European Commission

European Construction Sector Observatory

Stimulating favourable investment conditions

Analytical Report

November 2018

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1. Introduction

The importance of the construction sector[1] in Europe

The construction sector is of strategic importance for the European Union, being a pillar for both the economy and society. It generates almost 9% of gross domestic product (GDP) in the European Union and provides 18 million direct jobs, having a direct impact on the safety of persons and on the quality of life[2]. Despite recent upturns in activity in the sector, the financial crisis has had long-lasting structural impact on the construction sector, resulting in severe drops in demand, especially in the private residential and infrastructure market. In some EU countries, the burst of the housing bubble was one of the triggers and has continued to significantly reduce activity in the sector. In others, the sector suffers particularly from the contraction of credit markets. The constraints on public spending due to the crisis will put further pressure on investments in infrastructure works. Some countries have invested in stimuli packages as a response to the crisis, for example with up-front investments in infrastructure projects, a reduced VAT rate for new construction and/or renovation of buildings, preferential interest rates for mortgages, etc.[3]. However, only measures aiming to upgrade skills and qualifications, innovation and a 'green' economy will ultimately have long-lasting effects on the competitiveness of the sector. This highlights the need for an appropriate policy formulation that stimulates investment and growth in the short term, but also a restructuring of the construction sector in the long term[4].

Construction 2020 Strategy

In order to achieve sustainable and cohesive growth across the EU, the Europe 2020 Strategy set an overarching framework for a future strategy for the construction sector, focusing on the following three priorities:

- Smart growth: developing an economy based on knowledge and innovation;
- Sustainable growth: promoting a more efficient, greener and more competitive economy;
- Inclusive growth: fostering a high-employment economy delivering social and territorial cohesion.

In 2012, as a part of Europe 2020 Strategy, the European Commission issued a Communication on the "Strategy for the sustainable competitiveness of the construction sector and its enterprises"[5], aimed at facilitating sustainable growth and development. This Communication was accompanied by an Action Plan, commonly known as "Construction 2020", which aims at supporting the construction sector in its adaptation to key upcoming challenges and at promoting the sustainable competitiveness of the sector.

Construction 2020 is focusing on the identification and implementation of measures that help fostering sustainable competitiveness in the construction sector in the short, as well as in the medium to long term. It intends to define sound conditions on a general level for investment, research, innovation, entrepreneurship, higher resource efficiency

[1] The construction sector is defined to be constituted by the sub-sectors manufacturing, narrow construction, real estate activities and architectural and engineering activities. In this report construction sector refers to the construction-related industry, while construction refers to the overall construction process.

[2] European Commission, The European construction sector: A global partner. March 2016. http://ec.europa.eu/growth/tools-databases/newsroom/cf/itemdetail.cfm?item_id=8753&lang=en&title=The-European-construction-sector%3A-a-global-partner

[3] Commission Staff Working Document accompanying the document Communication from the Commission "Strategy for the sustainable competitiveness of the construction sector and its enterprises"

[4] European Commission, Communication from the Commission to the European Parliament and the Council, Strategy for the sustainable competitiveness of the construction sector and its enterprises. July 2012. http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012DC0433&from=EN

[5] European Commission, Communication COM (2012) 433 final.

and work environment. It also encourages actions to reassure and ameliorate the functioning of the Internal Market and help remove barriers to trade and business at international level.

The Construction 2020 Action Plan is organised around **five key strategic objectives**[6]:

1. Stimulating favourable investment conditions;
2. Improving the human-capital basis of the construction sector;
3. Improving resource efficiency, environmental performance and business opportunities;
4. Strengthening the Internal Market for construction;
5. Fostering the global competitive position of EU construction enterprises.

Thematic Objective 1 - Stimulating favourable investment conditions

Thematic objective 1 "Stimulating favourable investment conditions" (TO1) is the subject of further analysis of this analytical report. TO1 aims to increase the inflow of public and private investment into construction sector. The main focus of the TO1 is on building renovation and Trans-European Networks projects, which are expected to revitalise the growth in the sector, while helping reach the objectives of the European Energy, Transport and Cohesion Policies. This is expected to be achieved through a set of short and medium-to long–term measures.

Short-term measures focus mainly on building renovation and infrastructure maintenance, particularly in terms of resource efficiency. They put specific emphasis on the implementation and enforcement of the Directive on Energy Performance of Buildings, as well as the implementation of the new Late Payment Directive to strengthen the financial capacity of the construction market. The short-term measures also foresee the promotion of fiscal incentives and financial support initiatives though national schemes, EU and private funds, as well as the introduction of financial instruments to optimise the leverage effect.

A 2016 assessment of the Late Payment Directive shows that businesses are highly aware of their rights established by the Directive. However, improvements can be made by introducing a common monitoring system and by publishing information on average payment periods in both the public and private sector. The development of supporting initiatives, such as mediation and incentives for timely payment, can reduce late payments in the Member States.

Medium to long-term measures are putting greater emphasis on supporting investments related to EU climate and energy targets (e.g. the EFSI and ESI Funds' shift towards investments in the low-carbon economy). They foresee a wider implementation of engineered financial instruments (e.g. project bonds) in energy efficiency and renewable energy investments in urban infrastructure and the building sector. Long-term measures focus on the creation of a framework for the development of Trans-European Networks for Transport (TEN-T) and development of innovation strategies for smart specialisation, boosting smart growth in regions. The latter is expected to be achieved through the transformation of research and innovation activities into market based demand-side instruments, in order to accelerate the transition from research to the exploitation of innovative solutions.

Over **120 smart specialization strategies** in EU regions are receiving more than EUR 60 billion from national & EU funds, fostering competitiveness and interregional cooperation.

Based on the specific focus of the Thematic Objective 1, **this analytical report aims to**:

1. Provide an overview of the investment trends in and by the construction sector in the EU;
2. Identify the main drivers and obstacles to investment in the sector;

[6] High Level Tripartite Strategic Forum, Report on follow-up actions on the Communication and Action Plan Construction 2020. February 2014.

3. Identify policies that have an effect on strengthening investment in construction, particularly in residential, non-residential and infrastructure markets in the analysed Member States (MS);
4. Provide reflections on the potential policy directions for development of the construction sector in Europe.

2.
Investment landscape in construction and the construction sector

This chapter sets the scene of investment in construction by looking at the key performance indicators (output, construction costs, gross operating surplus, and business confidence). Then, the emerging trends in investment are discussed, taking into account the main construction markets as well as geographic trends. Finally, important structural aspects affecting investment are analysed, namely access to finance and late payments.

Main characteristics of the construction activity

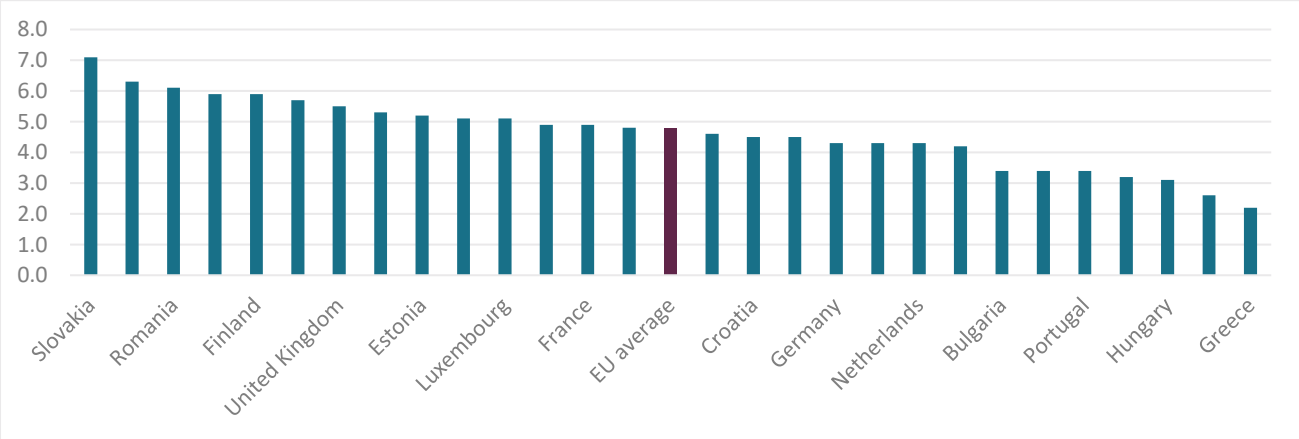
The investment landscape in construction is varied across MS.

The effects of the economic crisis are still looming on some of MS, while austerity is reducing investment in public infrastructure across the EU. Numerous factors affect investment in construction, which can be related to the wider economy or are specific to the construction sector. Notably, the output of construction sector is an important indicator of the health of the sector, and thus contributes to higher rates of investment. It brings an understanding of the underlying factors affecting competitiveness. Furthermore, business confidence in construction sector can also provide an insight into the investment climate for the sector. Despite that, in line with the EU's "Europe 2020" objectives for smart, sustainable and inclusive growth, this strategy directly focuses on investments in construction as the sector being very important to the EU economy. As a part of this goal, the Investment Plan for Europe and a European Fund for Strategic Investments (EFSI) have been put in place in 2015[7] with important financing opportunities for construction aiming at reviving the construction sector across the EU MS.

Main trends in the narrow construction sector

The gross value added is analysed as a share of GDP in order to draw conclusions on the relative size of the narrow construction sector in the EU. As can be seen from Figure 1, the narrow construction sector plays a significant role across the EU amounting to 4.9% of the total EU GDP in 2016. At MS level, Greece and Ireland stood at the lower end of the spectrum (2.2% and 2.6% respectively), whereas the sector had the highest relative importance in Slovakia and Poland (7.1% and 6.6% respectively).

Figure 1: Output of the narrow construction sector, EU-28, 2016 (as % of GDP)



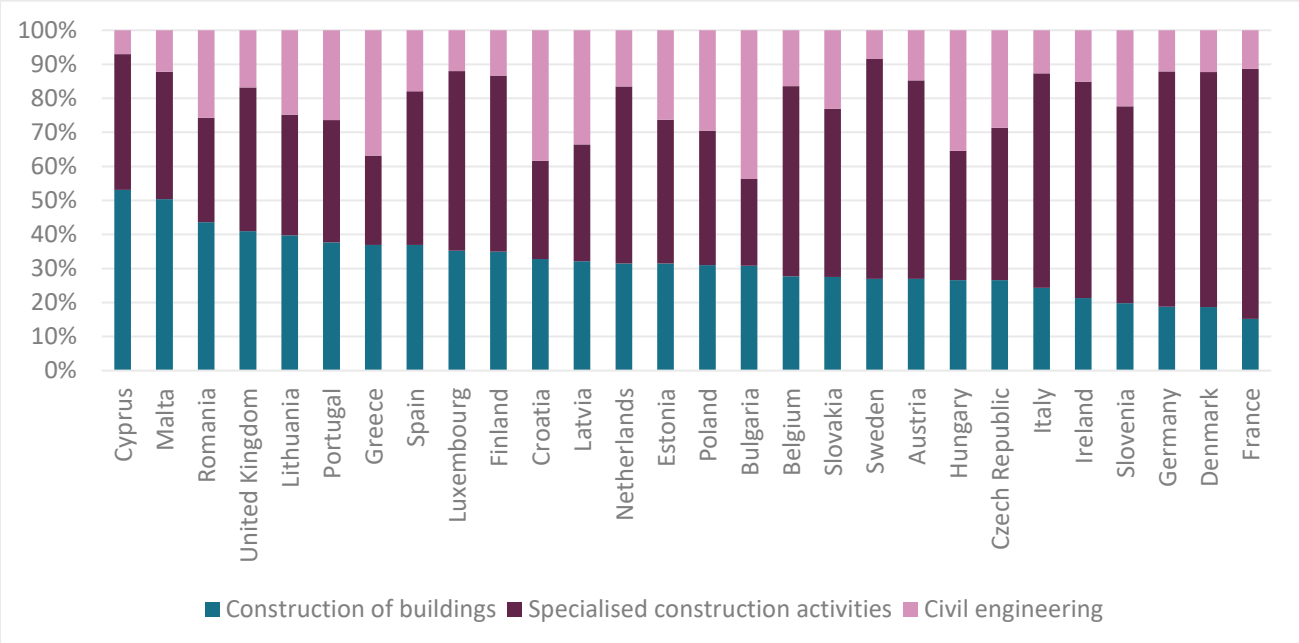
Note: Narrow construction sector corresponds to activities classified under Sector F in NACE Rev.2

*Source: Eurostat, 2017; Dataset: Gross value added and income by A*10 industry breakdowns [nama_10_a10]*

[7] EC, the European Construction Sector, a global partner, 2016. http://ec.europa.eu/growth/sectors/construction/

Looking at the value added at factor cost for the narrow construction sector, it stood at EUR 534.7 billion in 2015, up by 7.8% compared to 2010. As can be seen from the figure above, it is closely related to the overall size of the economy. As for the trends within construction, Figure 2 shows that while the construction of buildings accounts for the biggest share of value added in Cyprus, Malta and Romania, in France, Germany and Denmark, the majority of value added comes from specialised construction activities, which include demolition and site preparation, electrical, plumbing and other construction installation activities, building completion and finishing, and other specialised construction activities.

Figure 2: Value added at factor cost, EU-28, 2015, (%)



Source: Eurostat, 2017, Dataset: Annual detailed enterprise statistics for construction (NACE Rev. 2, F) [sbs_na_con_r2]

Construction costs of new residential buildings

The overall construction costs include material and labour costs and impact the overall profitability

For the majority of countries, construction costs have experienced high growth until 2008. After the financial crisis of 2008, the construction cost recovered the slow growth in 2010, with the construction cost index rising by 7.4% on the average for the EU-28 over 2010-2016, as shown in Figure 3[8] for the construction costs of new residential buildings. However, the growth of the construction cost index in the last years is still slower than in the previous decade.

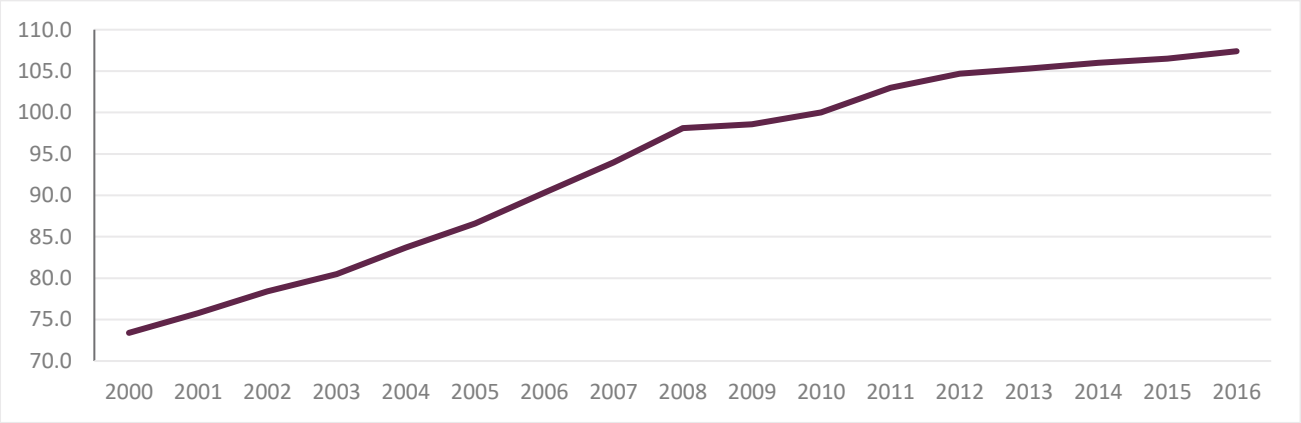
The highest growth of construction costs in 2010-2016 is observed in **Latvia** and **Lithuania** due to increases in input prices for materials and labour costs. It has increased by 21.1% and 20.4% respectively over the period of 2010-2016. Similar trend has been followed by **Hungary**, **Estonia** and **Denmark** with the rise of 19.1%, 14.1% and 13.5, respectively, over the same period.

