721 |
| 50-54 years old | 7,647 | 7,859 | 8,247 | 7,981 | 8,335 |
| 55-59 years old | 5,622 | 6,049 | 6,467 | 6,700 | 7,292 |
| 60-64 years old | 1,553 | 1,920 | 2,264 | 2,537 | 2,887 |
| 65 years and over | 205 | 249 | 317 | 393 | 474 |

Source: Statistical Office
of the Republic of Slovenia

Working population in construction



- **Wages (gross earnings)**

| Gross salary in construction (NACE Rev.2 F) in EUR | | | | | |
|--|----------|----------|----------|----------|----------|
| | 2017 | 2018 | 2019 | 2020 | 2021 |
| Gross salary in EUR | 1,237.78 | 1,289.94 | 1,317.84 | 1,389.89 | 1,488.46 |
| Change in %, compared to the previous year | 2.7 | 4.2 | 2.2 | 5.5 | 7.1 |
| Net earnings in EUR | 835.13 | 864.41 | 878.05 | 932.73 | 983.70 |

Source: Statistical Office of the Republic of Slovenia

C. Construction statistics according to the national methodology - Croatia

- The value of construction

| Year | Income NACE Rev.2 F (construction) | | | | |
|---|------------------------------------|--------------|--------------|--------------|--------------|
| | 2021 | 2020 | 2019 | 2018 | 2017 |
| Total (in mio EUR) | 9,387 | 8,188 | 7,960 | 7,046 | 5,844 |
| Construction of Buildings NACE Rev.2 F41 (in mio EUR) | 4,171 | 3,548 | 3,425 | 3,121 | 2,689 |
| Civil Engineering v F42 (in mio EUR) | 2,620 | 2,346 | 2,353 | 2,121 | 1,775 |
| Specialised Construction Activities NACE Rev.2 F43 (in mio EUR) | 2,594 | 2,293 | 2,180 | 1,803 | 1,378 |

Source: Croatian Bureau of Statistics

- Structure of employees

| | Persons in employment in construction (NACE Rev.2 F) | | | | |
|--|--|---------|---------|---------|---------|
| | 2017 | 2018 | 2019 | 2020 | 2021 |
| Persons in employment - total annual average in thousands | 107,250 | 114,750 | 110,750 | 119,250 | 128,000 |
| Persons in employment in legal entities, total in thousands | 75,823 | 79,717 | 85,943 | 92,694 | 99,732 |
| Persons in employment in legal entities, male in thousands | 67,782 | 71,116 | 76,707 | 83,410 | 89,876 |
| Persons in employment in legal entities, female in thousands | 8,041 | 8,601 | 9,236 | 9,284 | 9,856 |

*Numbers may not add to totals due to rounding; Annual average.

Source: Croatian Bureau of Statistics

| | Working population in construction (NACE Rev.2 F), balance as of 31.3. for the respective year | | | | |
|-------------------------------|---|---------------|---------------|---------------|---------------|
| | 2017 | 2018 | 2019 | 2020 | 2021 |
| Education – TOTAL | 62,962 | 68,951 | 73,592 | 82,261 | 88,470 |
| University degree | 5,312 | 5,812 | 6,472 | 6,941 | 8,201 |
| Non-university college degree | 3,276 | 3,631 | 3,825 | 6,100 | 5,113 |
| Secondary school education | 31,933 | 36,462 | 39,364 | 55,190 | 61,360 |
| Basic school education | 2,161 | 2,354 | 2,366 | 7,293 | 7,187 |
| Highly skilled | 901 | 1,083 | 1,004 | N/A | N/A |
| Skilled | 10,290 | 10,393 | 11,039 | N/A | N/A |
| Semi-skilled | 2,499 | 2,579 | 2,426 | 5,387 | 4,984 |
| Unskilled | 6,590 | 6,637 | 7,096 | 1,350 | 1,625 |

Source: Croatian Bureau of Statistics

| | Working population in construction (NACE Rev.2 F), balance as of 13.12. for the respective year | | | | |
|--------------------|--|---------------|---------------|---------------|---------------|
| | 2017 | 2018 | 2019 | 2020 | 2021 |
| Age – TOTAL | 62,962 | 68,951 | 73,592 | 82,261 | 88,470 |
| up to 18 years old | 136 | 131 | 189 | 263 | 213 |
| 19-24 years old | 3,916 | 4,644 | 5,167 | 6,186 | 6,735 |
| 25-29 years old | 6,065 | 6,465 | 7,139 | 8,275 | 9,228 |
| 30-34 years old | 8,647 | 9,053 | 9,300 | 10,071 | 11,016 |
| 35-39 years old | 9,680 | 10,424 | 10,968 | 12,083 | 12,789 |
| 40-44 years old | 8,656 | 9,922 | 10,715 | 11,959 | 13,023 |
| 45-49 years old | 7,094 | 7,970 | 8,619 | 10,096 | 11,016 |
| 50-54 years old | 7,661 | 8,206 | 8,374 | 9,069 | 9,319 |
| 55-59 years old | 7,320 | 7,776 | 8,126 | 8,432 | 8,819 |
| 60-64 years old | 3,398 | 3,874 | 4,292 | 4,939 | 5,352 |
| 65 years and over | 389 | 486 | 703 | 888 | 960 |

Source: Croatian Bureau of Statistics



- Wages (gross earnings)**

| Gross salary in construction (NACE Rev.2 F) in EUR | | | | | |
|--|--------|--------|--------|---------|---------|
| | 2017 | 2018 | 2019 | 2020 | 2021 |
| Gross salary in EUR | 914,33 | 969,67 | 989,05 | 1005,64 | 1030,99 |
| Change in % compared to the previous year | | +6.05 | +1.99 | +1.67 | +2.52 |
| Net earnings in EUR | 674,76 | 712,19 | 725,33 | 740,59 | 776,56 |

Source: Croatian Bureau of Statistics

D. Construction statistics according to the national methodology – North Macedonia

- The value of construction**

The value of construction in Republic of North Macedonia for 2021 expressed in Euro (average annual rate for 2021 for 1 EUR equals to 61.6 MKD) Include construction works and services, which the companies and establishments engaged in construction activity perform as the main contractor, co-builder or subcontractor.

| Year, 2021 | Type of construction activity, in mio EUR | | |
|---|---|-------------------|------------------|
| In mio EUR | TOTAL | Private ownership | Public Ownership |
| Classification of type of construction (CC-MK) | 734,3 | 418,3 | 316,0 |
| 1 BUILDINGS | 405,5 | 374,2 | 31,2 M |
| 11 Residential buildings | 298,5 | 284,9 | 13,6 M |
| 12 Non-residential buildings | 107,0 | 89,4 M | 17,6 M |
| 2 CIVIL ENGINEERING WORKS | 240,4 | 29,4 M | 211,0 |
| 21 Transport infrastructures | 138,8 | 0,9 M | 137,9 |
| 22 Pipelines, communication and electricity lines | 61,2 M | 3,4 M | 57,9 M |
| 23 Complex constructions on industrial sites | 47,0 M | 6,7 M | 7,3 M |
| 24 Other civil engineering works | 2,9 M | 0,4 M | 2,5 M |
| 25. Construction works | 23,5 M | 18,0 M | 5,5 M |

Source: State Statistical Office - Republic of North Macedonia

- **Structure of employees**

| Persons in employment in construction by activity and type of ownership (NACE Rev.2 F), annual average | | | | | |
|--|---------------|---------------|---------------|---------------|---------------|
| | 2017 | 2018 | 2019 | 2020 | 2021 |
| 1 Persons in employment | 53,391 | 56,263 | 56,036 | 55,165 | 54,380 |
| 11 Private | 52,033 | 54,361 | 53,565 | 52,361 | 51,160 |
| 12 Other | 1,358 | 1,902 | 2,470 | 2,804 | 3,219 |

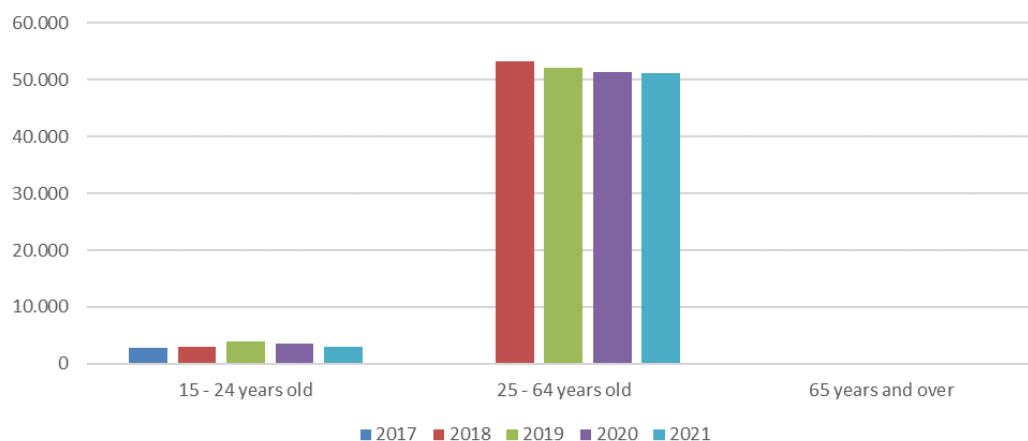
Source: State Statistical Office - Republic of North Macedonia

State Statistical Office - Republic of North Macedonia does not provide segregated data for employed foreign citizens by sectors (the only information regarding Foreign citizens is linked to their numbers and dispersions by statistical regions), therefore, these data are not included in the analysis.

| Persons in employment in construction by age (NACE Rev.2 F) | | | | | |
|---|---------------|---------------|---------------|---------------|---------------|
| | 2017 | 2018 | 2019 | 2020 | 2021 |
| Age - TOTAL | 53,346 | 56,250 | 56,002 | 54,960 | 54,180 |
| 15 - 24 years old | 2,713 | 2,905 | 3,836 | 3,622 | 2,898 |
| 25 - 64 years old | 50,630 | 53,345 | 52,166 | 51,338 | 51,282 |
| 65 years and over | 0 | 0 | 0 | 0 | 0 |

Source: State Statistical Office - Republic of North Macedonia

Working population in construction



| Persons in employment in construction by gender (NACE Rev.2 F) | | | | | |
|--|---------------|---------------|---------------|---------------|---------------|
| | 2017 | 2018 | 2019 | 2020 | 2021 |
| Total person employed in construction | 53,391 | 56,263 | 56,036 | 55,165 | 54,380 |
| Male | 49,866 | 51,014 | 52,384 | 51,751 | 50,867 |
| Female | 3,525 | 5,249 | 3,652 | 3,414 | 3,513 |