Thus, rising costs are putting increasing pressure on the profitability of construction. This is fuelled by slower increase of prices in the sector, reducing the margin for construction companies. In 2010-2016, the output price index for new residential buildings across the EU-28 grew by 6.6%, slower than the increase of the construction costs, Moreover, the numerous company defaults resulting from the crisis led to shortages in the market with respect to skilled employees

[8] The following analysis is based on the construction cost index (CCI) of residential buildings except residencies for communities (in national currency).

and qualified sub-contractors[9]. Conversely, **Greece**, **Croatia** and **Cyprus** have reported negative changes in the cost index, declining by 7.4%, 4.7% and 2.9% over the same period, as a result of difficulties in recovering after the financial crisis.

Figure 3: Construction cost index for new residential buildings, EU-28, 2000–2016 (national currency, 2010=100)



Note: The data presented is based on the EU-28 index which is adjusted for the accession of Croatia in 2014 and other MS since 2000.

Source: Eurostat, 2017, Dataset: Construction cost (or producer prices), new residential buildings - annual data [sts_copi_a]

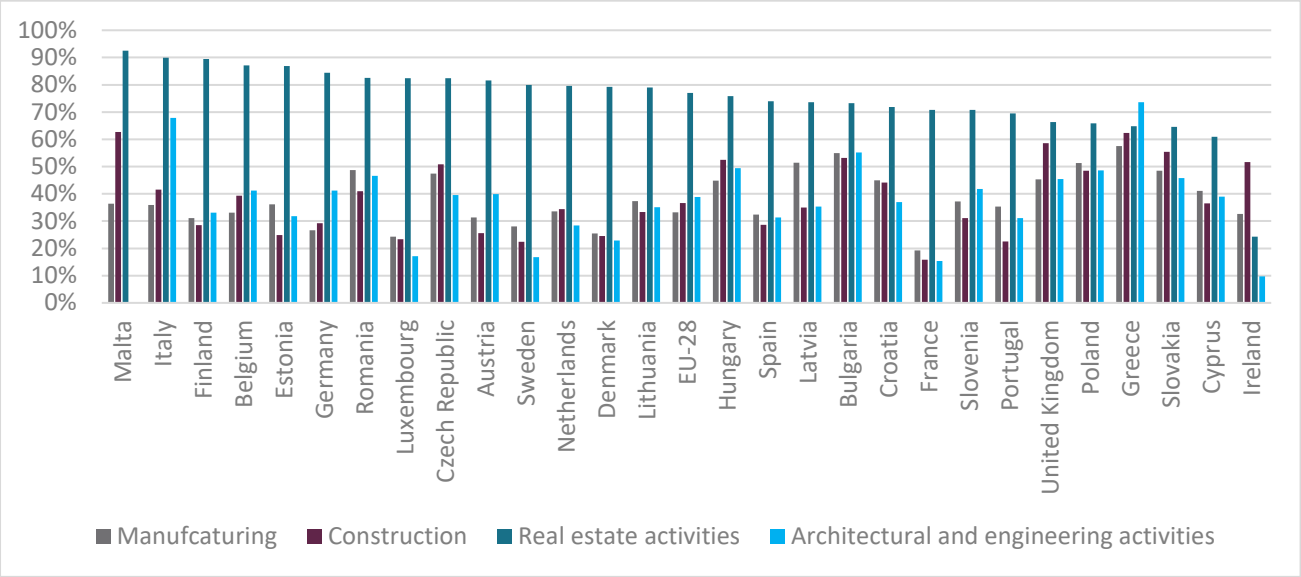
Gross operating surplus

The **gross operating surplus** gives an indication of the **profitability** of construction, which has an impact on the attractiveness of the sector for investment. While gross operating surpluses vary substantially across the sub-sectors and MS, some trends have affected the overall profitability of

As a general tendency, turnover and gross operating surpluses follow a similar pattern, with the leading countries in terms of turnover having relatively high surpluses, and the lower turnover ones accounting for small surpluses. To account for the influence of the overall size of the economy, in Figure 4 we look into the ratio of the gross operating surplus and the gross value added of the sub-sectors of the broad construction sector. As can be seen from the figure, the ratio is overall higher for the real estate sector compared to the rest and stood at 77% on average for the EU in 2015. The average ratio for the rest of the sectors is around 35%.

[9] Deloitte, European Construction Monitor, Trends for 2013-2015: Supply chain pressure in recovering markets: an isolated case or an emerging trend? December 2014. http://www2.deloitte.com/content/dam/Deloitte/de/Documents/real-estate/Deloitte_Deutschalnd_Construction_Monitor.pdf

Figure 4: Gross operating surplus to the value added in construction sub-sectors, EU-28, 2015 (%)



Source: Eurostat, 2018, Dataset: Annual enterprise statistics for special aggregates of activities (NACE Rev. 2) [sbs_na_sca_r2]

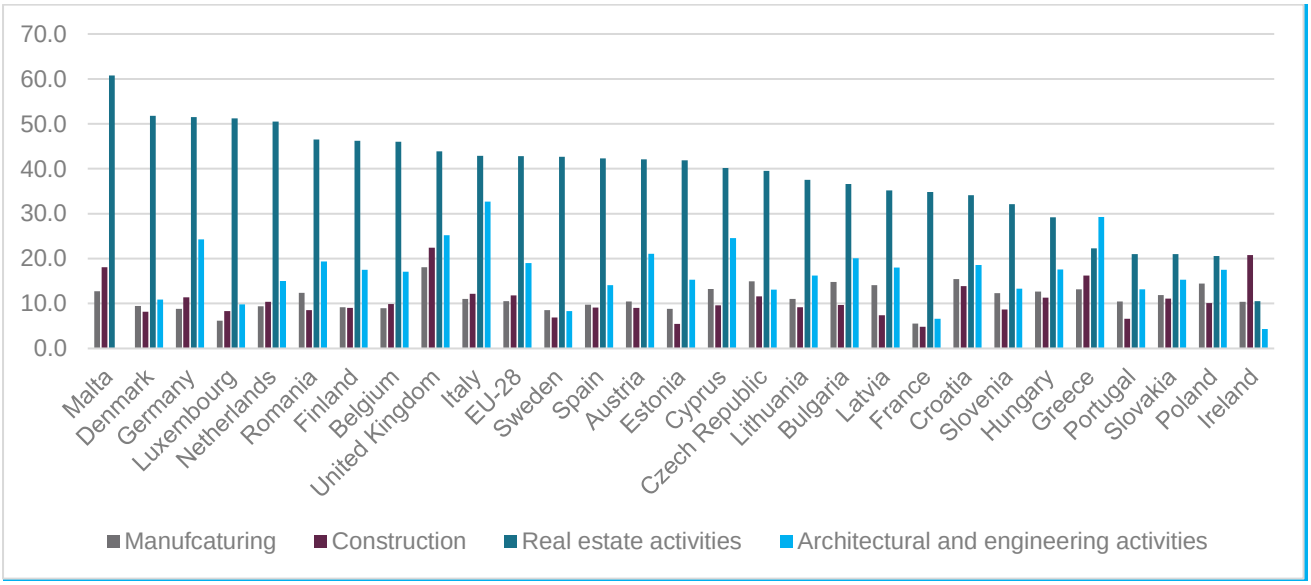
The **profitability** of the construction sector could be estimated by the **gross operating rate,** which corresponds to the share of gross operating surplus in turnover. Among the main drivers of productivity are digitalisation, pre-fabrication and automatisation and as a result, the main gains are made in the subsectors that have more flexibility to adapt to these.

Real estate activities in 2015 proved to be the most profitable compared to other sub-sectors, with the EU-28 average of 42.8% (Figure 5). The highest gross operating rates are observed in Malta (60.8%), Denmark (51.8%), Germany (51.5%) and Luxembourg (51.2%) in 2015, while Ireland (10.5%), Poland (20.6%), Portugal (21.0%) and Slovakia (21.0%) were among the MS with the lowest rates in 2015.

In the manufacturing sub-sector, the UK recorded the highest gross operating rate, reaching 22.4%, followed by Ireland's 20,8% and well above the EU-28 average of 10.5%. The lowest rates were noted in France (5.5%) and Luxembourg (6.2%).

Architectural and engineering activities, despite having low surpluses in absolute terms, had a relatively high profitability with the EU-28 average of 19.0%, varying from 6.2% in France to 35.6% in Italy in 2015. The lowest gross operating rate of all sub-sectors of the EU-28 is recorded in construction sub-sector, which stood at 11.8%, with the highest rate seen in the UK (22.4%) and the lowest in France (4.8%).

Figure 5: Profit margin on sales (gross operating rate) in the construction sub-sectors, EU-28, 2015 (%)



** Data for manufacturing and real estate activities are missing for Malta*

Source: Eurostat, 2017

Business confidence in construction enterprises

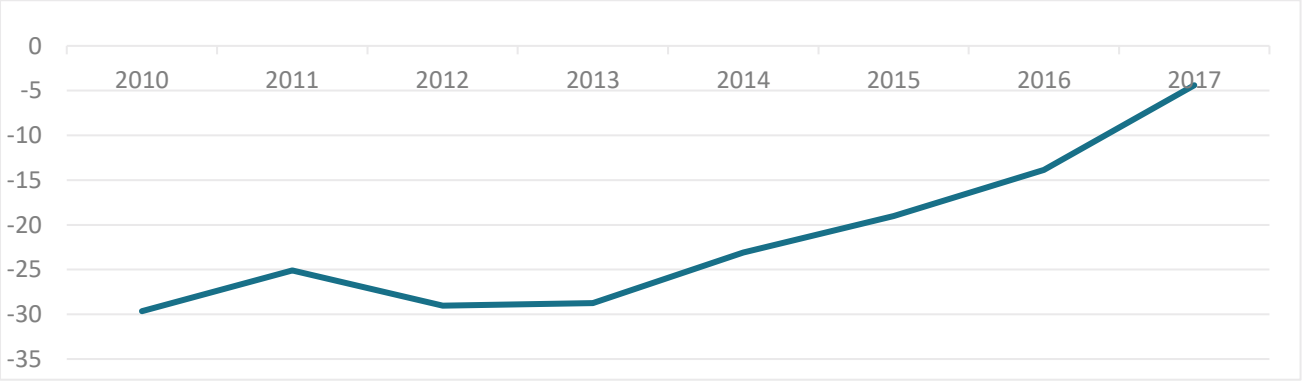
While growth in the construction sector has been picking up since the plunge due to the economic crisis, **business confidence in business enterprises of the construction sector remained in negative territory** over the period of 2010-2017, indicating that the aftermath of the crisis is still a disruptive force.

Changes in business confidence can have a considerable influence on investment decisions. Uncertainty about the future can reduce confidence, and means that investors may postpone their investment decisions until confidence returns.

Weakened government spending across most of the EU MS also dampens the business confidence in the sector.

As Figure 6 demonstrates, the **EU-28 average of business confidence in construction sector** has generally shown an improvement since 2013. After being at a bottom low of -30.0 in 2010, the indicator considerably increased and reached -4.0 in 2017, indicating that the construction sector, on the whole, is set on a recovery path.

Figure 6: Construction confidence index, EU-28, 2010-2017



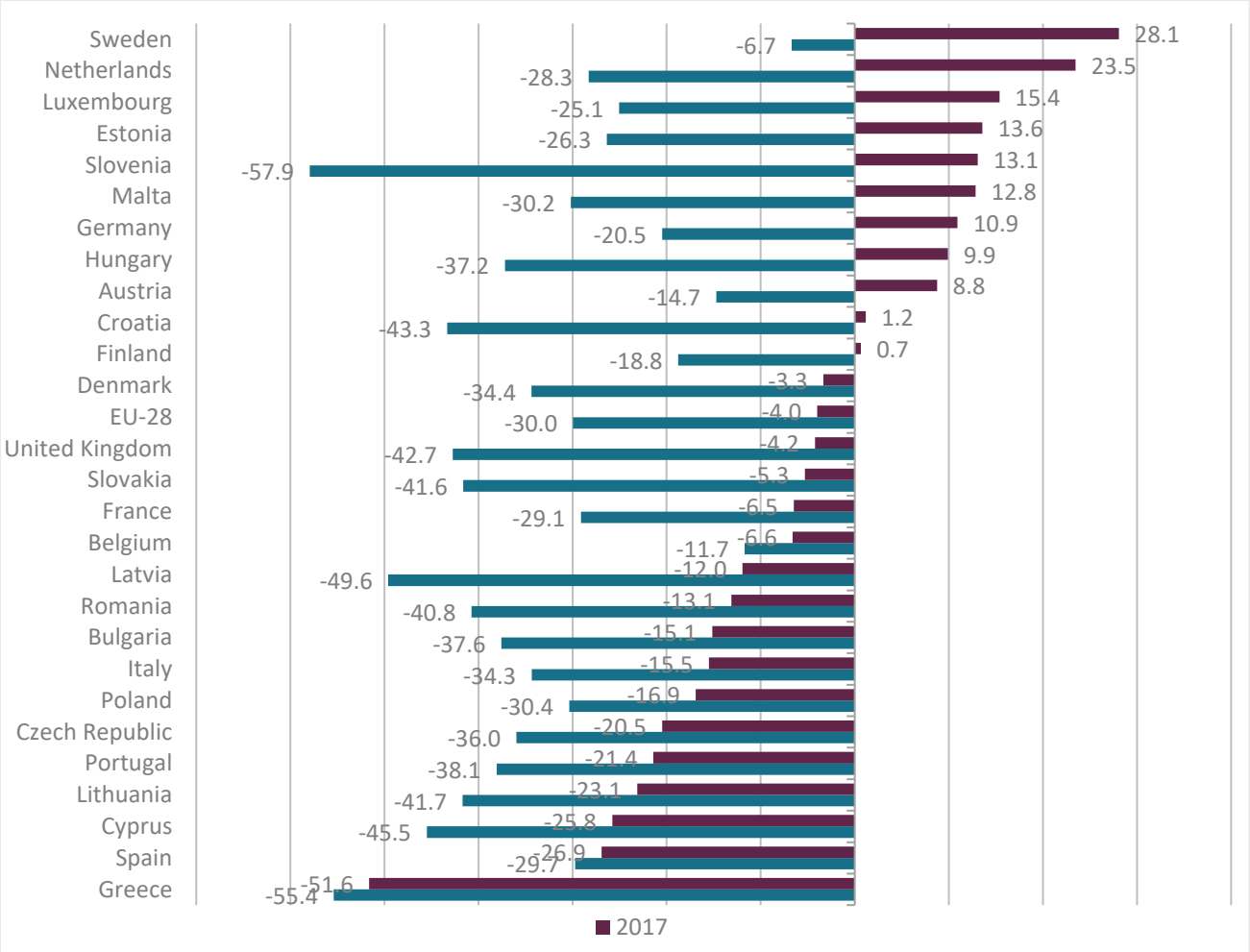
Source: DG ECFIN 2018, Seasonally adjusted data from Business and Consumer Survey, Eurostat Dataset: Sentiment indicators - monthly data [ei_bssi_m_r2]

Nevertheless, in more than half of EU MS business confidence remained in a negative territory in 2017. **Mediterranean countries** such as Greece, Spain, Cyprus and Portugal were particularly hit by a construction slump and recorded the lowest confidence levels of -51.6, -26.9, -25.8 and -21.4, respectively, mainly due to reduced public sector investment, slow recovery of the housing market and high vacancy rates.

The recovery of the confidence in the construction sector is usually linked to the recovery of overall economy.

On the other hand, prospects appear to have significantly improved in countries like the **Netherlands, Sweden and Luxembourg**. Business confidence showed an upward trend over years, reaching a significantly positive territory in 2017. In fact, Sweden has one of the strongest outlook for construction sector with the highest business level reaching +28.1 in 2017, which is mostly driven by investment in housebuilding[10]. The Netherlands and Luxembourg followed a similar trend and reached +23.5 and +15.4 respectively in the same year.

Figure 7: Construction sector confidence indicator, EU-28, 2010-2017



Note: Data missing for Ireland

Source: DG ECFIN, 2018, Seasonally adjusted data from Business and Consumer Survey, Eurostat Dataset: Sentiment indicators - monthly data [ei_bssi_m_r2]

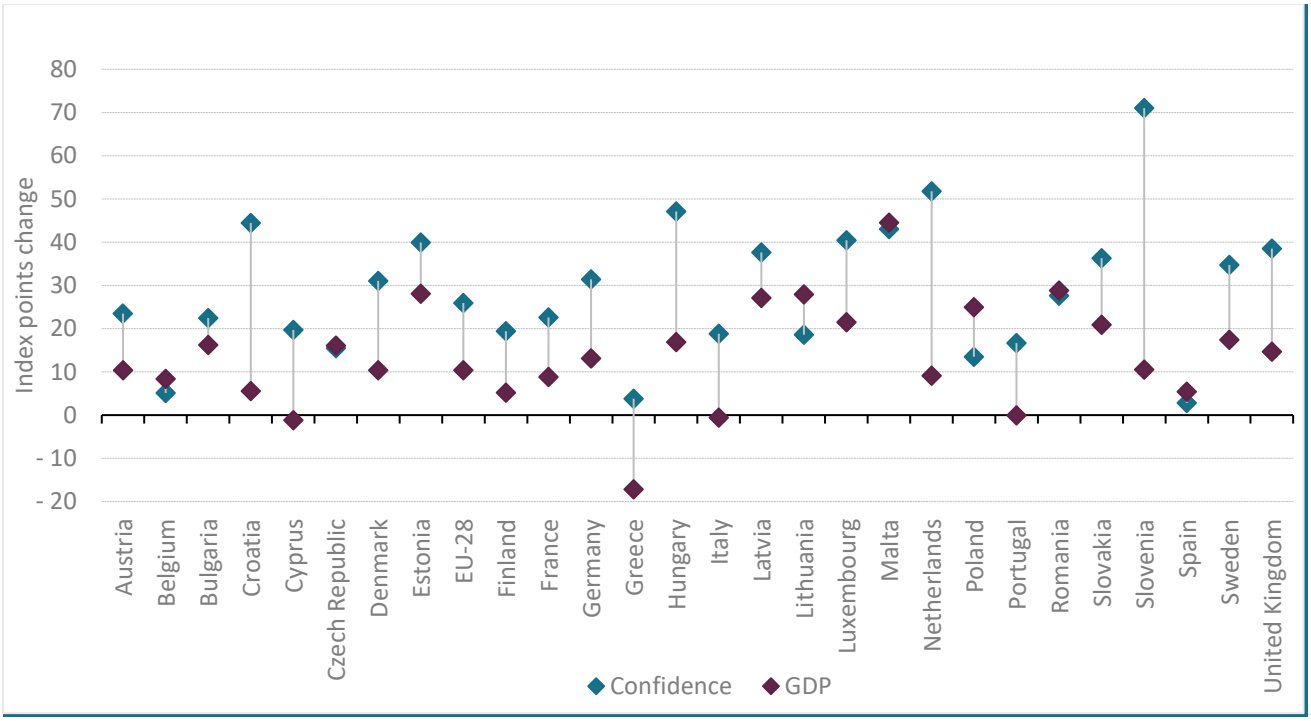
In most of the EU MS, the construction sector confidence indicator followed the same trend as the GDP change over 2010-2017. The figure below illustrates the trend of change of confidence and GDP indexes between 2010 and 2017. It

[10] FIEC, Construction activity in Europe. 2015

could be seen that for most of the countries (e.g. Belgium, Czech Republic, Malta, Romania and Spain) the GDP and confidence in construction sector are closely related and follow the same course.

However, for a number of countries (e.g. Croatia, Cyprus, Greece, the Netherlands and Slovenia) the boost of construction sector confidence was not supported by a strong growth, but in some cases with a decline of GDP. In Lithuania and Poland, contrary, high GDP growth in 2010-2017 did not lead to the significant increase in the confidence.

Figure 8: Relationship between change of GDP and construction sector confidence, EU-28, 2010-2017 (index points change)



Source: Eurostat, 2018

Investment trends in different construction sector markets

As a general trend, investment in the broad construction sector has gone hand in hand with investment in the total economy during the period 2010-2015. Due to the economic recession caused by the debt crisis in Europe, many countries are still slowly recovering.

Large differences in regional investment performance create is a challenge

Cuts in the national budgets have affected the share of GDP dedicated to investments, in particular, in countries such as Greece, Spain, Bulgaria, Cyprus and Italy. While the recovery of investment is slow, the average in the EU has been positive over the past three years, by around 3.1%[11].

The general situation is getting considerably better, since 2013. In particular, UK, Sweden and Germany that, despite being affected by the crisis in 2009, have a strong macroeconomic context which provided a buffer against the recession. For this reason, investment in the total economy in these countries recovered to the pre-crisis level by 2014. However, countries that were most hit by the crisis, such as Greece, Italy, Spain and Portugal started to increase their investment around 2014, and therefore, are still below the 2010 values. As an example, in 2017, the investment index in the construction sector in Greece, and Portugal was still 49.4% and 34.4% below 2010 values.

European Investment Bank Investment and Investment Finance in Europe.
http://www.eib.org/attachments/efs/investment_and_investment_finance_in_europe_2016_en.pdf

Investment in construction

Overall, most of EU-28 countries, especially in the Northern and Central European area, have seen **increasing investment volumes in construction** during the period 2010 to 2017. The significant increase between 2014 and 2016 is **linked to overlaps in the programming periods of ESIF, starting from 2007 to 2013 and the next from 2014 to 2020, as financing could still be implemented three years after the end of**

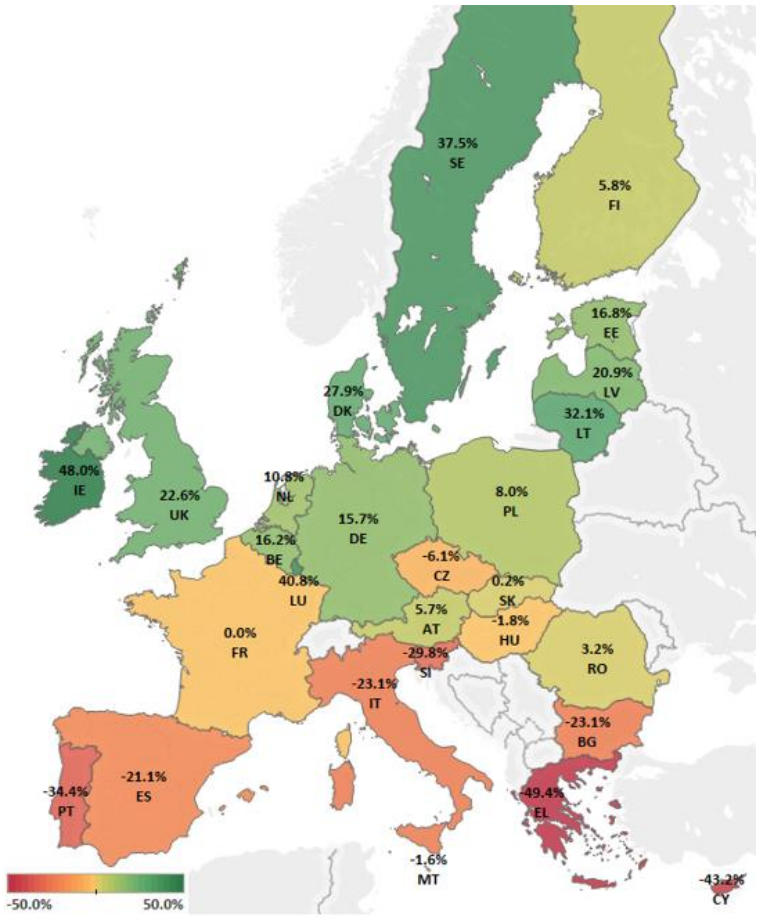
In 2017, investment in **Ireland, Luxembourg and Sweden** increased by 48.0%, 40.8% and 37.5%, respectively, compared to 2010. It is interesting to note, that the investment index in Ireland decreased until 2012, and since then it has risen by 76.6%. This development is also linked to the housing bubble[12] collapse between 2008 and 2014 when prices dropped by 50%.

Investment in construction across the MS was funded mostly by non-financial institutions

As shown in Figure 9, the overall situation in Southern Europe is undeniably poorer compared to rest of the EU, having invested significantly less than in 2010, mainly because this region was more severely hit by the crisis. In 2017**, Greece, Cyprus and Portugal** recorded the heaviest declines of 49.4%, 43.2%, and 34.4% respectively, staying far below 2010 values, reflecting the prolonged period of recovery from the 2008-2009 crisis and the subsequent government debt problems. Nevertheless, the general situation is positive - the average increase in investment in the analysed countries between 2010 and 2016 is 2.9%. Moreover, looking specifically at the change in investment levels between 2016 and 2017 – all countries apart from Slovakia recorded increasing investment, linked, inter alia, as indicated by national stakeholders, to increasing disbursements of ESI Funds in the 2014-2020 programming period.

[12] A bubble refers to a situation when the price for an asset exceeds its fundamental price by a large margin. A Housing bubble refers to an inflated price of the housing stock, linked to the imbalances between demand and supply of the housing stock and fueled by the speculation on the market in a situation of high demand and limited supply.

Figure 9: Change in investment in construction, gross fixed capital formation, EU-28, 2010-2017(index 2010=100)



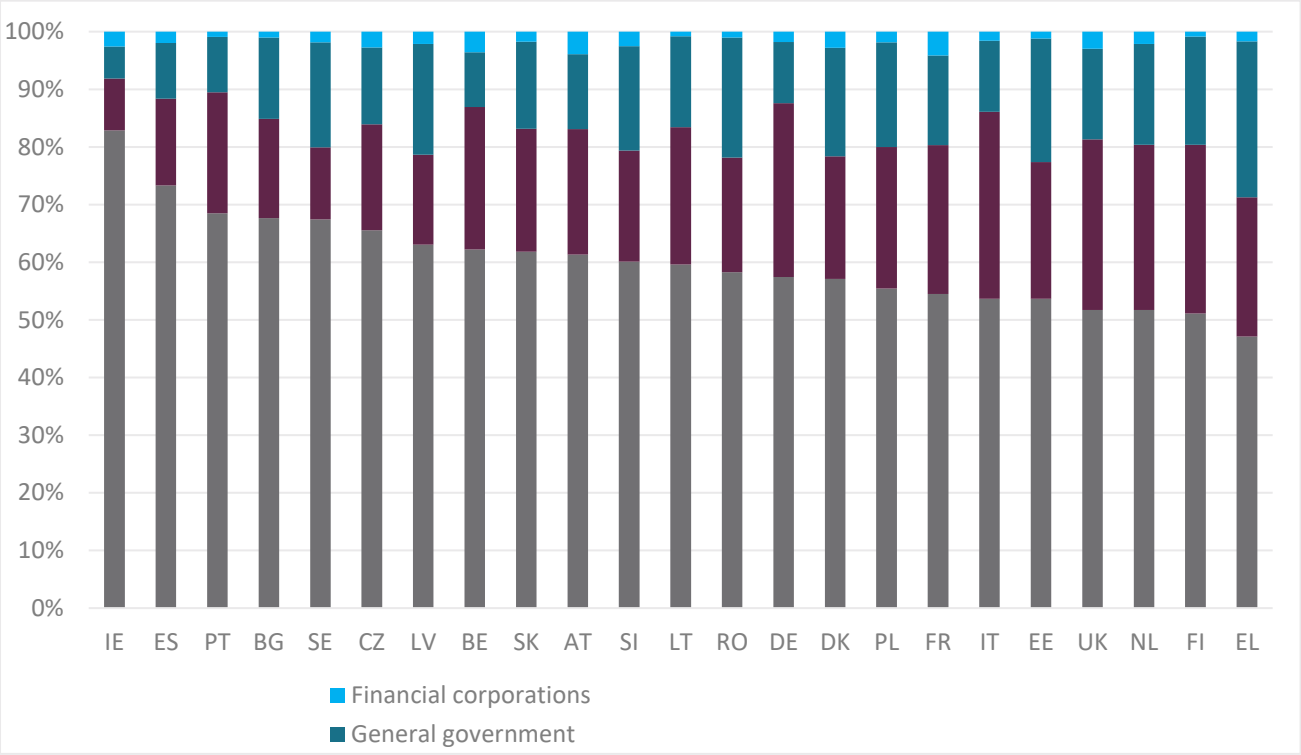
Source: AMECO, 2017.

In 2016, it supplied over half of the total investment for all countries, except for Greece (47.1%), and represented as much as 73.3% and 82.9% of the total investment for Spain and Ireland respectively. The latter can be connected to the large investments by multinational companies in the country and the recovery in residential building construction from the housing market collapse in 2007.

Households and non-profit institutions are the second biggest investors in construction, providing on average 25.7% of investment in the EU MS and over 30% in Germany (30.2%) and Italy (32.4%). The general government also provides significant amount funding, representing on average 13.5% of all investments.

In Greece (27.0%) and Romania (20.8%) it is the second main source of funding¸ in the former reflecting its relative importance in the face of dropping private sector investment, while in the latter it can be connected to the government's expansionary public investment programme. On the other hand, in Spain and Belgium it represents only 5.6% and 9.5% of investment respectively. Finally, financial corporations were shown to be investing the least in construction for all the countries analysed, with an average of only 2.5%.

Figure 10: Investment in construction by source of funding, EU-28, 2016 (%)



Note: Based on data in current prices, million euro. Data is not available at the source for Luxembourg, Cyprus, Croatia, Hungary and Malta. Data for Romania from 2015.

Source: AMECO, 2017.

In terms of the cross classification of gross fixed capital formation by sector, investment in construction across the MS analysed originated primarily from real estate activities, which accounted for an average of 53.8% of investment in the EU.