Source: State Statistical Office - Republic of North Macedonia

| Persons in employment in construction by level of education (NACE Rev.2 F) | | | | | |
|--|---------------|---------------|---------------|---------------|------------|
| | 2017 | 2018 | 2019 | 2020 | 2021 |
| Education - TOTAL | 31,010 | 29,502 | 33,366 | 32,840 | N/A |
| Elementary school or less | 3,928 | 10,049 | 11,746 | 11,724 | N/A |
| High school | 20,374 | 14,829 | 16,361 | 15,956 | N/A |
| Higher education, higher education | 6,708 | 4,624 | 5,259 | 5,160 | N/A |

Source: State Statistical Office - Republic of North Macedonia

- **Wages (gross earnings)**

Brutto (gross) salary is best defined as the sum of salary before the deduction of tax and insurance(s). Netto (net) salary is the result of initial pay including tax and other sorts of deductions made. These deductions depend on local/national legislation where employees are required to pay certain amounts of tax to the government. Gross salary in North Macedonia consists of the Net salary + Fringe benefits (28 % of gross salary) + Personal tax on salary (10 %). The Fringe benefits consist of (18.8 % of gross salary - pension and disability insurance + 7.5 % of gross salary - health insurance + 1.2 % of gross salary - employment fund + 0.5 % of gross salary - additional health insurance), while the personal tax on salary is flat and it is 10 %. Due to the fact that the average gross wage by sectors of activity is reported on monthly level, the table represents gross wage in December (M12) for each year. The average exchange rate for 2021 was 1 EUR = 61,6 MKD.

| | Gross salary in construction (NACE Rev.2 F) in MKD and EUR | | | | |
|---|--|--------|--------|--------|--------|
| | 2017 | 2018 | 2019 | 2020 | 2021 |
| Gross salary in MKD | 30,265 | 33,230 | 37,582 | 38,994 | 43,852 |
| Gross salary in EUR | 491.3 | 539.4 | 610.1 | 633.0 | 711.9 |
| Change in % compared to the previous year | -3.5 | 9.8 | 13.1 | 3.8 | 12.5 |
| Net earnings in MKD | 20,691 | 22,633 | 25,333 | 26,257 | 29,566 |
| Net earnings in EUR | 335.9 | 367.4 | 411.3 | 426.3 | 480.0 |

Source: State Statistical Office - Republic of North Macedonia



E. Other databases and international publications for construction

- In this DIG IN KPI project desk research analysis we have identified some other international publication-based sectoral databases where we can find out about the construction industry and which contain data from EU countries.

We recommend companies involved in construction and sectoral organisations to consider them when looking for cross-border business opportunities!

Please consult the following links:

ECONOMIC ACTIVITY PERFORMANCE AND STATISTICAL PROJECTIONS

FIEC - European Construction Industry Federation:

- Construction activity for Slovenia <https://fiec-statistical-report.eu/slovenia>
- Construction activity for Croatia (HUP UPG is a member, but the analysis for Croatia has not been done)
- Construction activity for North Macedonia (no available data, if MK become FIEC member their data could be included)

EUROPEAN CONSTRUCTION SECTOR OBSERVATORY (ECOSO): it profiles the construction industry in the 27 EU countries and the UK, and produces detailed country fact sheets (CFS) for each country. They define the construction sector very broadly. They include the F-construction, L - Real estate activities, some activity in C -Manufacturing (NACE Rev. 2).

Source: https://single-market-economy.ec.europa.eu/sectors/construction/observatory_en

- Slovenia - ECOSO country fact sheet https://single-market-economy.ec.europa.eu/sectors/construction/observatory/country-fact-sheets/slovenia_en
- Croatia - ECOSO country fact sheet https://single-market-economy.ec.europa.eu/sectors/construction/observatory/country-fact-sheets/croatia_en
- North Macedonia (no available data)

EUROCONSTRUCT: it covers construction market reports, currently members from 19 European countries, all consulting and non-profit research institutes specialized in construction.

Slovenia, Croatia and North Macedonia are not members, so they are not included in the Euroconstruct Country Report. Source: <https://www.euroconstruct.org/ec/reports>

CONSTRUCTION SECTOR DIGITALIZATION

Digitalisation in the construction sector -ESCO report

ESCO Digitalization in construction sector – analytical report (survey) for some EU countries (Slovenia and Croatia included, no data for MK). Source:

<https://ec.europa.eu/docsroom/documents/45547/attachments/1/translations/en/renditions/native>

Digitalisation in the construction sector – focused EC web site dedicated to support SMEs

Source: <https://digital-construction.ec.europa.eu/handbook>

F. Financial results of construction companies

1. Annual detailed enterprise statistics for construction - database Eurostat

Annual detailed enterprise statistics for construction (NACE Rev.2 F), **Eurostat**. Structural business statistics (SBS) describes the structure, conduct and performance of economic activities. The survey covers **market business entities with turnover, employees or investment perform during the observation period**. Last available data in Eurostat are for year 2020.

| TIME | Enterprises - number | | Turnover or gross premiums written - million euro | | Value added at factor cost - million euro | | Employees - number | |
|-------------------------------|----------------------|-----------|---|---------|---|---------|--------------------|------------|
| | 2019 | 2020 | 2019 | 2020 | 2019 | 2020 | 2019 | 2020 |
| European Union - 27 countries | 3,413,290 | 3,536,996 | 75,988 | 75,405 | 20,201 | 19,937 | 10,021,134 | 10,109,655 |
| Belgium | 120,581 | 127,121 | 8,689 | 11,770 | 2,150 | 2,685 | 213,691 | 213,814 |
| Bulgaria | 20,985 | 21,297 | 35,738 | 34,865 | 8,302 | 8,282 | 142,188 | 139,419 |
| Czechia | 183,632 | 185,705 | 39,107 | 40,203 | 13,267 | 13,621 | 212,743 | 213,145 |
| Denmark | 33,937 | 34,755 | 333,069 | 373,864 | 132,211 | 140,230 | 167,224 | 175,252 |
| Germany | 376,853 | 393,852 | 6,245 | 5,950 | 1,414 | 1,399 | 2,306,615 | 2,294,823 |
| Estonia | 12,448 | 12,958 | 28,059 | 29,196 | 8,650 | 8,030 | 48,288 | 50,064 |
| Ireland | 59,175 | 62,664 | 10,564 | 10,375 | 2,101 | 2,348 | 118,924 | 115,911 |
| Greece | 61,720 | 62,056 | 156,502 | 137,701 | 49,919 | 44,202 | 88,403 | 87,458 |
| Spain | 382,186 | 379,025 | 331,315 | 314,881 | 103,076 | 99,647 | 1,046,973 | 967,226 |
| France | 486,876 | 501,189 | 7,841 | 7,823 | 2,146 | 2,449 | 1,566,240 | 1,658,565 |
| Croatia | 22,959 | 24,044 | 165,236 | 159,750 | 52,555 | 50,782 | 108,122 | 114,999 |
| Italy | 479,574 | 490,251 | 4,329 | 4,249 | 1,156 | 1,127 | 812,589 | 843,261 |
| Cyprus | 9,001 | 9,310 | 4,874 | 4,504 | 1,254 | 1,213 | 32,731 | 34,843 |
| Latvia | 11,658 | 11,558 | 6,887 | 7,096 | 1,975 | 2,108 | 64,862 | 63,582 |
| Lithuania | 33,036 | 33,264 | 9,258 | 9,444 | 3,344 | 3,403 | 98,849 | 99,145 |
| Luxembourg | 4,244 | 4,309 | 24,122 | 23,583 | 6,199 | 5,650 | 48,427 | 49,900 |
| Hungary | 93,130 | 101,797 | 1,516 | 1,568 | 574 | 542 | 193,547 | 196,745 |
| Malta | 4,308 | 4,360 | 114,561 | 120,401 | 34,457 | 36,752 | 9,559 | 10,354 |
| Netherlands | 203,549 | 217,460 | 56,620 | 57,880 | 20,033 | 21,011 | 329,658 | 335,610 |
| Austria | 36,707 | 37,261 | 89,073 | 91,207 | 24,233 | 23,189 | 295,411 | 296,313 |
| Poland | 355,562 | 387,740 | 23,256 | 23,645 | 7,422 | 7,660 | 730,273 | 751,338 |
| Portugal | 90,430 | 92,328 | 23,720 | 26,741 | 7,586 | 7,894 | 300,786 | 308,943 |
| Romania | 60,047 | 66,205 | 6,299 | 6,245 | 1,924 | 2,032 | 396,164 | 432,511 |
| Slovenia | 19,600 | 20,164 | 12,547 | 11,665 | 2,624 | 2,466 | 60,459 | 60,325 |
| Slovakia | 109,133 | 110,982 | 39,731 | 40,381 | 11,771 | 12,062 | 82,085 | 75,743 |
| Finland | 41,403 | 42,375 | 82,240 | 84,781 | 25,917 | 26,669 | 184,850 | 181,135 |
| Sweden | 100,497 | 102,966 | 1,512 | 1,501 | 480 | : | 361,521 | 339,231 |
| North Macedonia | 5,076 | 5,191 | 2,024 | 2,104 | 595 | 609 | 31,152 | : |
| Albania | 3,930 | 4,294 | 8,012 | 8,115 | 1,646 | 1,930 | 44,653 | 47,951 |
| Serbia | 7,899 | 8,320 | 2,114 | 2,224 | 642 | 730 | 77,815 | 81,054 |
| Bosnia and Herzegovina | 4,249 | 4,451 | 75,988 | 75,405 | 20,201 | 19,937 | 37,160 | 37,573 |