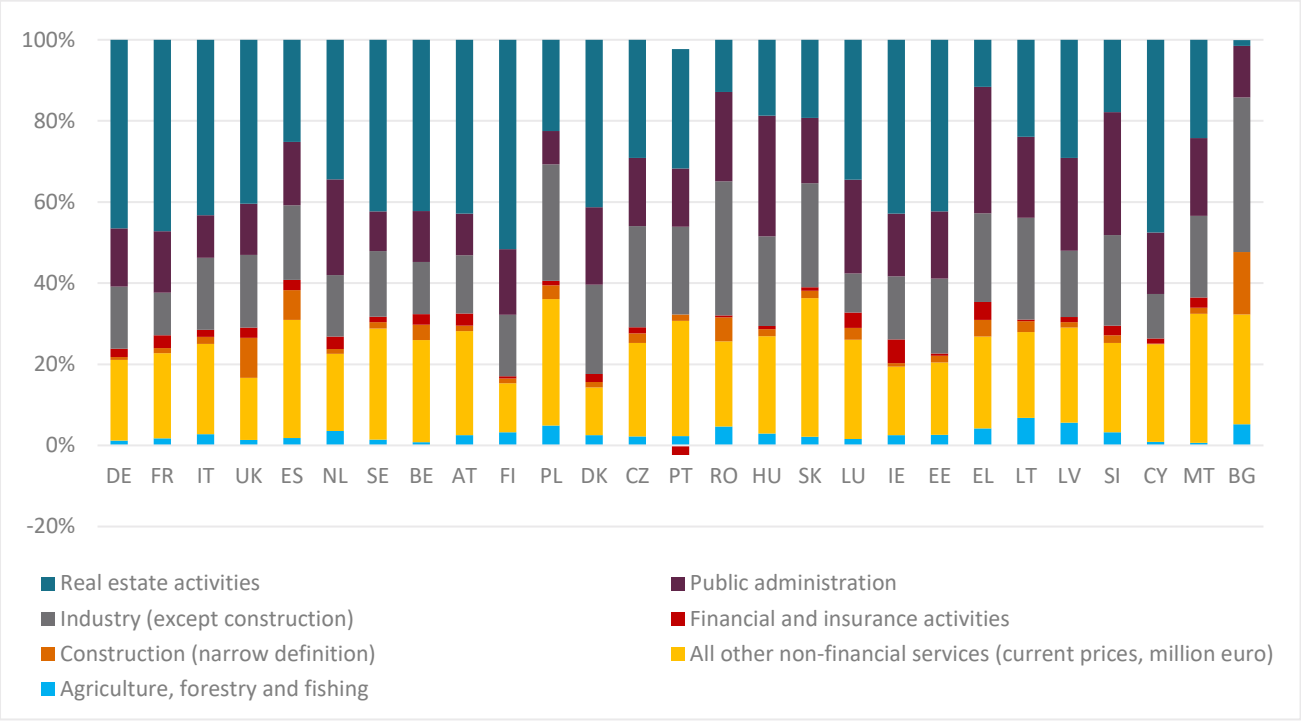
Real estate activities accounted for above 60.0% of gross fixed capital formation by sector in countries such as Finland (64.9%), Germany (64.0%) or Sweden (61.1%). The investments by the real estate activities in 2010-2015 have dropped significantly in Greece (-88.4%) and Bulgaria (-87.8%), reflecting a decrease in residential building demand. On the other hand, in Estonia and in Romania the investment in the real estate activities grew by 175.7% and 88.3% respectively. The growing investment in those countries is linked to the decreased interest rates and increased prices of housing, supported by the public investment programmes in the residential dwellings since 2010.

Households (activities of households as employers) were not shown to be investing directly in construction in the countries analysed, and therefore are not present in the figure. The reason behind this is that their investments are handled through the real estate developers (as reflected in another categories, such as real estate or public administration). This is due to the specific methodologies of data analysis, used by National Statistical Offices and Eurostat. However, even if not represented, it is expected that households' investment represent a major part of investments made by the real estate agencies.

In light of the high levels of investment from the real estate sector and non-financial sector, shown in Figure 11, investment from the narrow construction sector and from agriculture, forestry and fishing, is marginal.

Narrow construction contributed to on average 2.0% of investment in the sector among the countries analysed, with the highest share of 10.0% in Spain (EUR 10.7 billion) and supplying only 0.3% of gross investment in Germany (EUR 0.9 billion).

Figure 11: Cross-classification of gross fixed capital formation by sector, EU-28, 2015 (%)



Note: No data available for the missing EU28 countries. EU Average based on available data; Negative values can be due to disposals of fixed assets, which can be either sold, surrendered in barter or surrendered as capital transfers in kind.

Source: https://stats.oecd.org/glossary/detail.asp?ID=1173

Investment in residential buildings

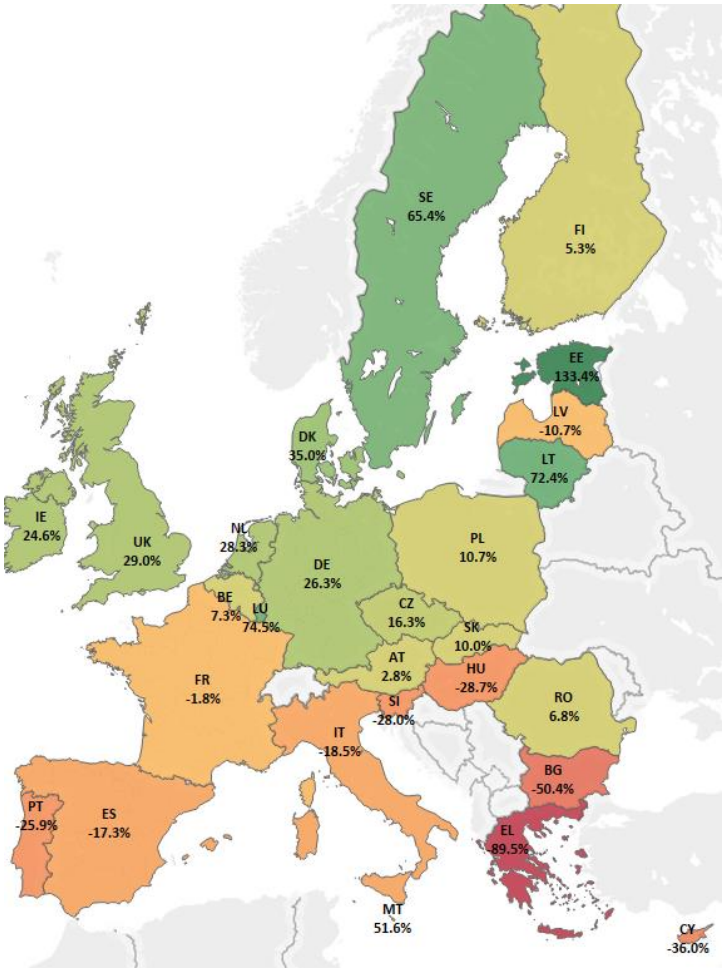
> Investment in the construction of residential buildings (dwellings)[13] from 2010 to 2015 has generally experienced a similar trend to that of construction across the majority of MS (Figure 12).

The country with the biggest decrease in residential building investment among all MS was again **Greece**, where the investment index in construction of dwellings fell by 89.5% between 2010 and 2015. This was followed by **Bulgaria (-66.3%),** and to a smaller extent by **Cyprus (-36.0%)** and **Hungary (-28.7%),** in line with their macroeconomic situations and declining investments in the economy.

On the other hand **Estonia, Latvia and Sweden** increased their investment index by 133.4%, 72.4% and 65.4% respectively in the same period. In Sweden the reason is linked to the fact that 250,000 new units per year are estimated to be required until 2020 to address the current housing shortage in Sweden[14], and policy intervention is therefore required to further boost investments in home-building. In this respect, the Stimulus for increased construction (*Stimulans för ökat byggande*), introduced by the government in 2015, seeks to stimulate construction of new rental properties through a budget allocation of SEK 3.2 billion (EUR 345 million) per year, particularly in urban areas (Stockholm, Göteborg and Malmo).

[14] Staten måste ta ekonomiskt ansvar för bostadsbyggandet, Dagens Nyheter, March 2015, https://www.dn.se/debatt/staten-maste-ta-ekonomiskt-ansvar-for-bostadsbyggandet/

Figure 12: Investment in dwellings, gross fixed capital formation, EU-28, 2010-2017(percentage of change, index 2010=100)



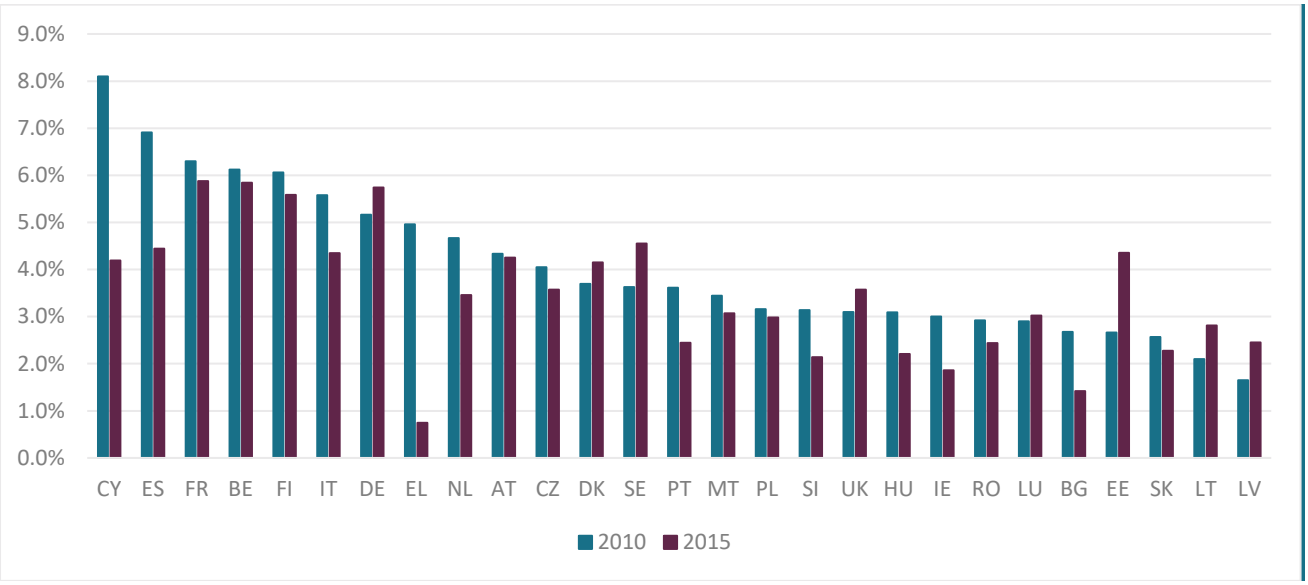
Source: AMECO, 2017.

Investment (measured as gross cross-sectoral fixed capital formation) within the dwellings segment of construction came almost exclusively by the real estate sector. It was followed by financial and insurance activities, by an average of less than 5%, the investment coming from other sectors is insignificant in nearly all the analysed countries.

Real estate sector represents the main developer for residential building projects, accumulating and investing the funds from households, narrow construction or public sector. Only Spain, among the countries analysed, had a share of investment by the narrow construction sector that exceeded 10% - specifically, it accounted for 19.4% of the total investment in dwellings (EUR 9.3 billion) in 2015.

In absolute terms, in 2015, investment in Germany was the highest, totalling EUR 174.8 billion, followed by France with EUR 129.0 billion, the United Kingdom with EUR 93.0 billion and Italy with EUR 71.8 billion. Bulgaria, Latvia and Malta invested the least in absolute terms, i.e. EUR 641.7 million, EUR 597.0 million and EUR 292.5 million respectively. As such, it is clear that the volume of investment in dwellings is closely related to GDP and population size, as shown at the figure below.

Figure 13: Share of the GDP invested in dwellings, EU-28, 2010-2015 (%)



Note: Data for Croatia is not available

Source: AMECO, 2018

In 2010, Cyprus, France, Belgium and Finland invested the biggest share of their GDP into the dwellings, investing more than 6% of the GDP into residential housing.

By 2015, the share of the GDP invested in dwellings decreased across Europe, with France, Belgium, Germany and Finland leading the investment share with more than 5% of the GDP invested in dwellings. Notably, Germany, Sweden, UK, Estonia, Luxembourg, Lithuania, Latvia and Romania has increased the share of the GDP allocated to the residential housing in 2015 compared with 2010.

Since 2010, it is mainly countries in Northern and Central Europe that have increased their investment.

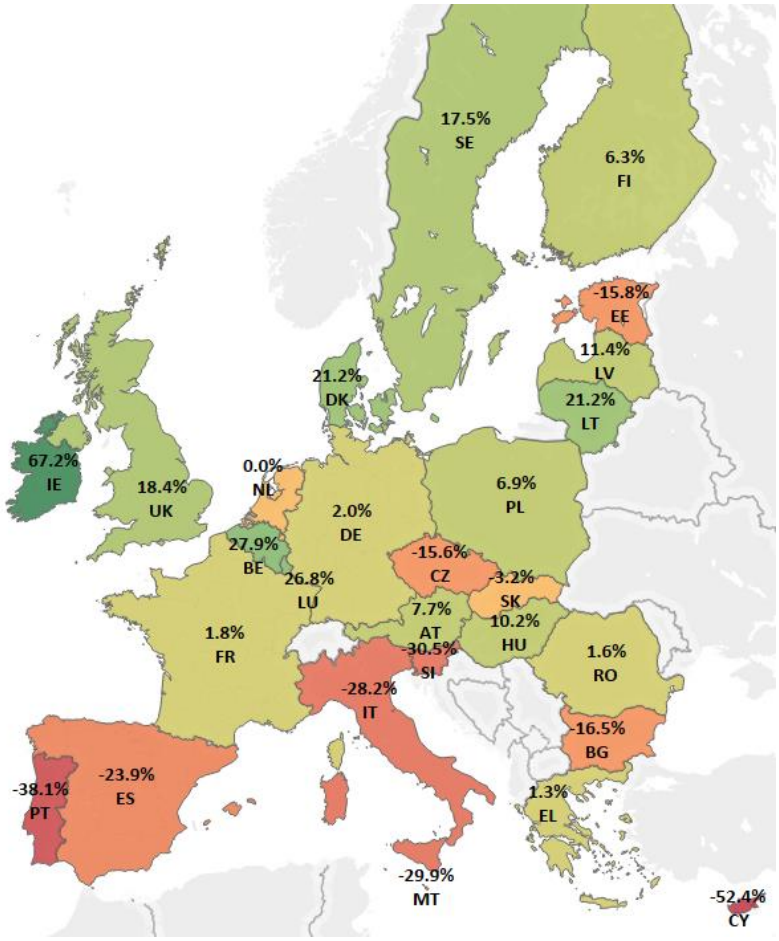
Investment in non-residential buildings and public infrastructure

Investment in non-residential buildings[15] and civil engineering[16] (infrastructures) has followed a similar trend to investment in dwellings and construction. The highest level of the investment index in non-residential buildings and infrastructure was reached in **Ireland (67.2%), Belgium (27.9%, Denmark (21.2%), and Lithuania (21.2%)**. For the non-residential sector, this was mainly a consequence of the construction of new office and administrative buildings, which picked up over the last years, following the drop due to the economic recession.

[15] Buildings other than dwellings, including fixtures, facilities and equipment that are integral parts of the structures and costs of site clearance and preparation. Examples include warehouse and industrial buildings, commercial buildings, buildings for public entertainment, hotels, restaurants, educational buildings, health buildings, etc.