Source: Eurostat

| | Gross value added per employee - thousand euro | | Gross operating surplus/turnover (gross operating rate) - percentage | | Value added at factor cost in turnover or gross premiums written – percentage * | | Investment rate (investment/value added at factor cost) – percentage ** | |
|-------------------------------|--|-------|--|------|---|------|---|------|
| TIME | 2019 | 2020 | 2019 | 2020 | 2019 | 2020 | 2019 | 2020 |
| European Union - 27 countries | 54.8 | 54.1 | 10.6 | 10.7 | 32.2 | 31.9 | 12.6 | 11.2 |
| Belgium | 94.5 | 93.2 | 11.6 | 12.0 | 26.6 | 26.4 | 26.1 | 28.1 |
| Bulgaria | 15.1 | 19.3 | 12.2 | 12.9 | 24.7 | 22.8 | 34.4 | 32.6 |
| Czechia | 39.0 | 38.9 | 11.6 | 11.7 | 23.2 | 23.8 | 26.4 | 27.2 |
| Denmark | 79.3 | 77.7 | 8.6 | 8.8 | 33.9 | 33.9 | 6.0 | 6.8 |
| Germany | 57.3 | 61.1 | 12.3 | 12.4 | 39.7 | 37.5 | 8.1 | 7.9 |
| Estonia | 29.3 | 28.0 | 6.8 | 6.7 | 22.6 | 23.5 | 14.3 | 16.9 |
| Ireland | 72.7 | 69.3 | 14.1 | 12.8 | 30.8 | 27.5 | 7.7 | 6.6 |
| Greece | 23.8 | 26.8 | 8.0 | 11.0 | 19.9 | 22.6 | 12.3 | 13.7 |
| Spain | 47.7 | 45.7 | 9.2 | 8.7 | 31.9 | 32.1 | 11.8 | 7.5 |
| France | 65.8 | 60.1 | 6.6 | 6.1 | 31.1 | 31.6 | 12.0 | 11.1 |
| Croatia | 19.8 | 21.3 | 9.5 | 11.9 | 27.4 | 31.3 | 20.5 | 18.5 |
| Italy | 64.7 | 60.2 | 13.2 | 13.5 | 31.8 | 31.8 | 8.8 | 6.6 |
| Cyprus | 35.3 | 32.3 | 11.4 | 10.3 | 26.7 | 26.5 | 8.6 | 7.6 |
| Latvia | 19.3 | 19.1 | 8.9 | 8.5 | 25.7 | 26.9 | 15.3 | 15.6 |
| Lithuania | 20.0 | 21.3 | 9.0 | 10.0 | 28.7 | 29.7 | 22.1 | 18.4 |
| Luxembourg | 69.1 | 68.2 | 11.0 | 11.3 | 36.1 | 36.0 | 13.6 | 14.8 |
| Hungary | 32.0 | 28.7 | 16.7 | 13.8 | 25.7 | 24.0 | 21.1 | 19.9 |
| Malta | 60.1 | 52.3 | 25.9 | 21.3 | 37.9 | 34.6 | 11.7 | 6.2 |
| Netherlands | 104.5 | 109.5 | 13.2 | 13.9 | 30.1 | 30.5 | 9.4 | 9.6 |
| Austria | 67.8 | 70.9 | 8.6 | 9.6 | 35.4 | 36.3 | 6.9 | 7.4 |
| Poland | 33.2 | 30.9 | 16.6 | 14.9 | 27.2 | 25.4 | 25.6 | 12.5 |
| Portugal | 24.7 | 24.8 | 9.6 | 9.5 | 31.9 | 32.4 | 19.6 | 14.7 |
| Romania | 19.1 | 18.3 | 15.7 | 15.1 | 32.0 | 29.5 | 64.6 | 59.2 |
| Slovenia | 31.8 | 33.7 | 10.1 | 10.7 | 30.5 | 32.5 | 15.8 | 13.7 |
| Slovakia | 32.0 | 32.6 | 11.2 | 11.0 | 20.9 | 21.1 | 20.3 | 33.5 |
| Finland | 63.7 | 66.6 | 8.0 | 8.7 | 29.6 | 29.9 | 9.5 | 9.6 |
| Sweden | 71.7 | 78.6 | 7.7 | 7.9 | 31.5 | 31.5 | 12.3 | 11.7 |
| North Macedonia | 15.4 | : | 19.6 | : | 31.7 | : | 61.4 | : |
| Albania | 13.3 | 12.7 | 20.0 | 19.4 | 29.4 | 28.9 | 32.4 | 45.6 |
| Serbia | 21.2 | 23.8 | 10.2 | 12.4 | 20.5 | 23.8 | 26.4 | 19.3 |
| Bosnia and Herzegovina | 17.3 | 19.4 | 17.7 | 19.9 | 30.4 | 32.8 | 21.8 | 17.4 |

*Value added at factor costs is the gross income from operating activities after adjusting for operating subsidies and indirect taxes. Value adjustments (such as depreciation) are not subtracted.

**Investment - Gross investment in tangible goods is defined as investment during the reference period in all tangible goods. Included are new and existing tangible capital goods, whether bought from third parties or produced for own use (i.e. Capitalised production of tangible capital goods), having a useful life of more than one year including non-produced tangible goods such as land. Investments in intangible and financial assets are excluded.

Source: Eurostat

2. Financial indicators from the annual reports for Slovenia based on national methodology

Slovenia - Financial indicators from the annual reports - Financial data of business subjects - legal persons and individual private entrepreneurs.

| Business subjects in F-construction (Nace Rev. 2), by annual reports | | | | |
|--|---------------------|---------------------|-------------------|-------------------------------|
| Year 2021 | Number of companies | Number of employees | Revenues, mio EUR | Value added per employee, EUR |
| Business subjects - legal persons Total | 7,876 | 49,419 | 6,342 | 34,600 |
| Micro | 6,721 | 19,174 | 1,585 | 24,718 |
| Small | 1,075 | 20,656 | 2,600 | 36,567 |
| Medium | 67 | 5,743 | 1,136 | 48,279 |
| Large | 13 | 3,846 | 1,021 | 52,882 |

Source: Ajpes, Kapos CCIS

| Individual private entrepreneurs in construction (Nace Rev. 2), by annual reports | | | | |
|---|--|---------------------|-------------------|-------------------------------|
| Year 2021 | Number of Individual private entrepreneurs (self employed) | Number of employees | Revenues, mio EUR | Value added per employee, EUR |
| Micro | 10,115 | 10,332 | 1,136 | 35,400 |

Source: Ajpes, Kapos CCIS

| Business subjects in F-construction (Nace Rev. 2), by annual reports | | | | | |
|--|--------|--------|--------|--------|--------|
| Year 2021 | 2017 | 2018 | 2019 | 2020 | 2021 |
| Number of companies | 7,154 | 7,206 | 7,283 | 7,575 | 7,876 |
| Number of employees | 37,216 | 41,012 | 45,594 | 46,08 | 49,419 |
| Revenues, mio EUR | 4,0 | 4,9 | 5,2 | 5,2 | 6,3 |
| Net revenues from sales, mio EUR | 3,85 | 4,80 | 5,04 | 5,01 | 6,09 |
| Value added, mio EUR | 1,1 | 1,3 | 1,5 | 1,5 | 1,7 |
| Value added per employee, EUR | 29,161 | 31,567 | 32,054 | 32,859 | 34,600 |
| Net profit / loss, mio EUR | 83,9 | 157,0 | 169,0 | 144,0 | 156,0 |

Source: Ajpes, Kapos CCIS

3. Financial indicators from the annual reports for Croatia based on national methodology

| TOTAL TURNOVER (mio EUR) | | | FINANCIAL YEAR'S PROFIT OR LOSS (mio EUR) | | GROSS INVESTMENTS (mio EUR) | | NUMBER OF EMPLOYEES (mio EUR) | | NUMBER OF CONSTRUCTION COMPANIES (mio EUR) | |
|--------------------------|--------------|--------------|---|--------------|-----------------------------|--------------|-------------------------------|---------------|--|--------------|
| FOR YEAR | 2020 | 2021 | 2020 | 2021 | 2020 | 2021 | 2020 | 2021 | 2020 | 2021 |
| MICRO | 1,846 | 2,206 | -112.9 | 94.8 | 40.8 | 35.2 | 5,698 | 6,084 | 2,050 | 2,254 |
| SMALL | 2,859 | 3,053 | 182.3 | 141.6 | 35.3 | 34.2 | 4,844 | 5,082 | 205 | 221 |
| MEDIUM | 1,899 | 2,218 | 80.2 | 110.8 | 30.5 | 38.1 | 1,934 | 2,192 | 18.7 | 20.9 |
| LARGE | 1,578 | 1,917 | 27.7 | 59.2 | 336.7 | 425.2 | 1,504 | 1,609 | 2.8 | 3.2 |
| TOTAL | 8,182 | 9,394 | 177.3 | 406.5 | 443.3 | 532.7 | 13,98 | 14,967 | 2,277 | 2,500 |

Source: <https://digitalnakomora.hr/home>

4. Financial indicators from the annual reports for North Macedonia based on national methodology

| Performance of enterprises by industrial activities and size class by number of persons employed, by NKD REV 2 | | | | |
|--|---------------------|---------------------|-------------------|---|
| Year 2021 | Number of companies | Number of employees | Revenues, mio EUR | Value added at factor cost, million EUR |
| Total number of enterprises | 5,487 | 32,550 | 1.678 | 0.474 |
| Micro (0-9 employees) | 4,891 | 11,933 | 0.459 | 0.133 |
| Small (10-49 employees) | 527 | 9,938 | 0.539 | 0.146 |
| Medium (50-249 employees) | 60 | 5,746 | 0.376 | 0.110 |
| Large (250 + employees) | 9 | 4,933 | 0.304 | 0.086 |

Source: State Statistical Office - Republic of North Macedonia

| Need of labour in Construction sector for 2022 | | | | | | |
|--|---|--|-------------------|-------------|------------------------|------------|
| Year 2022 | Number of employers that have need for labour | Level of required education for the job position | | | | |
| | | Expected employments | Elementary school | High School | Upper of higher school | University |
| Construction sector | 125 | 792 | 164 | 467 | 64 | 97 |

Source: Employment Service Agency - Republic of North Macedonia

| Year | Business subjects in F-construction (Nace Rev. 2), by annual reports | | | | |
|-------------------------------------|--|--------------|--------------|--------------|--------------|
| | 2017 | 2018 | 2019 | 2020 | 2021 |
| Number of companies | 4,483 | 4,925 | 5,076 | 5,242 | 5,487 |
| Number of employees | 33,294 | 32,765 | 31,469 | 31,511 | 32,550 |
| Revenues, mio EUR | 1.44 | 1.38 | 1.51 | 1.51 | 1.68 |
| Net revenues from sales, mio EUR | N/A | N/A | N/A | N/A | N/A |
| Value added at factor cost, mio EUR | 0.45 | 0.44 | 0.48 | 0.45 | 0.47 |
| Personnel costs mio, EUR | 0.19 | 0.18 | 0.18 | 0.18 | 0.20 |
| Net profit / loss, mio EUR | 0.26 | 0.26 | 0.30 | 0.25 | 0.28 |

Source: State Statistical Office - Republic of North Macedonia



G. Digitalization in companies for the project's partner countries

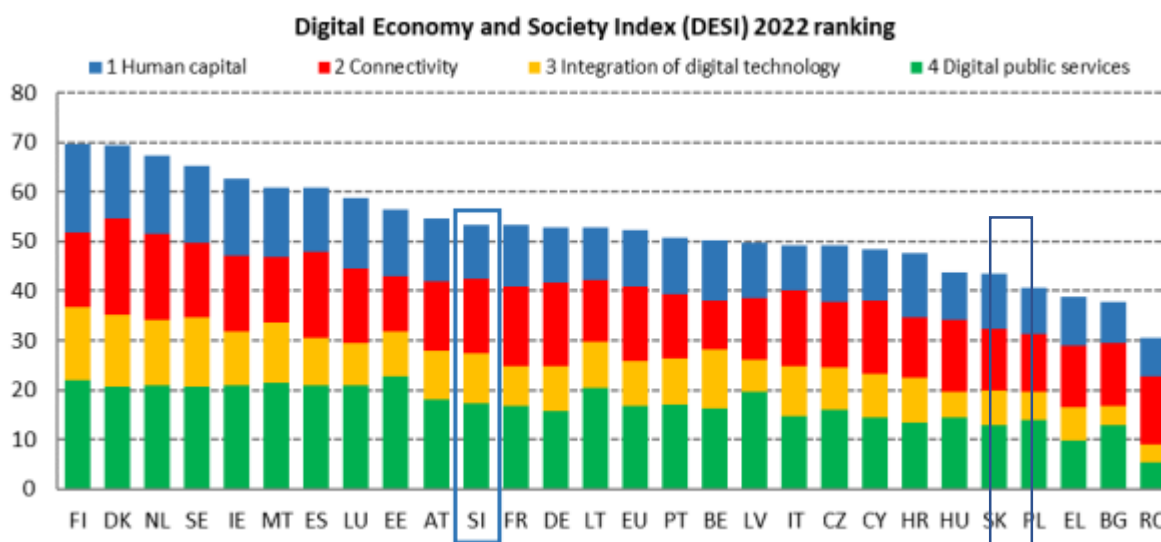
1. Digital Economy and Society Index (DESI) for Slovenia and Croatia (no data for MK)

Digital transformation through the use of technology changes the business operations of companies and can thus help to reduce costs and increase productivity. The European Union has been monitoring the progress of member states since 2014. In the overall ranking of the index, which measures the digital progress of the Member States, Slovenia moved up two places. Slovenia ranks 11th among the 27 EU Member States in the 2022 edition of the DESI. The country's relative progress generally aligns with the EU average. Slovenia remains above the European average in the field of connectivity, where we have also contributed to excellent results through broadband network building, and in the area of integration of digital technologies, especially cloud services and artificial intelligence. Based on the same methodology, the DESI Index is available for Slovenia and Croatia, but not for North Macedonia.

In the period 2017–2022, Slovenia improved its ranking among EU Member States in the area of digitalisation of the economy and society, but at the same time its lead over the EU average (according to DESI) continues to shrink, and in the global comparison Slovenia even fell from 31st to 37th place between 2020 and 2022. Slovenia's competitive advantage over the EU has also gradually narrowed and its gap with innovation leaders in the areas of digitalisation and automation of the business sector has widened, with Slovenia remaining relatively competitive in robotisation and e-sales.

The pace of a profound digital transformation of companies is slow and not even the COVID-19 crisis has noticeably helped to accelerate progress: the crisis mainly led to an accelerated use of basic digital tools (e.g. communication tools) and, for example, an increase in online sales, while its impact on the use of more sophisticated technologies or their integration was much smaller.

Croatia ranks 21st of 27 EU Member States in the 2022 edition of the Digital Economy and Society Index (DESI).



Source: European Commission <https://digital-strategy.ec.europa.eu/en/policies/desi>

Slovenia ranks 17th among the 27 EU countries in the **Human capital** dimension. In Human capital, Croatia ranks 9th of the 27 EU countries.

| | Slovenia | | | EU | Croatia | | |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | DESI 2020 | DESI 2021 | DESI 2022 | DESI 2022 | DESI 2020 | DESI 2021 | DESI 2022 |
| 1a1 At least basic digital skills | NA | NA | 50% | 54% | NA | NA | 63% |
| % individuals | | | 2021 | 2021 | | | 2021 |
| 1a2 Above basic digital skills | NA | NA | 20% | 26% | NA | NA | 31% |
| % individuals | | | 2021 | 2021 | | | 2021 |
| 1a3 At least basic digital content creation skills⁴ | NA | NA | 66% | 66% | NA | NA | 81% |
| % individuals | | | 2021 | 2021 | | | 2021 |
| 1b1 ICT specialists | 3.9% | 4.4% | 4.8% | 4.5% | 3.2% | 3.7% | 3.6% |
| % individuals in employment aged 15-74 | 2019 | 2020 | 2021 | 2021 | 2019 | 2020 | 2021 |
| 1b2 Female ICT specialists | 20% | 17% | 17% | 19% | 21% | 18% | 21% |
| % ICT specialists | 2019 | 2020 | 2021 | 2021 | 2019 | 2020 | 2021 |
| 1b3 Enterprises providing ICT training | 28% | 26% | 26% | 20% | 23% | 23% | 23% |
| % enterprises | 2019 | 2020 | 2020 | 2020 | 2019 | 2020 | 2020 |
| 1b4 ICT graduates | 3.5% | 4.1% | 4.1% | 3.9% | 4.0% | 4.4% | 4.7% |
| % graduates | 2018 | 2019 | 2020 | 2020 | 2018 | 2019 | 2020 |

Source: European Commission

Slovenia ranks 9th among EU countries on **integrating digital technology** in business activities. Slovenian SMEs with at least a basic level of digital intensity level up with the EU average of 55 %. Croatia ranks 14th among EU countries on the Integration of digital technology.

| | Slovenia | | | EU | Croatia | | |
|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | DESI 2020 | DESI 2021 | DESI 2022 | DESI 2022 | DESI 2020 | DESI 2021 | DESI 2022 |
| 3a1 SMEs with at least a basic level of digital intensity | NA | NA | 55% | 55% | NA | NA | 50% |
| % SMEs | | | 2021 | 2021 | | | 2021 |
| 3b1 Electronic information sharing | 33% | 33% | 36% | 38% | 26% | 26% | 24% |
| % enterprises | 2019 | 2019 | 2021 | 2021 | 2019 | 2019 | 2021 |
| 3b2 Social media | 24% | 24% | 30% | 29% | 22% | 22% | 24% |
| % enterprises | 2019 | 2019 | 2021 | 2021 | 2019 | 2019 | 2021 |
| 3b3 Big data | 10% | 7% | 7% | 14% | 10% | 14% | 14% |
| % enterprises | 2018 | 2020 | 2020 | 2020 | 2018 | 2020 | 2020 |
| 3b4 Cloud | NA | NA | 38% | 34% | NA | NA | 35% |
| % enterprises | | | 2021 | 2021 | | | 2021 |
| 3b5 AI | NA | NA | 12% | 8% | NA | NA | 9% |
| % enterprises | | | 2021 | 2021 | | | 2021 |
| 3b6 ICT for environmental sustainability | NA | 74% | 74% | 66% | NA | 75% | 75% |
| % enterprises having medium/high intensity of green action through ICT | | 2021 | 2021 | 2021 | | 2021 | 2021 |
| 3b7 e-Invoices | 62% | 58% | 58% | 32% | 12% | 43% | 43% |
| % enterprises | 2018 | 2020 | 2020 | 2020 | 2018 | 2020 | 2020 |
| 3c1 SMEs selling online | 17% | 17% | 19% | 18% | 21% | 30% | 29% |
| % SMEs | 2019 | 2020 | 2021 | 2021 | 2019 | 2020 | 2021 |
| 3c2 e-Commerce turnover | 11% | 12% | 14% | 12% | 9% | 14% | 13% |
| % SME turnover | 2019 | 2020 | 2021 | 2021 | 2019 | 2020 | 2021 |
| 3c3 Selling online cross-border | 12% | 12% | 13% | 9% | 10% | 10% | 13% |
| % SMEs | 2019 | 2019 | 2021 | 2021 | 2019 | 2019 | 2021 |

Source: European Commission

2. Digital Economy and Society Index (DESI) for North Macedonia

Since the Digital Economy and Society Index (DESI) covers data only for Member states of EU, countries from Western Balkans including North Macedonia have not adopted yet the full methodology of DESI index. In the case of North Macedonia only Connectivity indicators are harmonized and collecting data for these group of indicators is done by the Broadband Competence Office of Republic of North Macedonia which was founded by the Ministry of Information Society and Administration.

| | | MKD (First BCO Report March 2020) | MKD (Second BCO Report September 2020) | MKD (Third BCO Report March 2021) | MKD (Fourth BCO Report September 2021) | MKD (Fifth BCO Report March 2022) |
|--|--------------|--|--|--|--|--|
| Connectivity indicators in DESI 2019 | | EU | | | | |
| 1a1 Fixed broadband coverage | 97,4% | 97,87% | 97,87% | 99,08% | 99,48% | 99,48% |
| %households | 2020 | | | | | |
| 1a2 Fixed broadband take-up | 77% | 70,91% | 72,95% | 73,58% | 75,79% | 77,92% |
| %households | 2020 | | | | | |
| 1b1 4G coverage | 99,7% | 99,36% | 99,38% | 99,39% | 99,39% | 99,39% |
| %households (average of operators) | 2020 | | | | | |
| 1b2 Mobile broadband take-up | 71% | 70,06% | 64,83% | 64,95% | 66,78% | 75,83% |
| Subscriptions per 100 people | 2019 | | | | | |
| 1b3 5G readiness | 51% | | 22,2 % | | | |
| Assigned spectrum as a % of total harmonised 5G spectrum | 2021 | | (July 2020) | 22,2% | 22,2% | 22,2% |
| 1c1 Fast broadband (NGA) coverage | 87% | 78,61% | 78,61% | 82,84% | 82,84% | 82,84% |
| %households | 2020 | | | | | |
| 1c2 Fast broadband take-up | 41% | 21,03% | 27,43% | 28,27% | 29,89% | 32,62% |
| %households | 2018 | | | | | |
| 1d1 Ultrafast broadband coverage | 60% | 43,8% | 43,8% | 63,1% | 63,1% | 63,1% |
| %households | 2018 | | | | | |
| 1d2 Ultrafast broadband take-up | 26% | 0,98% | 1,74% | 1,81% | 1,97% | 2,32% |
| %households | 2019 | | | | | |
| 1e1 Broadband price index | 69 | | | | | |
| Score (0 to 100) | 2020 | | | | | |

Source: Broadband Competence Office – Republic of North Macedonia

<https://bco.mioa.gov.mk/wp-content/uploads/2022/11/Sixth-Report-for-broadband-development-in-the-country-and-implementation-of-National-Operational-Broadband-Plan.pdf>

Aside from these Data, a Market report: “Monitoring the Digital Economy and Electronic Communications Services in the Western Balkans and Turkey” issued in 2019 by the European Commission, shows data for the 6 countries from Western Balkans and Turkey regarding the monitoring of key digital developments which will serve as a tool for tracking the progress made in digitalization in the region using the Digital Economy and Society Index (DESI) and associated indicators to monitor market developments for electronic communications and digital services in the seven countries. This data is incomparable with the one of EU countries since it does not include the human capital.