[16] Structures other than buildings, including the cost of streets, sewers and site clearance and preparation other than for residential or non-residential buildings. Examples include highways, streets, roads, railways and airfield runways bridges, elevated highways, tunnels and subways, waterways, harbours, dams and other waterworks, long-distance pipelines, communication and power lines, local pipelines and cables, ancillary works, constructions for mining and manufacture.

Figure 14: Investment in non-residential buildings and civil engineering, gross fixed capital formation, EU-28, 2010-2017 (percentage change, index 2010=100)



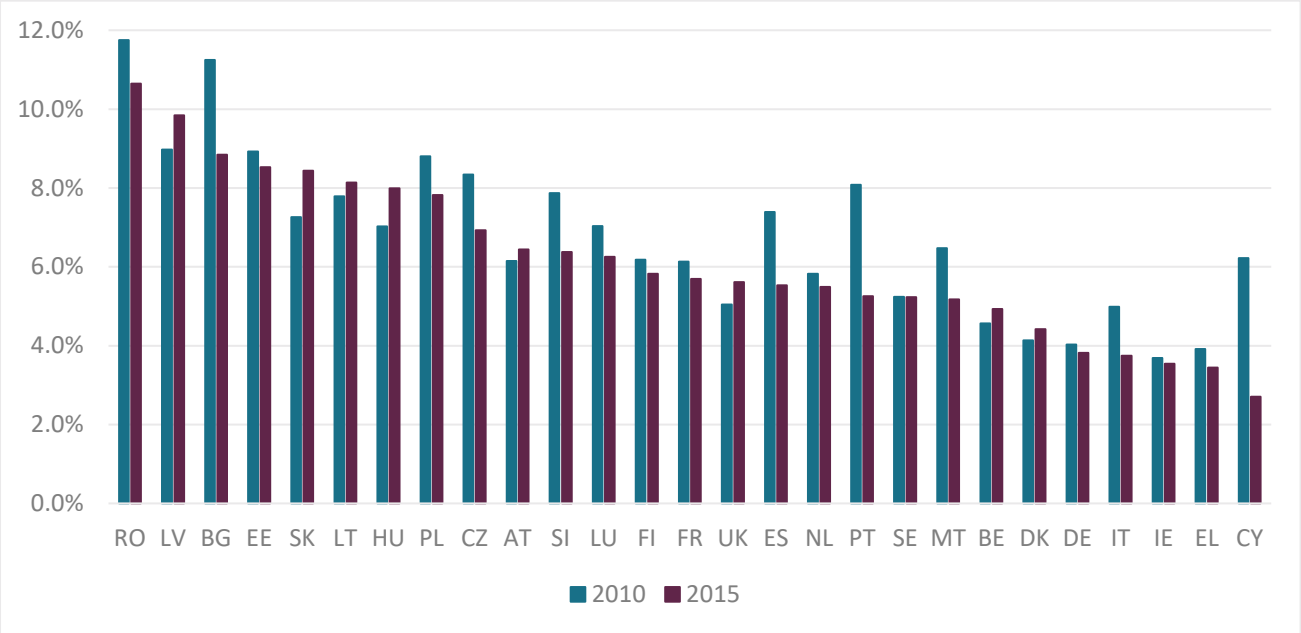
Source: AMECO, 2017.

On the other hand, the MS where investment has decreased the most are mainly Southern European countries. The investment index in non-residential construction and civil engineering decreased considerably in **Cyprus (-52.4%), Portugal (-38.1%) and Malta (-29.9%)**. This is linked to the fact that Southern countries were more severely affected by the crisis and took longer to recover. In addition, in Italy, the main cause of underfinancing in this sector is the fact that a significant amount of state funds for civil engineering works are blocked or left unused (about EUR 57 billion as of 2014)[17].

> In absolute terms, in 2015, investment in the non-residential sector was the highest in France (EUR 124.8 billion), followed by the United Kingdom (EUR 118.2 billion). Conversely, Cyprus, Malta and Estonia recorded the lowest investment volumes with EUR 480.7 million, EUR 492 million, and EUR 1.7 billion, respectively.

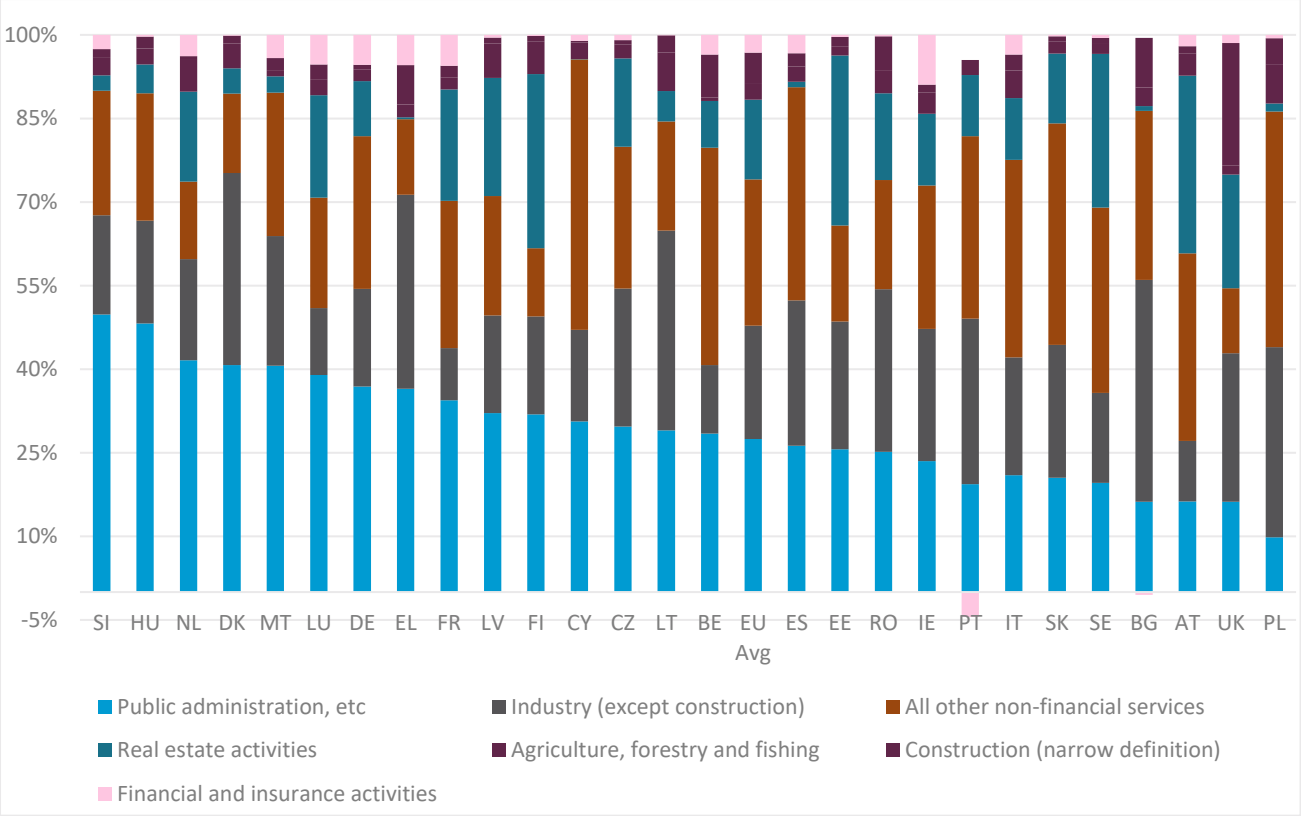
[17] Edilizia e Territorio, Costruzioni, nessuna ripresa: investimenti giù del 2,5% anche nel 2014. July 2014. http://www.ediliziaeterritorio.ilsole24ore.com/art/infrastrutture24/2014-07-08/costruzioni-nessuna-ripresa-investimenti-114248.php?uuid=AbHyfy0J&refresh_ce=1

Figure 15: Share of the GDP invested in the non-residential construction, EU-28, 2010-2015 (%)



Source: Eurostat, AMECO, 2018

Figure 16: Cross-classification of gross fixed capital formation for non-residential buildings and infrastructure by sector, EU-28, 2015



Note: Public administration includes defence, education, human health and social work activities; Negative values typically include disposals of fixed assets, e.g. through selling or surrendering assets including surrendering assets as capital transfers in kind

Source: Eurostat, 2017

Cross-classification of gross fixed capital formation investment in the non-residential market is diversified across the MS analysed.

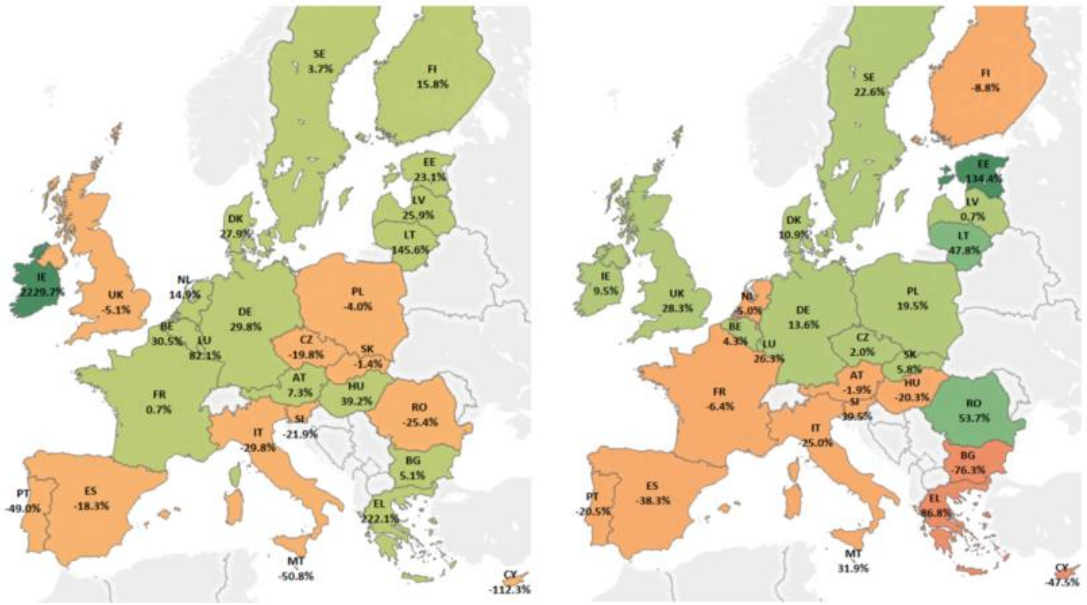
Investment from the public sector (public administrations) with an average of 20.0% took the biggest share in Slovakia, Hungary, and the Netherlands representing 49.8%, 48.2%, and 41.6% respectively, suggesting a large amount of public programmes and policies supporting development of non-residential construction. Poland, UK and Austria had the lowest share of public support, 9.8%, 16.2%, and 16.3% respectively. **Investment from industry** was found to be another important source of investment in non-residential construction, especially in Bulgaria (40.2%), Lithuania (35.9%) and Greece (34.8%). Conversely, in France the role of this group of investors is considerably lower, representing only 9.4% of investments. In absolute terms, investment made by sector was the highest in the UK, accounting for EUR 31.5 billion in 2015, considerably larger than the EUR 24.0 billion invested in 2013.

The non-financial services sector had the highest EU average (26.2%) among the analysed countries, being the UK, Finland and Greece the lower with a share between 11.7% and 13.6%. Contrarily it was the major investor in the non-residential market in Cyprus, Poland, and Slovakia, supplying 48.6%, 42.3%, and 39.7% of all the investments in these countries in 2015. Germany, France and Hungary relied heavily on this group of investors, obtaining from them more than a quarter of investments. In contrast, in Spain and the UK, the share of investment by the non-financial sector was low, amounting to 4.3% and 1.1%, respectively.

Investment by the construction and real estate sectors

Investment made by the construction sector in Europe was heavily influenced by the general economic trends in the recent years. Investment made by the construction sector has been analysed through the prism of investment made by narrow construction and the real estate sector.

Figure 17: Investment by the narrow construction and the real estate sector, EU-28, 2010-2015 (percentage change)



Source: Eurostat, 2017

Investment by the narrow construction sector is generally connected with the overall economic performance of the construction sector and the macroeconomic performance of the countries.

The percentage **change in investment** is to be regarded in the context of the crisis, which hit some countries' construction sectors harder than others. This is well represented in the cases of **Greece and Ireland**, where investment by the narrow construction sector appears to have **increased with 222.1% and 2229.7% respectively** over the five year period (Figure 17). Contrarily to the investment in construction, investment by the narrow construction sector in Greece increased and reached the volume of EUR 723.8 million. In Ireland investment by the narrow construction had previously lost nearly 100% of the volume from 2008 to 2012, having reached negative values in 2011. This extent of the crisis impact on the construction sectors explains the huge variation increase during 2010 and 2016, from EUR 14.8 million to EUR 195.9 million. A more modest increase in investment by the narrow construction sector for example in Germany (+29.8%),

The situation was bright for the narrow construction sector in **Lithuania, and Luxembourg** as well, which managed to significantly increase the investments made by this sector by 145.6% and 82.1%. In these cases, this was driven by the strong performance of the sector overall and by very high demand, accounting for an attractive investing environment.

Investments have been steadily decreasing in Romania (-25.4%), Spain (-18.3%), Czech Republic and UK (-5.1%), among others, during the period 2010 to 2015. An even more expressed decline made Malta (-50.8%), Portugal (-49.0%) and Cyprus (-112.3%), the outliers of the decreasing trend by the narrow construction investment. Despite a fall in investment levels compared to 2010, the UK's construction sector remained the biggest investor in 2015 (EUR 22.2 billion). France has maintained stable investment volumes by construction sector in 2010-2015, following the same trend as the total investment in construction, where in 2015 investment by the narrow construction sector amounted to EUR 7.3 billion.

Figure 18: Investment by the narrow construction sector in selected assets, 2015 (EUR m)

Note: Data not available for all EU-28 countries

Source: Eurostat, 2017.

In terms of specific investments by assets types, the category 'machinery and equipment'[18] takes a prominent role of the investment by the narrow construction sector among the analysed countries, particularly in Italy and France.

Italy and France have invested respectively EUR 2.5 billion (44.1% of all investment by narrow construction sector in Italy) and EUR 2.3 billion (31.5% of all investment by narrow construction sector in France) in 2015. In Hungary, investment in machinery was comparably small in absolute terms (EUR 132 million), but represented a sizeable share of investment by the construction sector in total fixed assets (29.7%). In absolute terms, the narrow construction sector in Sweden, Portugal and Finland invested the biggest share into the other machinery and equipment, with 56.9%, 56.9% and 56.0% of investment allocated to this category in 2015.

Investments by the narrow construction sector into intellectual property products play a significant role, particularly given the increasing importance of innovation in the sector.

France leads investment in intellectual property products with EUR 954 million spent on intellectual property product in 2015 (13.1% of all investment for narrow construction sector in the country). Substantial investment is also recorded in the Netherlands (EUR 657 million or 26.8% of all investment for narrow construction sector) and UK (615 million or 2.8%), while Ireland, Estonia and Slovakia invest more modestly (EUR 10.5 million, EUR 3.4 million and 4.1 million, respectively). In absolute terms, apart from Netherlands and France, the narrow construction sectors in Germany, UK and Italy had invested the biggest amounts in the intellectual property products, respectively EUR 652.0 million, EUR 589.8 million and EUR 310.9 million in 2015.