Data for North Macedonia

| Indicator | | 2018 | 2019 |
|--|-----------------|------|------|
| 1. Connectivity | | 28 | 23 |
| Indicator for which data available | | 5 | 7 |
| | EU Average 2019 | | |
| 1 A.1 Fixed BB Coverage % | 97% | 41% | 98% |
| 1 A.2 Fixed BB take-up % | 76% | 18% | 66% |
| 1. B.1 4G Coverage % | 91% | | 100% |
| 1. B.2 Mobile BB take-up (per 100 pop) | 90 | 59 | 69 |
| 1. C.1 NGA Coverage % | 50% | 50% | 50% |
| 1. C.2. Fast BB Take-up | 34% | 13% | 21% |
| 1. D.1 Ultrafast BB Coverage | 57% | n/c | |
| 1. D.2. Ultrafast BB Take-up % | 15% | n/c | 1% |
| 1. E.1 Broadband Price index | 87 | | |
| 2. Digital skills | | 5 | 3 |
| Indicator for which data available | | | |
| | EU Average 2019 | | |
| 2 A.1 Internet Users % | 81% | 70% | 78% |
| 2 A.1 B Individuals Not Using the Internet % | 13% | 23% | 18% |
| 2. A.2 At least Basic Digital Skills % | 57% | 34% | |
| 2. B.1 ICT Specialists % | 4% | 15% | 12% |
| 2. B.2 STEM Graduates | 19% | 7% | |

4. Business technology integration

Indicator for which data available

| | EU Average 2019 | 6 | 2 |
|--|-----------------|-----|-----|
| 4. A.1 Electronic Information Sharring % | 34% | | |
| 4. A.1 B Business Connectivity % | 97% | 94% | 82% |
| 4. A.3 Social Media % | 21% | 16% | |
| 4. A.4 eInvoices % | 23% | 6% | |
| 4. A.5 Cloud % | 26% | 4% | 11% |
| 4. B.1 SME Selling Online % | 17% | | |
| 4. B.2 eCommerce Turnover % | 10% | 2% | |
| 4. B.3 Selling Online Cross-border % | 8% | 1% | |

Source: Publication Office of the European Union

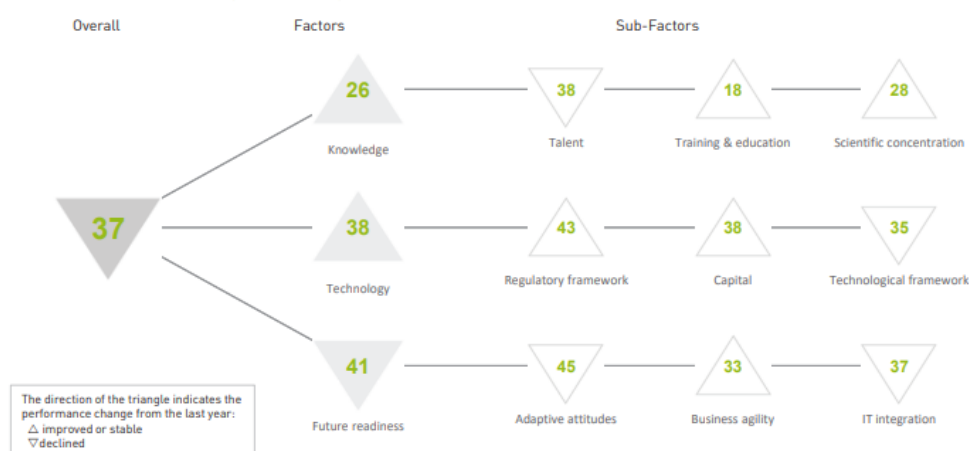
<https://op.europa.eu/en/publication-detail/-/publication/a54e990d-1fb3-11ea-95ab-01aa75ed71a1/language-en>

3. IMD World Digital Competitiveness Ranking 2022 for Slovenia and Croatia

The broader framework of digital competitiveness in the context of global economies is shown by the Digital Competitiveness Index (IMD), on which Slovenia ranked 37th and Croatia ranked 43th in 2022, out of 63 countries in the world. Based on the same methodology, the IMD World Digital Competitiveness Ranking is available for Slovenia and Croatia, but not available for North Macedonia.

SLOVENIA

OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

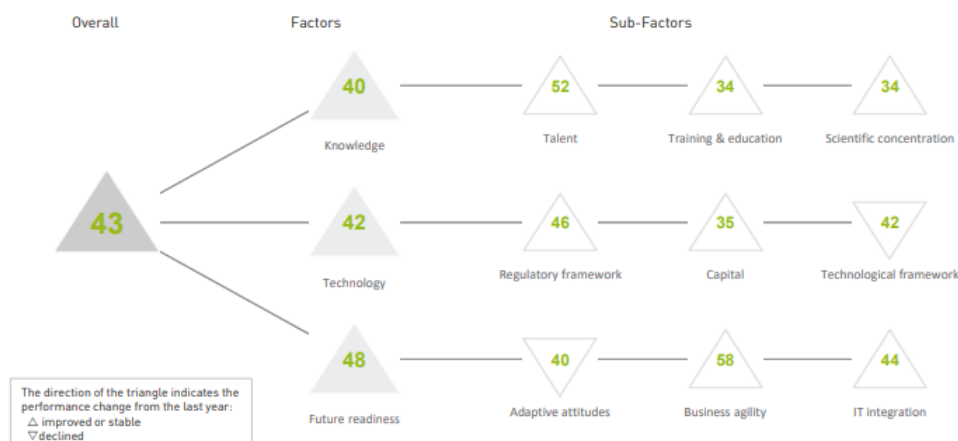
| | 2018 | 2019 | 2020 | 2021 | 2022 |
|------------------|------|------|------|------|------|
| OVERALL | 34 | 32 | 31 | 35 | 37 |
| Knowledge | 26 | 27 | 29 | 30 | 26 |
| Technology | 38 | 35 | 35 | 39 | 38 |
| Future readiness | 35 | 36 | 37 | 40 | 41 |

Source: IMD <https://www.imd.org/centers/wcc/world-competitiveness-center/rankings/world-digital-competitiveness-ranking/>

According to the digital competitiveness ranking (IMD World Digital Competitiveness), Croatia ranked 43rd in 2022 and improved its digital competitiveness by 12 places.

CROATIA

OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

| | 2018 | 2019 | 2020 | 2021 | 2022 |
|------------------|------|------|------|------|------|
| OVERALL | 44 | 51 | 52 | 55 | 43 |
| Knowledge | 43 | 42 | 41 | 47 | 40 |
| Technology | 49 | 50 | 49 | 50 | 42 |
| Future readiness | 54 | 60 | 62 | 60 | 48 |

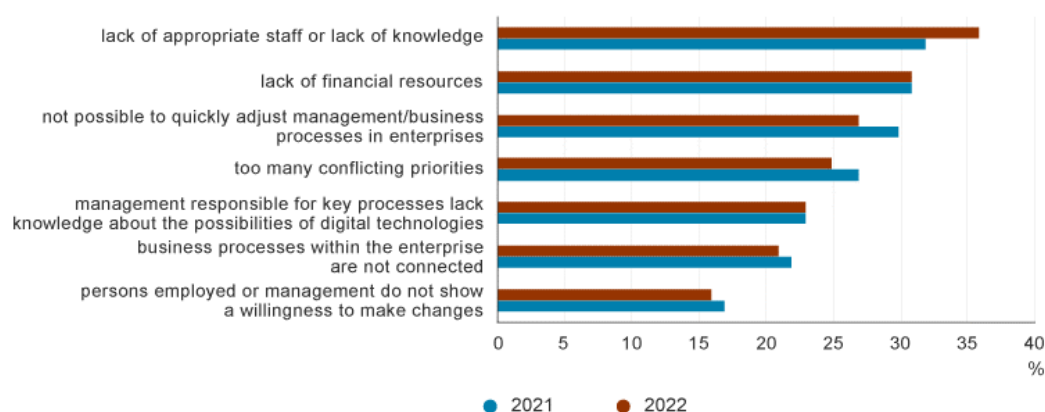
Source: IMD

4. Digitalization in companies for Slovenia - National database

The Statistical Office of the Republic of Slovenia collects and publishes data on the degree of digitization in **companies with at least 10 employees and the self-employed**. In digital transformation, the use of technologies changes the enterprise's business operations and can enable cost reduction, increased productivity, etc. 58% of enterprises with 10 or more employees and self-employed are hampered by problems in digital transformation of business (in 2021: 60%): 56% of small, 67% of medium-sized and 79% of large enterprises. 26% of enterprises have no problems with digital transformation and 43% stated that digital transformation is not essential for the successful performance of the enterprise (in 2021 46%).

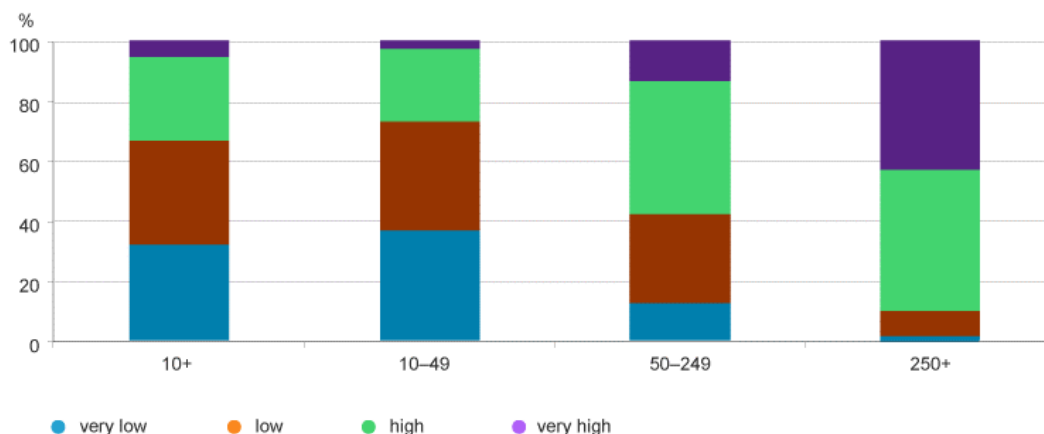
A fifth of the enterprises have a digital strategy for digital transformation of business that was approved by the management (in 2021: 17%): 17% of small, 30% of medium-sized and 56% of large enterprises.

Share of enterprises with 10 or more employees and self-employed by problems limiting digital business transformation, Slovenia



The rate of digitization of enterprises with at least 10 employees and self-employed is monitored by the digital intensity index, which consists of 12 indicators used to monitor the use of ICT in enterprises in an individual year. In 2022, the largest share of enterprises with at least 10 employees and self-employed had a low digital intensity index (35%). 32% of enterprises had a very low, 28% a high and 5% a very high digital intensity index. Among small enterprises 37% had a very low and the same share a low index, among medium-sized 44% had a high index and among large enterprises 47% had a high index.