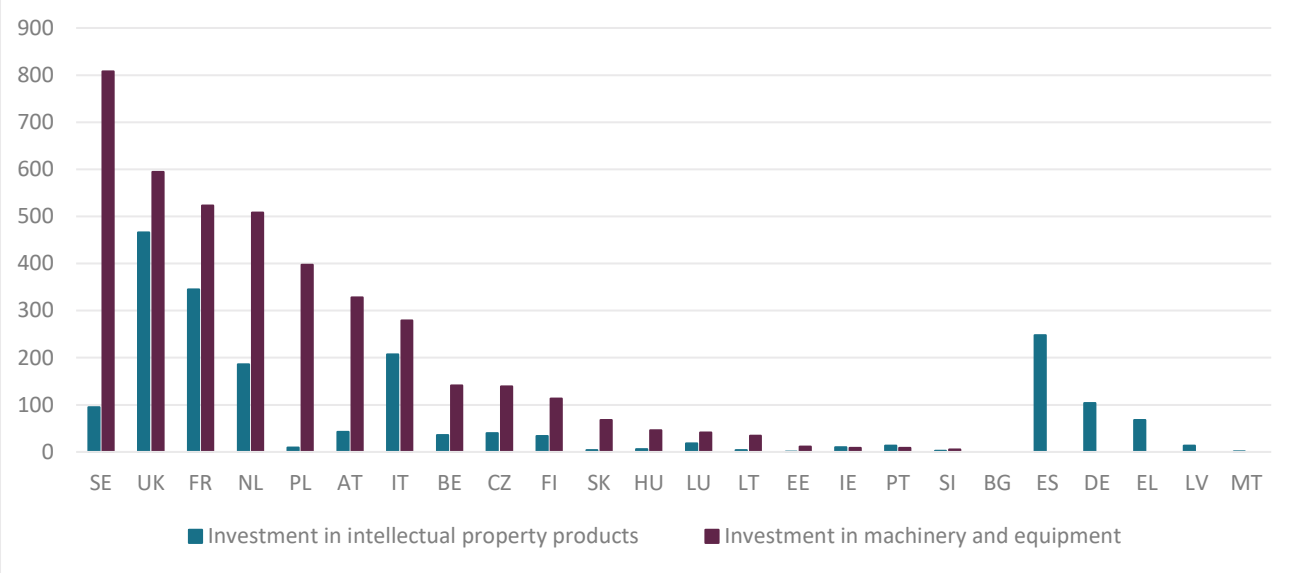
Investment by the real estate sector, i.e. developers, real estate agencies and households, has shown a similar trend as in construction in most MS (see Figure 17above) and was on the increase in all MS apart from Greece, Bulgaria and Finland, where it declined in the period 2010-2015.

Germany has seen the highest volumes of investment in the overall economy by the real estate sector, reaching EUR 165.7 billion (10.2% of all investment for the real estate), followed by France with EUR 144.3 billion in 2015, a 13.6% increase since 2010 for Germany but a 6.4% decrease for France. The real estate sector in Estonia increased the most among the analysed countries, going from EUR 535.1 million to EUR 1.2 billion, corresponding to a 134.4% increase.

The investment by the real estate sector into non-residential construction was much lower across Europe compared to investment in residential construction in 2015, with an average share of 14.3%. The share of investment from real estate varied from 0.1% and 0.4% in Cyprus and Greece to around 31.5% in Austria and Finland. However, in absolute terms, investment in France was the highest with EUR 25.0 billion.

[18] This category excludes transport equipment and software

Figure 19: Investment by the real estate sector in selected assets, 2015 (EUR m)



Note: Data not available for all EU-28 countries

Source: Eurostat, 2017.

Regarding the specific investments into assets types by the real estate in 2015, again the category **'other machinery and equipment'**[19] is the largest among the two selected asset types. It was particularly high in Sweden and the UK, among the analysed countries (Figure 19). These two countries have each invested EUR 807.9 million (3.3% of all investment for real estate activities) and EUR 594.6 million (0.6%) in 2015, respectively. In relative terms, Lithuania, Poland, Slovakia and Luxembourg also the biggest share of real estate investment in to the machinery and equipment, accounting for 3.1%, 2.7%, 2.6% and 2.0% accordingly in 2015.

Finally, investments in **intellectual property products** play again a significant role in some of the MS, particularly given the increasing importance of innovation in the sector. UK is the country where real estate invests the most in this asset with EUR 465.7 million spent on intellectual property product in 2015, but representing only 0.5% of the total investment for real estate activities in 2015. Substantial investment also comes from France (EUR 345 million, 0.2% of total investment for real estate activities) and Italy (206.9 million or 0.3% of total investment for real estate activities). In relative terms, the real estate in Greece and Latvia invested the most into the intellectual property products, with 4.2% and 1.8% of investment accordingly. Estonia's real estate is the country that spends the least, having spent less than 1 million (0.1%) in it during 2015.

Renovation investment

> The EU average of renovation spending as percentage of total household disposable income in 2010 was 0.8%. This value has remained stable during the next years, having the same average share during the next 5 years.

Romania had the biggest significant change since it increased from 1.2% in 2010 to 2.9% in 2015. Finland had a higher increase (+388.1%) but it is not that representative since it increased its renovation spending share from 0.03% to 0.13% during the same period, continuing to be lowest share among the MS[20].

Regarding the final consumption expenditure of households on maintenance and repair of dwellings, France, Germany and Poland were the countries which spent the most in 2015: EUR 18.9 billion, EUR 10.7 billion and EUR 9.5 billion.

[19] Refers to the machinery and equipment, different than Transport equipment and ICT equipment.
[20] No data available for Malta and Croatia

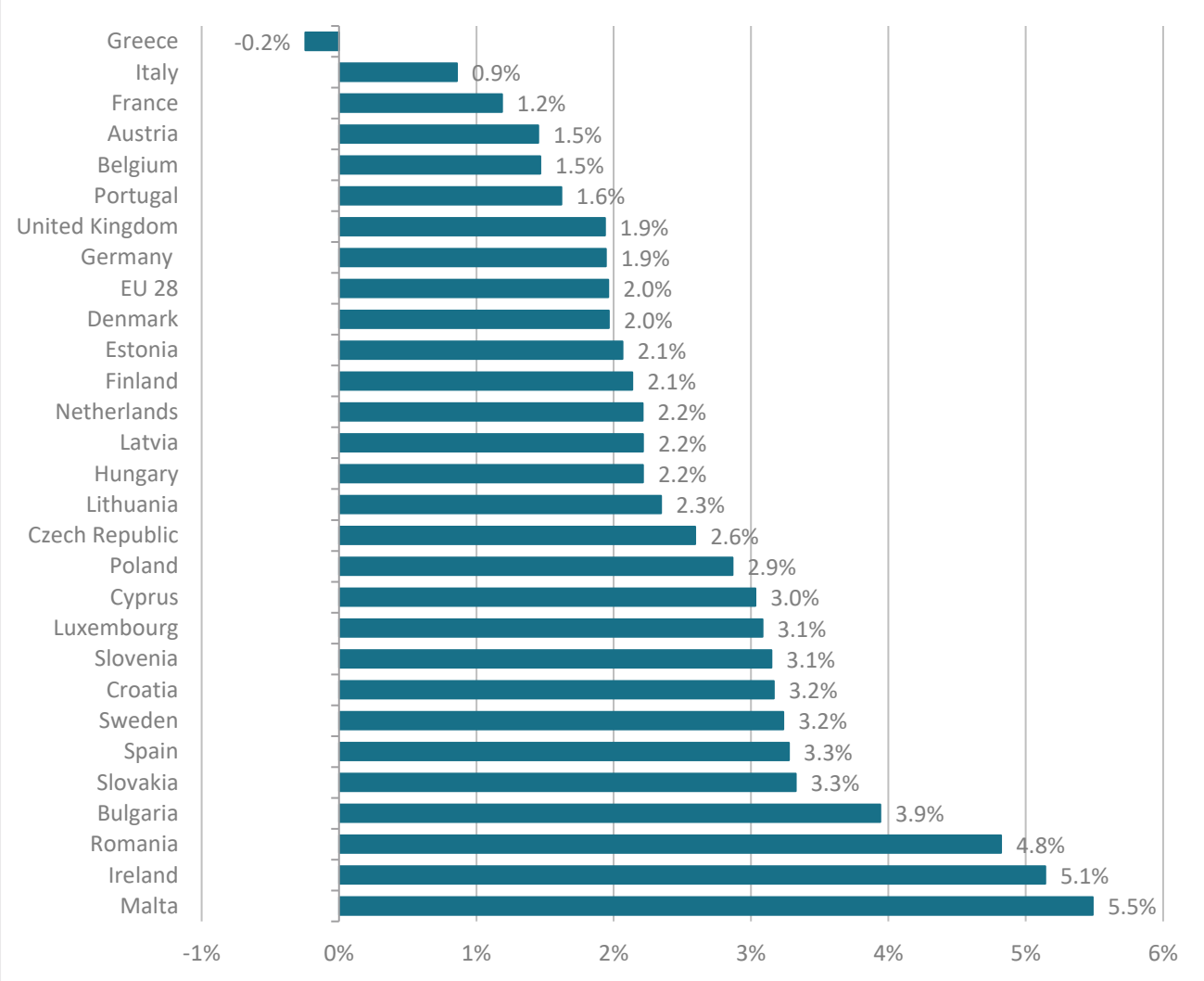
3.
Drivers for investment in construction

Economic growth

Economic growth, measured as the percentage rate of increase in real gross domestic product (GDP), is one of key drivers for investment in construction in the EU.

The EU economy is on track for a recovery from the financial crisis and demonstrates strong annual economic growth with the average EU-28 GDP growth standing at 1.96% in 2016, as indicates Figure 20. Nevertheless, in a number of countries, GDP (at market prices) in 2016 was still lower than the levels at 2010 – notably, Greece (-18.3%), Cyprus (-5.2%), Portugal (-2.8%) and Italy (-2.1%).

Figure 20: GDP change, EU-28, 2015-2016 (%)



Source: Eurostat, 2017

The fastest pace of economic growth among the EU MS is recorded in Malta with annual GDP growth of 5.5%, Ireland (5.1%) and Romania (4.8%), exceeding significantly the pre-crisis level between 2015 and 2016. Such economic

performance in Malta was mainly driven by growing exports as well as by strong domestic demand[21]. Ireland's economy is boosted by a substantial contribution from multinationals and global value chains[22] and Romania's by expansionary fiscal policies and strong private consumption supported by wage increases, indirect tax cuts, and low interest rates[23].

Conversely, Greece's high public debt and banks' large stock of non-performing loans (NPLs) have a negative effect on the country's economic growth and financial vulnerability that led to negative GDP change of -0.24% in 2016[24]. Italy and France also follow a similar trend, recording the lowest economic growth with a modest GDP change of 0.9% and 1.2% over the same period. Italy's low economic growth can be explained by weak productivity dynamics[25], while France suffered from low net exports[26] over the same period.

Overall, the EU economy is fully recovered from the financial crisis and the euro area is on track to increase at its fastest pace in a decade between 2017 and 2018 with the exception of Greece, which is clouded by governmental and financial instability.

The economic growth of the EU as a whole is projected to continue at 2.1% in 2018 and at 1.9% in 2019 mostly driven by private consumption, general stronger growth around the globe, and decreasing unemployment[27].

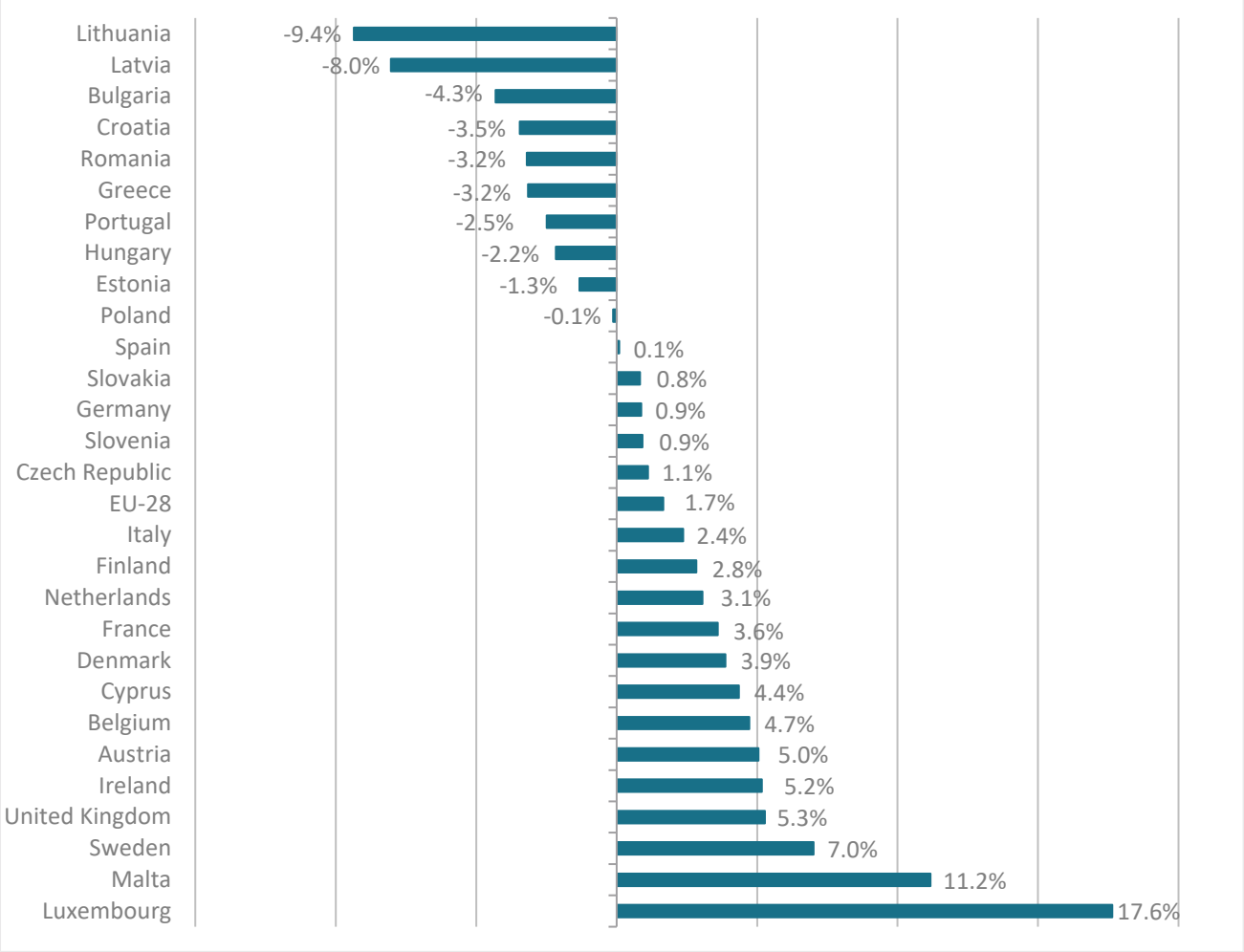
Demographic change

Population growth is one of the main drivers for investment in construction.