Share of enterprises with 10 or more employees and self-employed according to the degree of digitalization, expressed by the digital intensity index, Slovenia, 2022



Source: Statistical Office of the Republic of Slovenia

* The rate of digitization of enterprises with at least 10 employees and self-employed is monitored by the digital intensity index, which consists of 12 indicators used to monitor the use of ICT in enterprises in an individual year.

In 2022, the rate of digitization was calculated on the basis of the following indicators:

- More than half of employees and self-employed have access to the Internet for business purposes – in 55% of enterprises more than half of employees and self-employed have such access (in 2021 50%).
- Enterprise employs ICT specialist – 21% of enterprises.
- Maximum contracted download speed of the fastest fixed Internet connection is at least 30 Mbit/s – 83% of enterprises (in 2021: 79%).
- Enterprise conducted remote meetings – 46% of enterprises.
- Enterprise makes persons employed aware of their obligations in ICT security related issues – 51% of enterprises.
- Enterprise provides training to develop ICT related skills of the persons employed in the previous year – 29% of enterprises.
- Enterprise uses at least three ICT security measures – 68% of enterprises.
- Enterprise has document(s) on measures, practices or procedures on ICT security – 40% of enterprises.
- Employees and self-employed have remote access to e-mail, documents or business apps – 86% of enterprises.
- Enterprise uses robots (industrial or service) – 7% of enterprises (6% industrial and 1% service robots).
- Enterprise generated at least 1% of its turnover in the previous year via computer networks – with orders via websites or via electronic data interchange (EDI) – in 2021 there were 20% of such enterprises, which is the same as in 2020.
- Enterprise generated more than 1% of its turnover via web sales and more than 10% of its web sales to private customers – in 2021 there were 9% of such enterprises (in 2020 8%).

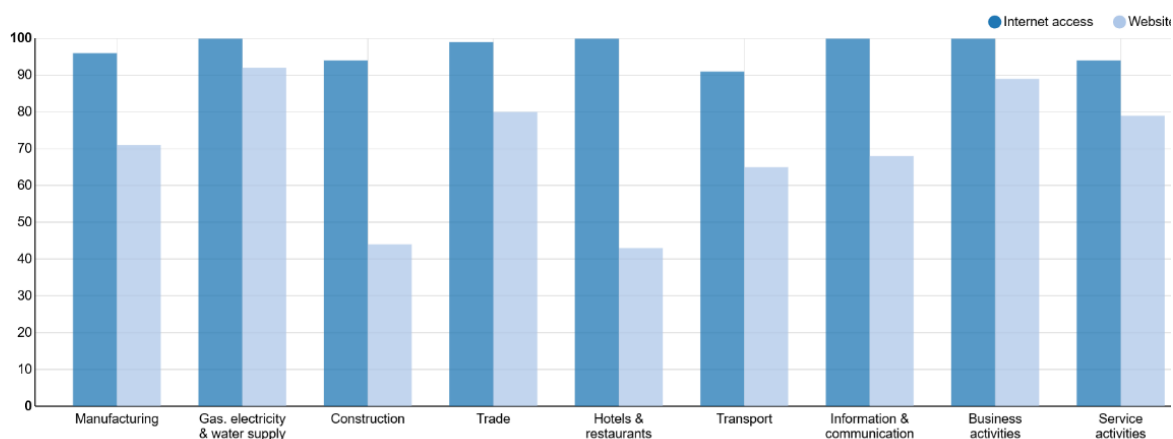
5. Digitalization in companies for Croatia - National database

The Croatian Bureau of Statistics conducts an annual survey on *Usage of Information and Communication Technologies (ICT) in Enterprises*.

Regarding the global enterprises in Croatia for 2022, there are some tendencies:

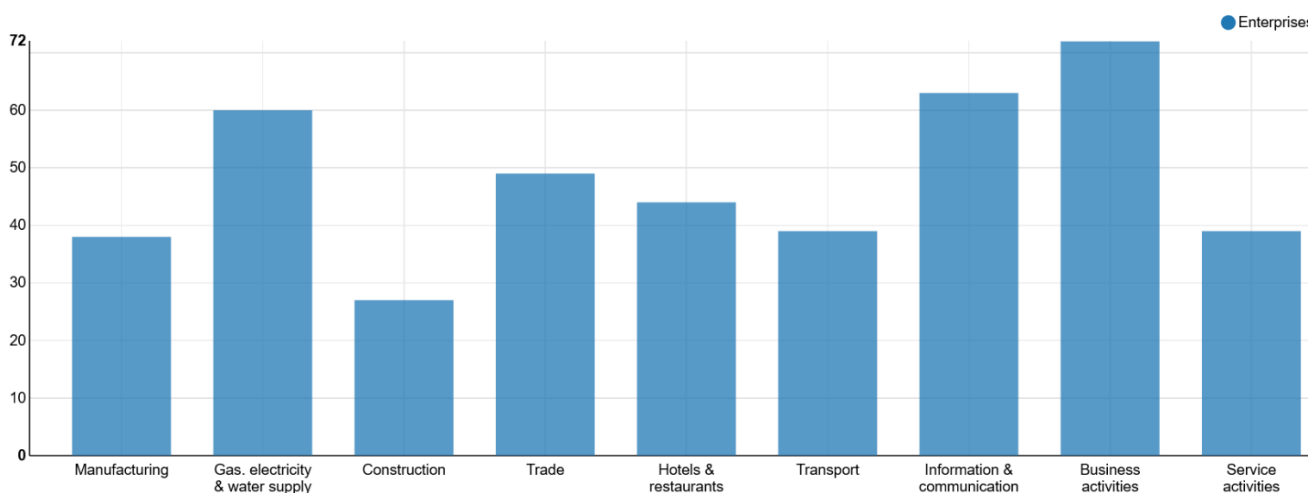
- High level of ICT integration in business conducts; 97% of enterprises used computers with internet access and 69% of enterprises owned a website.
- Usage of broadband internet access prevailed; 94% of enterprises used some type of fixed broadband internet connection.
- Internet sales covered only 17% of the total sales of goods and services.
- Cloud computing internet service as a new technology was used by 44% of enterprises.
- When considered specifically in usage of CRM or ERP cloud solutions, 20% companies use some kind of those solutions.
- Green ICT – 70% of companies took measures to reduce paper consumption, while 40% took measures to reduce the electricity consumption of ICT equipment.

G-1 USAGE OF ICT IN ENTERPRISES, BY ACTIVITIES, 2022



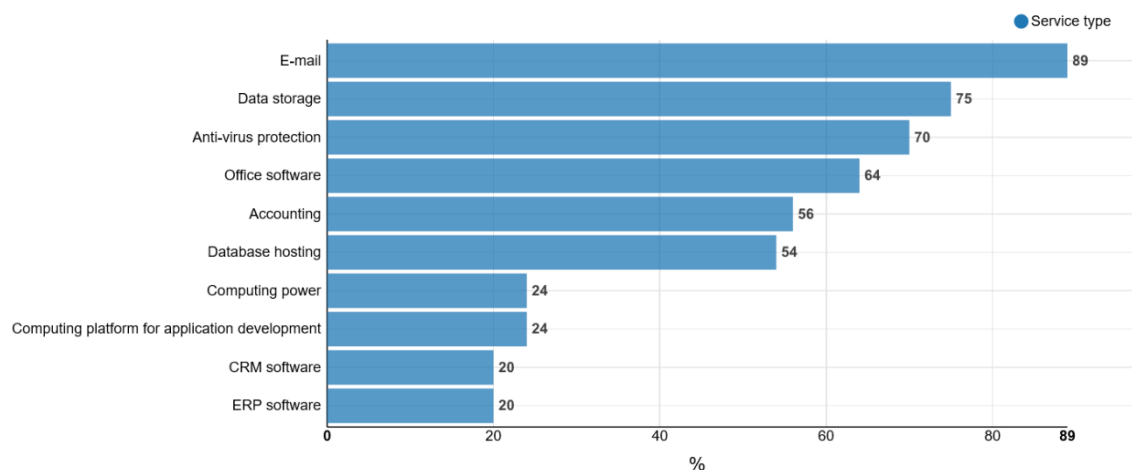
Source: Croatian bureau of Statistics

G-5 USAGE OF INTERNET RESOURCES VIA CLOUD COMPUTING SERVICES, BY ACTIVITIES, 2022



Source: Croatian bureau of Statistics

G-6 USAGE OF CLOUD COMPUTING SERVICES, BY SERVICE TYPE, 2022



Source: Croatian bureau of Statistics

6. Digitalization in companies for North Macedonia - National database

Based on data of the State Statistical Office, in 2022, 99,1% of Macedonian enterprises used a computer in their work. From the enterprises with computer use, access to Internet is used by 95.1% and fixed broadband connection to the Internet is used by 89.0% of the enterprises with 10 or more employees.

Regarding e-commerce, 13.4% of the enterprises received e-sales orders via computer networks, and 12.3% of the enterprises received web sales orders for products or services via a website.

T1 Information and communication technologies in the enterprises according to the number of employees, 2022

| | Total | Enterprises according to the number of employees | | | |
|---|-------|--|----------|--------|--|
| | (10+) | (10-49) | (50-249) | (250+) | |
| Enterprises with computer | 99,1 | 99,0 | 99,5 | 100,0 | |
| Enterprises with Internet access | 95,1 | 94,8 | 96,8 | 97,1 | |
| - Via fixed broadband connection (DSL, cable, fiber optics or other technology) | 89,0 | 88,9 | 88,7 | 93,8 | |
| - the maximum contracted download speed of the fastest Internet connection is least 30 Mbit/s | 73,0 | 72,8 | 70,6 | 89,0 | |
| - the maximum contracted download speed of the fastest Internet connection is at least 100 Mbit/s | 38,1 | 37,3 | 40,0 | 56,6 | |
| Online ordering or reservation or booking, e.g. shopping cart | 13,4 | 12,5 | 17,7 | 18,7 | |
| Possibility for visitors to customise or design online goods or services | 12,3 | 11,5 | 16,9 | 15,1 | |

T2 E-commerce in the enterprises, according to the number of employees, 2022

| | Total | Enterprises according to the number of employees | | | |
|---|-------|--|----------|--------|--|
| | (10+) | (10-49) | (50-249) | (250+) | |
| E-sales: have received orders via computer networks | 13,5% | 12,7% | 17,7% | 18,7% | |
| Web sales: received orders for products or services via a website | 12,4% | 11,7% | 17,0% | 15,1% | |
| = /> 1% | 4,5% | 4,4% | 5,5% | 1,5% | |
| < 1% | 2,3% | 1,9% | 4,7% | 3,4% | |
| B2C (Sales to private consumers) | 5,5% | 5,0% | 9,0% | 4,9% | |
| B2B (Sales to other enterprises) and B2G (Sales to public authorities) | 3,1% | 2,9% | 4,8% | 2,4% | |
| EDI-type sales: received orders via EDI-type messages in an agreed format, e.g. EDIFACT, UBL, XML | 1,3% | 1,3% | 1,0% | 4,6% | |

Source: Republic of North Macedonia State Statistical Office

H. Digitization of construction companies for the project's partner countries

The purpose of publishing the data is to present to what extent enterprises with 10 or more employees and self-employed use information-communication technologies (ICT), sell or buy via websites or through computer data exchange, i.e. degree of digitalization of enterprises.

The survey covers a part of the target population on the basis of which we make conclusions about the scope of the usage of information-communication technologies (ICT) and e-commerce of the entire population

1. Indicators of digital society for construction in Slovenia

| Number of enterprises with 10 or more employees and self-employed by CONTRACTED FIXED INTERNET SPEED | | | | |
|--|--------------------|-------|------------------|-------|
| | 41–43 Construction | | Activity – TOTAL | |
| | 2021 | 2022 | 2021 | 2022 |
| 0 Number of enterprises | 1,413 | 1,45 | 7,712 | 8,131 |
| 1 Enterprises with access to the Internet | 1,377 | 1,354 | 7,67 | 7,984 |
| 1.1. Access via fixed connection | 1,164 | 1,221 | 7,228 | 7,73 |
| 1.1.1 Less than 30 Mbit/s | 217 | 189 | 1,117 | 1,013 |
| 1.1.2 30 but less than 100 Mbit/s | 344 | 381 | 2,186 | 2,288 |
| 1.1.3 At least 100 but less than 500 Mbit/s | 392 | 445 | 2,706 | 3,078 |
| 1.1.4 At least 500 Mbit/s but less than 1 Gbit/s | 67 | 90 | 525 | 722 |
| 1.1.5 At least 1 Gbit/s | 143 | 116 | 693 | 629 |

| Number of enterprises with 10 or more employees and self-employed by TYPE OF ACCESS AND PROVISION OF PORTABLE DEVICES | | | | |
|---|--------------------|-------|------------------|-------|
| | 41–43 Construction | | Activity – TOTAL | |
| | 2021 | 2022 | 2021 | 2022 |
| 0 Number of enterprises | 1,413 | 1,45 | 7,712 | 8,131 |
| 1 Enterprises with access to the Internet | 1,377 | 1,354 | 7,67 | 7,984 |
| 1.1 Access via fixed or mobile connection | 1,336 | 1,354 | 7,621 | 7,984 |
| 1.1.1 Access via fixed connections, e.g. xDSL, fiber optics, cable | 1,164 | 1,221 | 7,228 | 7,73 |
| 1.1.2 Access via mobile telephone networks | 1,227 | 1,194 | 7,06 | 7,327 |
| 2 Enterprises provided a portable device that allows Internet connection via mobile telephone networks | 1,227 | 1,194 | 7,06 | 7,327 |

| Number of enterprises with 10 or more employees and self-employed by WEBSITE FUNCTIONALITY | | | | |
|--|--------------------|------|------------------|-------|
| | 41–43 Construction | | Activity – TOTAL | |
| | 2021 | 2022 | 2021 | 2022 |
| 0 Number of enterprises | 1,413 | 1,45 | 7,712 | 8,131 |
| 1 Enterprises with a website | 1,019 | 856 | 6,424 | 6,594 |
| 1.1 Description of goods or services, price information | 982 | 846 | 6,271 | 6,496 |
| 1.2 Online ordering or reservation or booking | 54 | 76 | 1,687 | 1,616 |
| 1.3 Online order tracking | 9 | Z | 674 | 869 |
| 1.4 Possibility for visitors to customise or design the products or services | 36 | 19 | 540 | 631 |
| 1.5 Personalised content on the website for regular/repeated visitors | Z | 29 | 515 | 581 |
| 1.6 Link to enterprise profile on social networks | 227 | - | 3,078 | - |
| 1.7 Advertisement of job positions or online job application | 227 | 198 | 2,51 | 2,653 |
| 1.9 Is multilingual | - | 202 | - | 3,543 |

| Number of enterprises with 10 or more employees and self-employed by STRUCTURE OF INVOICES SENT IN THE PREVIOUS YEAR | | | | |
|--|--------------------|-------|------------------|-------|
| | 41–43 Construction | | Activity – TOTAL | |
| | 2021 | 2022 | 2021 | 2022 |
| 0 Number of enterprises | 1,413 | 1,45 | 7,712 | 8,131 |
| 1 Sent invoices in standard structure suitable for automated processing (e-invoices) in the previous year | 656 | 645 | 4,479 | 4,919 |
| 1.1 Sent less than 10% of all invoices in standard structure suitable for automated processing (e-invoices) | 385 | 362 | 2,199 | 2,093 |
| 1.2 Sent at least 10% but less than 25% of all invoices in standard structure suitable for automated processing (e-invoices) | 106 | 120 | 866 | 845 |
| 1.3 Sent at least 25% but less than 50% of all invoices in standard structure suitable for automated processing (e-invoices) | 77 | 70 | 546 | 779 |
| 1.4 Sent at least 50% but less than 75% of all invoices in standard structure suitable for automated processing (e-invoices) | 15 | 32 | 372 | 452 |
| 1.5 Sent at least 75% of all invoices in standard structure suitable for automated processing (e-invoices) | 72 | 61 | 496 | 750 |
| 2 Sent invoices in electronic form not suitable for automated processing (e.g. e-mail, attachment as PDF) in the previous year | 874 | 958 | 5,849 | 6,54 |
| 3 Sent invoices in paper form in the previous year | 1,336 | 1,261 | 7,201 | 7,302 |

| Number of enterprises with 10 or more employees and self-employed by ELECTRONIC EXCHANGE OF INFORMATION IN THE ENTERPRISE | | | | |
|---|--------------------|------|------------------|-------|
| | 41–43 Construction | | Activity – TOTAL | |
| | 2021 | 2022 | 2021 | 2022 |
| 0 Number of enterprises | 1,413 | 1,45 | 7,712 | 8,131 |
| 1 Usage of ERP software package in enterprises for sharing information between different functional areas | 242 | 181 | 2,76 | 3,16 |
| 2 Usage of CRM software package in enterprises | 73 | 97 | 1,684 | 2,08 |
| 2.1 Usage of CRM software package for capturing and storing information about clients | 73 | 97 | 1,684 | 2,08 |
| 2.2 Usage of CRM software package for analysing the information about clients | 40 | 58 | 972 | 1,379 |
| 3 Usage of software solutions for paperless office, e.g. document system, BPM (Business Process Management) systems for business process management | 70 | 99 | 1,225 | 1,69 |
| 4 Usage of software solutions for human resource management (HRM) | 9 | 37 | 670 | 958 |
| 5 Usage of tools to support teamwork and collaboration, e.g. MS Teams, Skype, Slack, Google Chat | 300 | 324 | 4,077 | 4,424 |
| 6 Have a digital business transformation strategy | 79 | 57 | 1,334 | 1,619 |

| Number of enterprises with 10 or more employees and self-employed by ELECTRONIC SALES IN THE PREVIOUS YEAR | | | | |
|--|--------------------|------|------------------|-------|
| | 41–43 Construction | | Activity – TOTAL | |
| | 2021 | 2022 | 2021 | 2022 |
| 0 Number of enterprises | 1,413 | 1,45 | 7,712 | 8,131 |
| 1 Enterprises sold via websites or EDI in agreed format in previous year | 49 | 56 | 2,119 | 2,109 |
| 1.1 Enterprises generated at least 1% of their turnover with sales via websites or EDI | 18 | 56 | 1,537 | 1,645 |
| 1.2 Enterprises generated at least 2% of their turnover with sales via websites or EDI | Z | 20 | 1,354 | 1,475 |
| 1.3 Enterprises generated at least 5% of their turnover with sales via websites or EDI | Z | 10 | 1,133 | 1,224 |
| 2 Enterprises sold via websites in previous year | 49 | 50 | 1,833 | 1,81 |
| 2.7 Enterprise sold via enterprise website | 45 | 20 | 1,33 | 1,289 |
| 2.8 Enterprise sold via e-commerce marketplace | Z | 30 | 698 | 864 |
| 2.9 Enterprises sold via websites to private consumers | Z | 40 | 1,289 | 1,265 |
| 2.10 Enterprises sold via websites to other enterprises, public authorities | 27 | 40 | 1,276 | 1,34 |
| 2.11 Enterprises received orders via websites from customers located in Slovenia | Z | 50 | 1,707 | 1,617 |
| 2.12 Enterprises received orders via websites from customers located in other EU Member States | - | 10 | 903 | 912 |
| 2.13 Enterprises received orders via websites from customers located in other countries | - | 10 | 368 | 369 |
| 3 Enterprises sold via EDI (Electronic Data Interchange) in previous year | 9 | 6 | 462 | 544 |

| Value (million EUR) in enterprises with 10 or more employees and self-employed by VALUE OF E-COMMERCE SALES IN THE PREVIOUS YEAR | | | | |
|--|--------------------|---------|------------------|--------|
| | 41–43 Construction | | Activity – TOTAL | |
| | 2021 | 2022 | 2021 | 2022 |
| 0 Turnover in the previous year (excluding VAT) | 3,888 | 5,735 M | 76,102 | 92,462 |

| Number of employees and self-employed in enterprises with 10 or more employees and self-employed by ICT USAGE AMONG EMPLOYEES AND SELF-EMPLOYED | | | | |
|---|--------------------|--------|------------------|---------|
| | 41–43 Construction | | Activity – TOTAL | |
| | 2021 | 2022 | 2021 | 2022 |
| 0 Number of employees and self-employed | 38,488 | 40,07 | 415,87 | 423,368 |
| 1 Number of employees and self-employed with access to the Internet for business purposes | 12,808 | 15,921 | 242,211 | 261,634 |
| 2 Number of employees and self-employed provided with a portable device that allows Internet connection via mobile telephone networks | 9,172 | 9,964 | 149,101 | 155,493 |

| Number of enterprises with 10 or more employees and self-employed by PURCHASE OF CLOUD COMPUTING SERVICE | | |
|--|--------------------|------------------|
| 2021 | 41–43 Construction | Activity – TOTAL |
| 0 Number of enterprises | 1,413 | 7,712 |
| 1 Enterprises purchasing cloud computing services | 374 | 3,292 |
| 1.1 E-mail | 274 | 2,418 |
| 1.2 Office software, e.g. word processors, spreadsheets | 215 | 2,158 |
| 1.3 Hosting the enterprise's database | 185 | 1,251 |
| 1.4 Storage of files (all types of files, backup files of enterprise) | 72 | 838 |
| 1.5 Finance or accounting software applications | 13 | 693 |
| 1.6 Enterprise Resource Planning (ERP) software applications | 278 | 2,374 |
| 1.7 Software application for managing information about customers (CRM) | 176 | 1,414 |
| 1.8 Security software applications, e.g. antivirus program, virtual private network (VPN), network access control | 247 | 2,165 |
| 1.9 Computing power to run the enterprise's own software, e.g. virtual processors | 41 | 936 |
| 1.10 Computing platform providing a hosted environment for application development, testing or deployment, e.g. reusable software modules, application programming interfaces (APIs) | 53 | 746 |
| 1.11 Other cloud computing services | 10 | 275 |