The EU-28 generally experienced moderate population growth over the last decade. In 2017, the population of MS had increased by 1.7% on average compared to 2010 levels (Figure 21). Luxembourg is among the EU MS with the highest growth of population, increased by 17.7% in 2017 compared to the 2010 level. The rapid population increase in Luxembourg is mainly due to large numbers of net inward migration over the last decade and is likely to continue over the coming years. Slightly lower increases were observed in Malta (11.2%) and Sweden (5.3%). On the other hand, Latvia, Lithuania and Bulgaria experienced the highest declining population trends accounting for -9.4%, -8.0% and -4.3%, respectively, over the period of 2010-2017.

21 European Commission, European Semester Country Report Malta 2017. February 2017.
22 European Commission, European Semester Country Report Ireland 2017. February 2017.
23 European Commission, European Semester Country Report Romania 2017. February 2017.
24 OECD, Greece - Economic forecast summary (November 2017), http://www.oecd.org/eco/outlook/greece-economic-forecast-summary.htm
25 European Commission, Country Report Italy 2017. February 2017. https://ec.europa.eu/info/sites/info/files/2017-european-semester-country-report-italy-en_0.pdf
26 European Commission, Country Report France 2017. February 2017. https://ec.europa.eu/info/sites/info/files/2017-european-semester-country-report-france-en.pdf
27 EC, Autumn 2017 Economic Forecast, https://ec.europa.eu/info/business-economy-euro/economic-performance-and-forecasts/economic-forecasts/autumn-2017-economic-forecast_en

Figure 21: Change in population, EU-28, 2010-2016 (%)

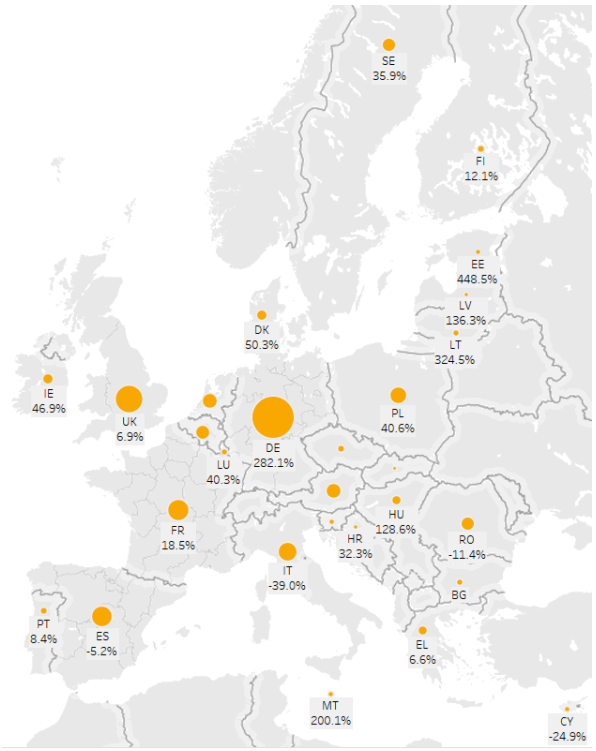


Source: Eurostat, 2017

Migration has been in the spotlight with the growing movement of people within the EU and the high influx of non-EU migrants and refugees. As can be seen from Figure 22, net migrations trends across the EU MS were quite varied. In Germany, the admission of a high number of asylum seekers resulted in a net migration of 1.5 million persons in 2015, up by 282.1% from 2010 (404,055 persons). In comparison, in other countries with traditionally high levels of net migration, the change compared to 2010 was more modest (+18.5% in France, +6.9% in the UK) or even negative (-5.2% in Spain, -39.0% in Italy).

> Some countries experienced a high growth in population, but from a low base, e.g. net migration to Lithuania grew by 324.5% between 2010 and 2015, which in real terms is the change between the 5,213 persons in 2010 to 22,130 persons in 2015.

Figure 22: Change in net migration, EU-28, 2010-2015 (%)



Note: The size of the bubbles represents the absolute values of net migration in 2017. The percentage values represent change in the net migration numbers in 2015 compared to 2010.

Source: Eurostat, 2017

Age demographics are another important driver for investment in construction – ageing citizens require housing suited to their needs and specialised social and health infrastructure. In 2016, the EU-28 working-age population accounted for almost two thirds (65.3%) of the total population.

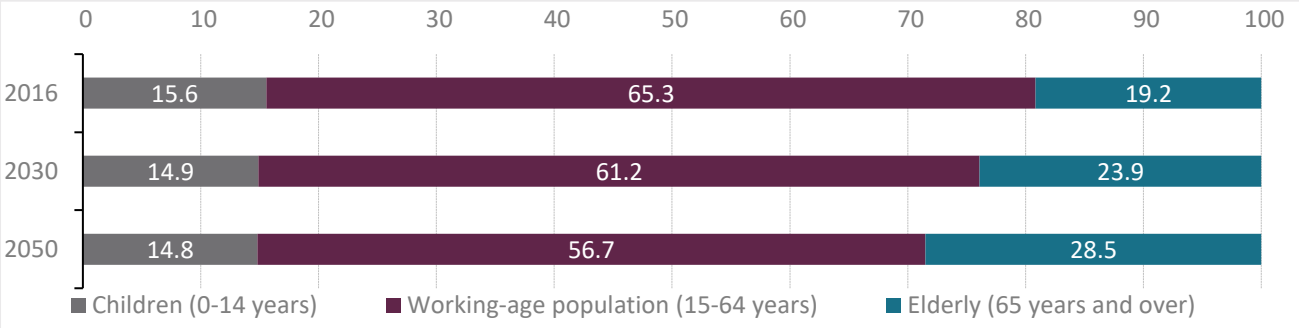
The share of working population is forecasted to decrease to 56.7% by 2050 with the highest declines expected in Slovakia, Poland, Cyprus and Portugal, as illustrated in Figure 23[28]. Similarly, the share of children (aged between 0 and 14) in the total EU-28 population is forecast to follow a downward trend at a modest pace over the period of 2016-2050 with a 0.8 percentage point reduction. The share of children in total EU-28 population will account for 14.8% in 2050. Germany and Malta are the only two MS of the EU which expect to enlarge the share of children in the total population, while Ireland, Cyprus and Greece expect the largest downfalls[29].

On the other hand, elderly persons (65 years and over) of the total population of the EU-28 is expected to increase from 19.2% in 2016 to 28.5% in 2050, showing a trend of ageing population that continues to rise in the EU.

According to Eurostat, the population projections demonstrate that the share of the elderly in the total EU population will increase by at least 9 percentage points in more than half of the EU MS between 2016 and 2050.

[28] Ibidem.
[29] Ibidem.

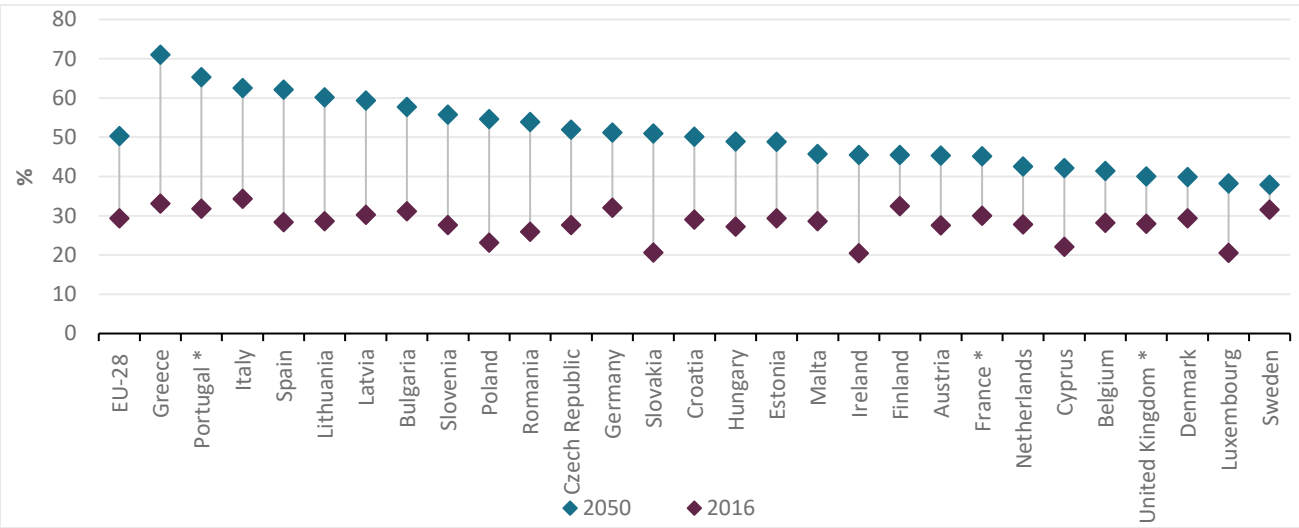
Figure 23: Population projections by age group, EU-28, 2016-2050 (%)



Source: Eurostat, 2018

Similarly, Figure 24 illustrates developments for the old-age dependency ratio between 2016 and 2050, after which the pace at which the EU-28's seniority dependency ratio is anticipated to slow down, however it highlights the process of ageing population. In half of EU MS, the old-age dependency ratio is predicted to be higher than 50% by 2050. This means that there will be fewer than two working-age persons for each person aged 65 and over by 2050[30]. In countries such as Lithuania, Ireland, Greece, Spain, Poland, Romania, Portugal, Slovenia and Slovakia, the old-age dependency ratio is predicted to double by 2050.

Figure 24: Old-age dependency ratio, EU-28, 2016-2050



Note: The old-age dependency ratio is defined as the ratio between the number of persons aged 65 years and over to the number of persons aged 15-64 years, expressed as a percentage.

Source: Eurostat, 2017

Despite the ageing process of the EU population, **positive net inward migration** has the potential to help delay the ageing trends and contribute to stimulating favourable investment conditions for construction companies in some of the EU MS. In MS with positive net inward migration, it is possible to **slowdown the process of ageing population** due to an increased share of working-age persons. However, countries with negative net inward migration will be likely to experience accelerating reduction of working-age population which will negatively and directly affect elderly dependency ratio as well as indirectly harm investment in construction.

[30] Ibidem.

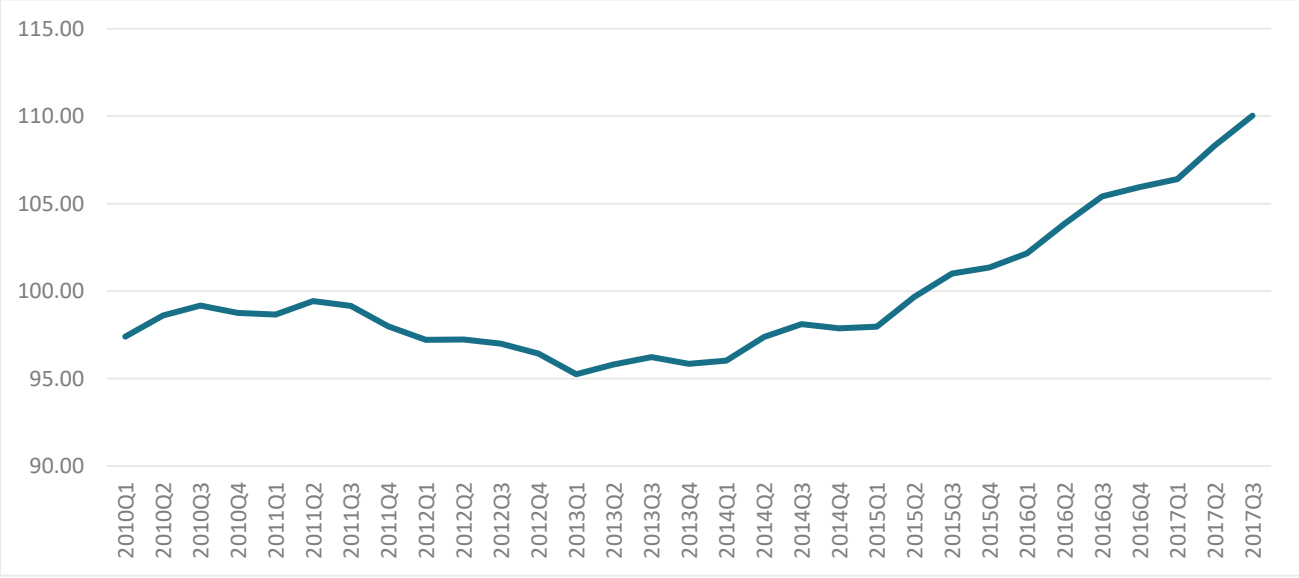
Housing demand

In some countries, housing construction has not been keeping up with the recent demographic trends in terms of population growth. This is leading to significant housing shortages, concentrated around the main urban centres and in the most economically attractive regions. As an underlying trend, urbanisation is accelerating in virtually all EU countries, with people increasingly moving to the largest cities such as London and Paris. This is notably the case in the UK, where about 245,000 new dwellings per year are needed in England alone[31], while only half of this amount is being built. There is already a shortage of rental housing of up to 156,000 dwellings in Sweden, especially in Stockholm and in the big university cities such as Göteborg and Malmö[32]. There is strong demand-side pressure in metropolitan areas of Germany, such as Munich and Hamburg, which are leading to an increase in prices and rents[33]. This is the case also Luxembourg, where the supply has not kept up with the growing demand associated with the huge population growth (17.7% between 2010 and 2017).

House price index in the EU, evolution 2015-2017 ↑ **10.0%**

As can be seen from Figure 25, the house price index has been growing – since 2015 alone, it has increased by 10%. According to Housing Europe[34], housing costs in the EU represented on average 22.2% of disposable income for the total population, this increases to around 41% for the people with an income lower than 60% of the median. The highest housing costs compared to the salaries are to be found in Greece, Denmark, and the Netherlands where there is a clear problem of housing affordability. One of the reasons behind this is that the demand is very high compared to the supply, and more dwellings are needed. Moreover, in countries such as Spain, Greece and Italy, youth finds it hard to find a house due to high prices, stricter conditions for mortgage lending, little availability of rental housing, or youth unemployment. This difficulty results on having, over 50% of the population between 18 and 34 years old living with parents.

Figure 25: House-price index, EU-28, 2010-2017 (2015=100)



Source: Eurostat, 2017

[31] House of Commons, Tackling the under-supply of housing in England, May 2018. http://researchbriefings.files.parliament.uk/documents/CBP-7671/CBP-7671.pdf
[32] Housing Europe, The state of housing in the EU. 2015.
[33] Ibidem.
[34] The state of housing in the EU - Housing Europe Report 2015 http://www.housingeurope.eu/resource-468/the-state-of-housing-in-the-eu-2015

Regarding **social housing**, most countries are facing a shortage and have long waiting lists. This is specially seen in countries with a small rental market such as Belgium or Sweden and also linked to the increase of immigrants and refugees in the countries.

For several years since 2015 France has been building around 100.000 new social houses a year, nevertheless, it still needs more efforts to supply all the demand[35]. The rental market is small compared to the demand in most countries, with Germany the only country in the EU with a rental sector larger than the owner-occupied, yet the country still falls short compared to the demand in the country.