| Number of enterprises with 10 or more employees and self-employed by TYPE OF PERFORMER OF ICT FUNCTIONS | | |
|---|--------------------|------------------|
| 2022 | 41–43 Construction | Activity – TOTAL |
| 0 Number of enterprises | 1,450 | 8,131 |
| 1 ICT functions performed by own employees (incl. those employed in parent or affiliate enterprises) | 251 | 2,902 |
| 2 ICT functions performed by external suppliers | 796 | 6,132 |

| Number of enterprises with 10 or more employees and self-employed by REASON FOR USAGE OF ROBOTICS | | |
|--|--------------------|------------------|
| 2022 | 41–43 Construction | Activity – TOTAL |
| 0 Number of enterprises | 1,450 | 8,131 |
| 1 Enterprises using robotics | 13 | 537 |
| 1.3 To enhance safety at work | 6 | 400 |
| 1.4 To ensure high precision or standardized quality of processes and/or goods and services produced | 6 | 504 |
| 1.5 To expand the range of goods produced or services provided by the enterprise | 13 | 316 |

| Number of enterprises with 10 or more employees and self-employed by USAGE OF ROBOTICS | | |
|---|-----------------------|------------------|
| 2022 | 41–43 Construction | Activity – TOTAL |
| 0 Number of enterprises | 1,45 | 8,131 |
| A1 Enterprises using robotics | 13 | 537 |
| A1.1 Industrial robots, e.g. robotic welding, laser cutting, spray painting | 13 | 504 |
| B1.1 Enterprises using less than 5 robots | 13 | 375 |
| The usage of Internet of things by purpose in enterprises with 10 or more employees and self-employed by USAGE OF INTERNET OF THINGS | | |
| 2021 | 41–43 Construction | Activity – TOTAL |
| Number of enterprises – TOTAL | 1,413 | 7,712 |
| .Enterprises using interconnected devices or systems that can be monitored or remotely controlled via the Internet (Internet of Things) | 540 | 3,815 |
| ..For energy consumption management, e.g. smart-meters, smart-lights, smart-thermostats | 178 | 1,48 |
| ..For premises' security, e.g. smart-alarm systems, smart-smoke detectors, smart-door locks, smart-security cameras | 421 | 2,921 |
| ..For production processes, e.g. sensors or RFID tags used to monitor or automate the process | 55 | 912 |
| ..For logistics management, e.g. sensors for tracking products or vehicles in warehouse management | 240 | 1,409 |
| ..For condition-based maintenance, e.g. sensors to monitor maintenance needs of machines or vehicles | 58 | 322 |
| ..For other purposes | 18 | 192 |

| Number of enterprises with 10 or more employees and self-employed by PROBLEM LIMITING DIGITAL BUSINESS TRANSFORMATION | | | | |
|---|--------------------|------|------------------|-------|
| | 41–43 Construction | | Activity – TOTAL | |
| | 2021 | 2022 | 2021 | 2022 |
| 0 Number of enterprises | 1,413 | 1,45 | 7,712 | 8,131 |
| 1 Have a digital business transformation strategy | 79 | 57 | 1,334 | 1,619 |
| 2 Have problems with digital transformation | 758 | 735 | 4,641 | 4,745 |
| 2.1 Persons employed or management do not show a willingness to make changes in the enterprise | 231 | 247 | 1,276 | 1,309 |
| 2.2 Lack of appropriate staff or lack of knowledge | 428 | 406 | 2,489 | 2,922 |
| 2.3 Management responsible for key processes (e.g. marketing and sales, production, development of new products and services) have insufficient knowledge about the possibilities of digital technologies | 281 | 285 | 1,762 | 1,836 |
| 2.4 It is not possible to quickly adjust management or business processes in enterprises, e.g. quick experimentation with the usage of digital technologies, adaptation to changes | 415 | 353 | 2,318 | 2,201 |
| 2.5 Business processes within the enterprise are not connected | 414 | 353 | 1,717 | 1,698 |
| 2.6 There are too many conflicting priorities in the enterprise | 328 | 331 | 2,078 | 1,999 |
| 2.7 Lack of financial resources | 337 | 449 | 2,374 | 2,534 |
| 2.8 Digital transformation is not essential for the successful performance of the enterprise | 813 | 757 | 3,535 | 3,48 |
| 3 Do not have problems with digital transformation | 397 | 314 | 2,19 | 2,112 |

| Number of enterprises with 10 or more employees and self-employed by ORIGIN OF USED ARTIFICIAL INTELLIGENCE TECHNOLOGIES | | |
|---|-----------------------|------------------|
| 2021 | 41–43 Construction | Activity – TOTAL |
| 0 Number of enterprises | 1,413 | 7,712 |
| 1 Using artificial intelligence technologies | Z | 905 |
| 1.1 Developed by own employees (including those employed in parent or affiliate enterprise) | 10 | 243 |
| 1.2 Commercial software or systems were modified by own employees (including those employed in parent or affiliate enterprise) | 5 | 314 |
| 1.3 Open-source software or systems were modified by own employees (including those employed in parent or affiliate enterprise) | 5 | 241 |
| 1.4 Commercial software or systems ready to use were purchased (including examples where it was already incorporated in a purchased item or system) | 50 | 683 |
| 1.5 External providers were contracted to develop or modify them | 14 | 322 |

| Number of enterprises with 10 or more employees and self-employed by PURPOSE OF USAGE OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES | | |
|---|-----------------------|------------------|
| 2021 | 41–43 Construction | Activity – TOTAL |
| 0 Number of enterprises | 1,413 | 7,712 |
| 1 Using artificial intelligence technologies | Z | 905 |
| 1.1 For marketing or sales | 11 | 239 |
| 1.2 For production processes | - | 230 |
| 1.3 For organisation of business administration processes | 4 | 124 |
| 1.4 For management of enterprises | 9 | 184 |
| 1.5 For logistics | - | 78 |
| 1.6 For ICT security | 36 | 615 |
| 1.7 For human resource management or recruiting | - | 24 |

| Number of enterprises with 10 or more employees and self-employed by USAGE OF ARTIFICIAL INTELLIGENCE TECHNOLOGY | | |
|--|-----------------------|------------------|
| 2021 | 41–43 Construction | Activity – TOTAL |
| 0 Number of enterprises | 1,413 | 7,712 |
| 1 Using artificial intelligence technologies | Z | 905 |
| 1.1 Technologies performing analysis of written language (text mining) | - | 59 |
| 1.2 Technologies converting spoken language into machine-readable format (speech recognition) | 10 | 115 |
| 1.3 Technologies generating written or spoken language (natural language generation) | 23 | 267 |
| 1.4 Technologies identifying objects or persons based on images, e.g. image, fingerprint, face, object, video | 36 | 585 |
| 1.5 Machine learning (e.g. deep learning) for data analysis | - | 247 |
| 1.6 Technologies automating different workflows or assisting in decision-making (artificial intelligence based software robotic process automation) | - | 163 |
| 1.7 Technologies enabling physical movement of machines via autonomous decisions based on observation of surroundings, e.g. autonomous robots, self-driving vehicles, autonomous drone | Z | 45 |

| Number of employees and self-employed in enterprises with 10 or more employees and self-employed by REMOTE ACCESS AMONG EMPLOYEES AND SELF-EMPLOYED | | |
|--|-----------------------|------------------|
| 2022 | 41–43 Construction | Activity – TOTAL |
| 0 Number of employees and self-employed | 40,070 | 423,368 |
| 1 Number of employees and self-employed with remote access to the e-mail system of the enterprise | 7,139 M | 160,714 |
| 2 Number of employees and self-employed with remote access to documents of the enterprise, e.g. files, spreadsheets, presentations, photos | 4,314 M | 120,283 |
| 3 Number of employees and self-employed with remote access to business applications, software of the enterprise, e.g. access to accounting, sales, orders, CRM | 3,383 M | 101,58 |

Source: Statistical Office of the Republic of Slovenia

z- statistical confidentiality

(-) no data

M -less reliable estimate – use with caution

Methodological explanation <https://www.stat.si/statweb/File/DocSysFile/8096>

2. Indicators of digital society for construction in Croatia

The Croatian Bureau of Statistics conducts an annual survey on *Usage of Information and Communication Technologies (ICT) in Enterprises*. Regarding the 4 main categories for the construction industry, it is obvious that basic computer and internet usage is widespread, but more advanced integration of ICT technologies in most companies is lacking and without visible trend of improvement.

| NACE Rev.2 F | Computer usage | Internet access | Company website | Cloud computing |
|--------------|----------------|-----------------|-----------------|-----------------|
| 2022 | N/A | 94% | 44% | 27% |
| 2021 | N/A | 91% | 38% | 18% |
| 2020 | N/A | 87% | 50% | 23% |
| 2019 | 93% | 93% | 44% | 18% |
| 2018 | 95% | 95% | 56% | 25% |
| 2017 | 94% | 94% | 53% | 20% |

Source: Croatian Bureau of Statistics

3. Indicators of digital society for construction in North Macedonia

Compared to other sectors, according to the given parameters, the construction sector does not lag behind other sectors, although generally speaking in a broader sense of digitization, out of the total number of companies, only 8% of digitally mature companies according to economic activity are from the construction sector.

According to the available data from the State Statistics Office, the construction sector is one of the sectors that has the lowest share of e-sales, with only 7.4%, which is expected given the nature of the sector and the degree of digitization of the other sectors. E-sales in construction entirely include web sales and no sales via EDI (Electronic Data Interchange) have been recorded.

T3 ICT usage by activities, 2022

| Sector: Construction (Division 41-43) | Activity according to the National Classification of Activities (Rev.2) |
|--|---|
| Enterprises with computer | 98,5% |
| Enterprises with Internet access | 92,6% |
| - Via fixed broadband connection (DSL, cable, fiber optics or other technology) | 89,0% |
| -- the maximum contracted download speed of the fastest Internet connection is least 30 Mbit/s | 63,7% |
| -- the maximum contracted download speed of the fastest Internet connection is at least 100 Mbit/s | 31% |
| E-sales (web or EDI) | 7,4% |
| Web sales | 7,4% |
| EDI-type sales | 0,0 |

Source: Republic of North Macedonia State Statistical Office