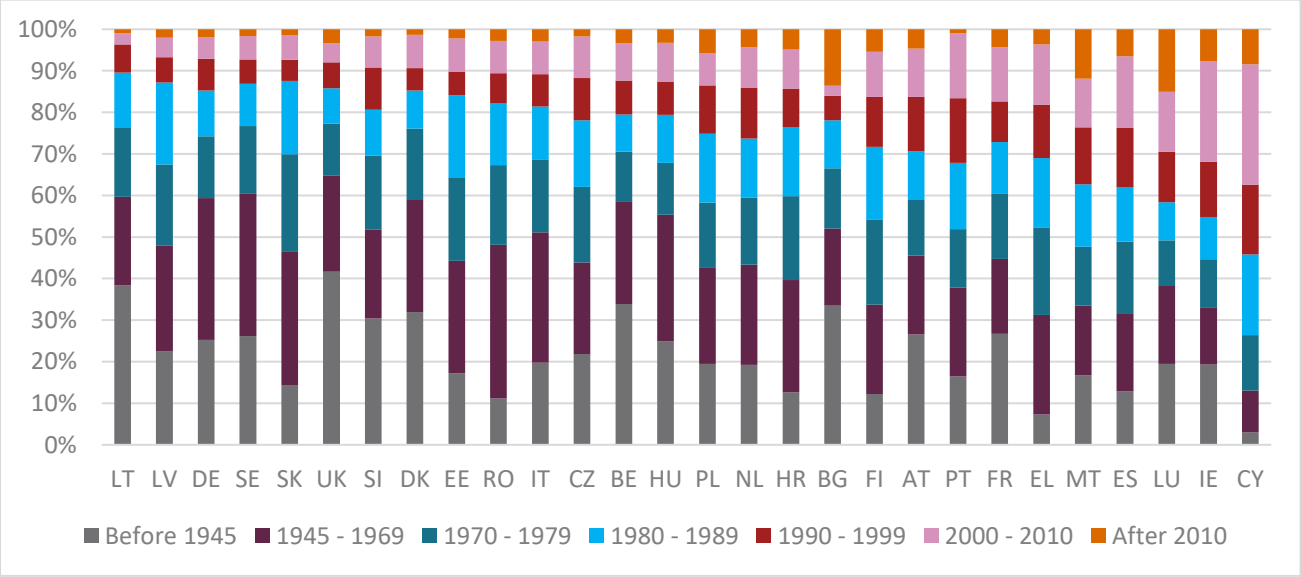
It is important for countries to address the overall housing shortage and making housing affordable since it has several risks such as having an increase of homeless, more people with mortgage payments. The overall housing situation in 2017 has resulted in having homelessness and housing problems in all EU countries, except Finland[36]. Some policies taken to address these challenges are described in Section 5.

Energy efficiency & renovation demand

Energy efficiency demand encourages and fosters favourable investment conditions in the renovation and energy performance improvements of buildings. The residential building stock in the EU MS is ageing. On average, 45.4% of the building stock in MS is built before 1969 and 75.4% before 1990[37].

As can be seen in the graph below, in all MS with the exception of Cyprus, Ireland, Luxembourg, the proportion of the residential building stock which was built after 2000 is below 25%. An ageing building stock means that in the absence of investment in the renovation and energy performance improvements of old buildings, the average level of energy performance of the national stock will be low[38].

Figure 26: Age of the residential building stock – share of dwellings by year of construction, EU-28



35 Ibidem.

36 Homelessness and housing problems reach crisis point in all EU countries – except Finland. The guardian. 2017. https://www.theguardian.com/housing-network/2017/mar/21/homelessness-housing-problems-crisis-point-all-eu-countries-except-finland

37 EU Building Stock Observatory

38 EC, European Construction Observatory, Analytical Report on Improving Resource Efficiency, February 2018.

Source: EU Building Stock Observatory

Recent developments in the **international regulatory framework** on sustainability and climate change, such as the Agenda 2030/ Sustainable Development Goals[39] and the Paris Climate Accord[40], have encouraged more progress and commitment to reducing energy consumption and increasing the energy performance and resource efficiency in construction.

There are also several **EU regulatory initiatives** and Directives in place that aim at increasing energy performance and resource efficiency in construction. Notably, the Energy Efficiency Directive (EED) (2012/27/EU), plans for a 20% energy savings target to be achieved by 2020 and includes a number of provisions and targets focusing specifically on energy performance in buildings. Another fundamental regulatory document is the Energy Performance of Building Directive (EPBD) (2010/31/EU), which introduces the concept of Nearly Zero Energy Buildings (NZEBs) and requires that all new buildings be NZEBs by 2020 (for public buildings this obligation is applicable from 2018). In addition, the Directive provides a common methodological framework for measuring the energy performance of buildings, sets an obligation for MS to lay down cost-optimal new minimum energy performance requirements (for new buildings and buildings undergoing major renovations), and for technical building elements and obliges MS to establish mandatory energy performance certification and inspections schemes.

The EPBD has made it possible for consumers to make informed choices that will help them save energy and money, and has resulted in a positive change of trends in the energy performance of buildings. Following the introduction of energy efficiency requirements in national building codes, new buildings today consume only half as much as typical buildings from the 1980s.

On May 2018 the EPBD was revised aiming at accelerating the cost-effective renovation of existing buildings, with the vision of decarbonising building stock by 2050 and mobilising investment. The revised Directive also supports electro mobility infrastructure deployment in buildings' car parks and introduces new provisions to enhance smart technologies and technical building systems, including automation.

20% energy savings target to be achieved by 2020 (EED)

Finally, in terms of the **national regulatory framework**, most policies and regulations are driven by the implementation of international and European regulations, notably through the transposition and implementation of the EPBD and EED.

Alongside the EU directives, additional measures have been taken in MS, for example in Lithuania. In 2018, a new law will come into force requiring all new buildings to be built as A+ class, and from 2021 the highest - A++ class. Such buildings are called energy-free, because they will have to produce half of their energy consumption from renewable energy sources (solar, wind, geothermal, etc.).

In addition to regulatory measures, there are a number of national policy measures that stimulate investment in energy efficiency – further information on these is available in Section 5.

Need for maintenance and expansion of public infrastructure

In the aftermath of the economic crisis, public investment in transport infrastructure has fallen in most EU MS, highlighting demand for future public investments given the ageing infrastructure and the growing population in the EU (Figure 21).

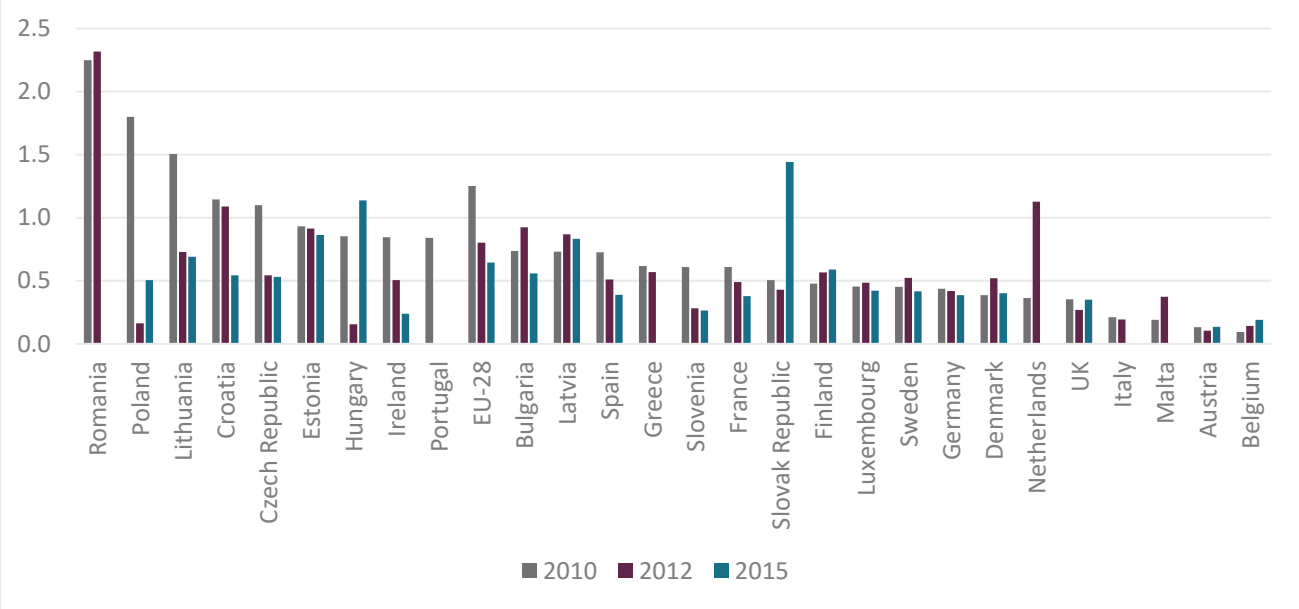
[39] UN General Assembly, Transforming our world : the 2030 Agenda for Sustainable Development, 21 October 2015, A/RES/70/1

[40] United Nations / Framework Convention on Climate Change (2015) Adoption of the Paris Agreement, 21st Conference of the Parties, Paris: United Nations.

The proportion of GDP invested in road infrastructure has drastically dropped across majority of the EU MS in 2015. More specifically, total **investment in road infrastructure** as a share of GDP has dropped by 25.2% in the EU-28 on average over period of 2010-2015.

Poland and Ireland experienced the largest declines of 71.9% and 71.7%, respectively, followed by Slovenia (-56.7%) and Croatia (-52.5%), over the same period. By contrast, Belgium and Slovakia were among those countries reaching the highest positive investment in road infrastructure as a share of GDP, recording increment of 184.8% and 100%, respectively over 2010-2015 (Figure 27).

Figure 27: Road infrastructure investment per GDP, EU-28, 2010-2015 (%)



Source: OECD, 2017

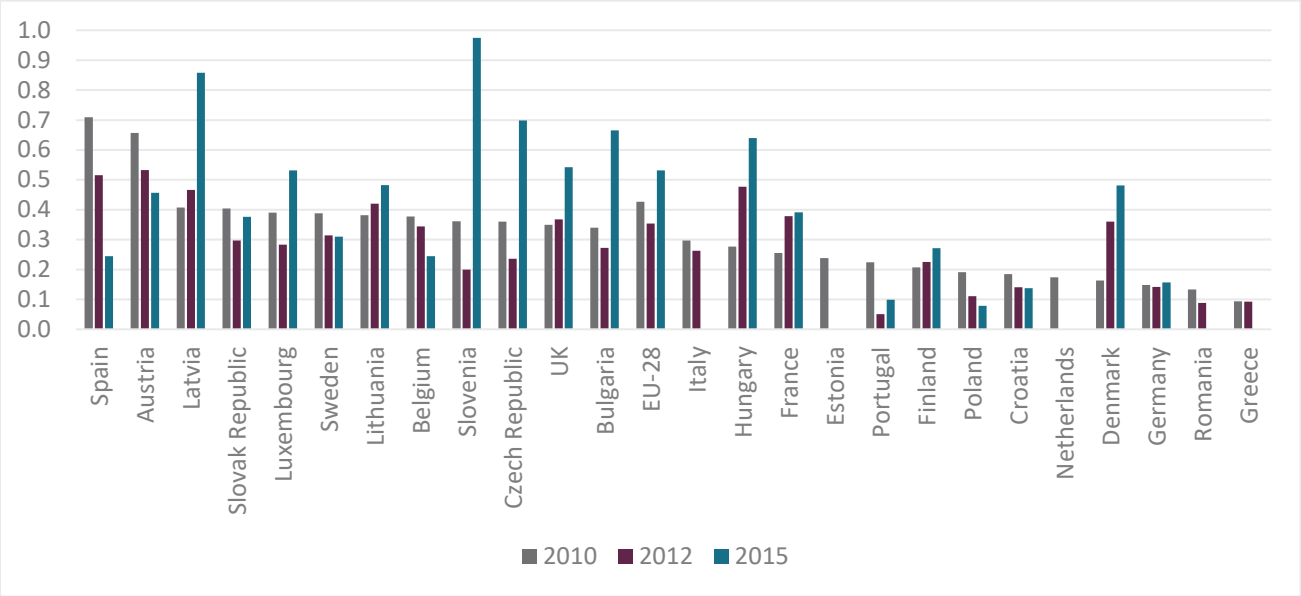
*Some data is missing or incomplete for Cyprus, Greece, Portugal and the Netherlands

Public spending on rail infrastructure as a proportion of GDP has gone up by 40% on average in the EU-28 over the period of 2010-2015.

Public spending on rail infrastructure in the EU, 2010-2015 ↑ **40.0%**

The EU-average increase in public spending on rail infrastructure is mostly driven by Denmark (+195.1%), Slovenia (+170.1%), Hungary (+130.7%) and Latvia (+110.8%), while Spain, Poland and Portugal recorded the lowest rail investment as a share of GDP and stood at -65.5%, -58.6% and -55.8%, respectively, over 2010-2015 (Figure 28). Overall, despite that investment in rail infrastructure went up, investment in rail infrastructure as a share of GDP was still relatively low, reaching only 0.4% of the EU-28 average in 2015.

Figure 28: Share of rail infrastructure investment to GDP, EU-28, 2010-2015 (%)



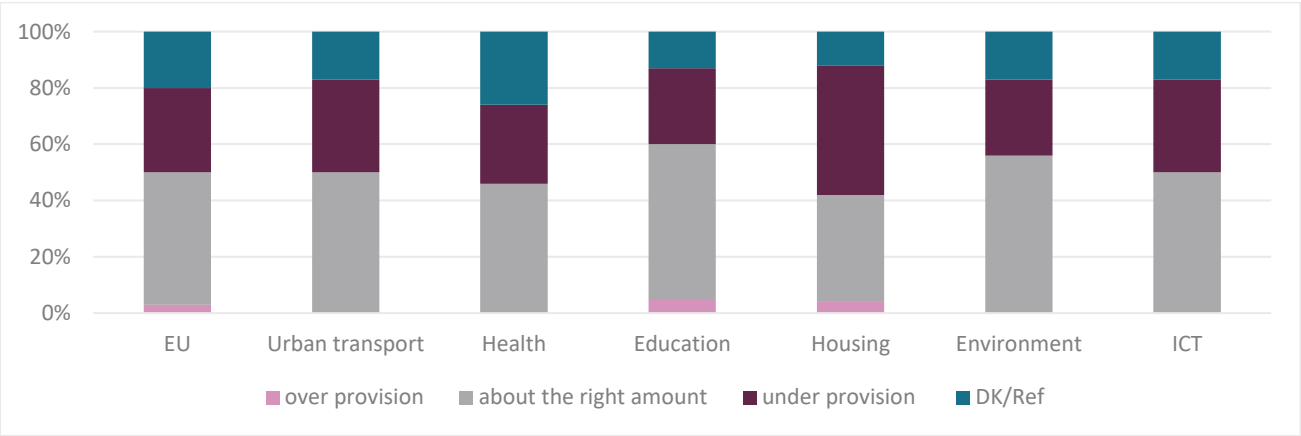
**Some data is missing or incomplete for Estonia, Greece, Ireland, Portugal, Italy, Malta and the Netherlands*

Source: OECD, 2017

In regards to infrastructure, the EIB conducted an Investment Survey on the Municipality Infrastructure Investment. The results show that around half of municipalities in the EU consider that past investments in infrastructure have been in line with their needs. One out of three regions notes that its investment activities over the past five years have been below needs. Under 1% report 'over provision' over this period. The proportion of municipalities reporting 'under provision' is biggest for housing (Figure 29). Overall, local municipalities in the EU overviewing local infrastructure investment activities and needs noted that there has been 33% of under-investment in the past 5 years than over-investment across the EU MS, mainly in social housing, urban transport and ICT[41].

The quality of municipal infrastructure is ranked at 3.2 (on a scale from 0 to 5), however a greater number of municipalities in the EU were optimistic than sceptical about closing their infrastructure gaps in the following five years

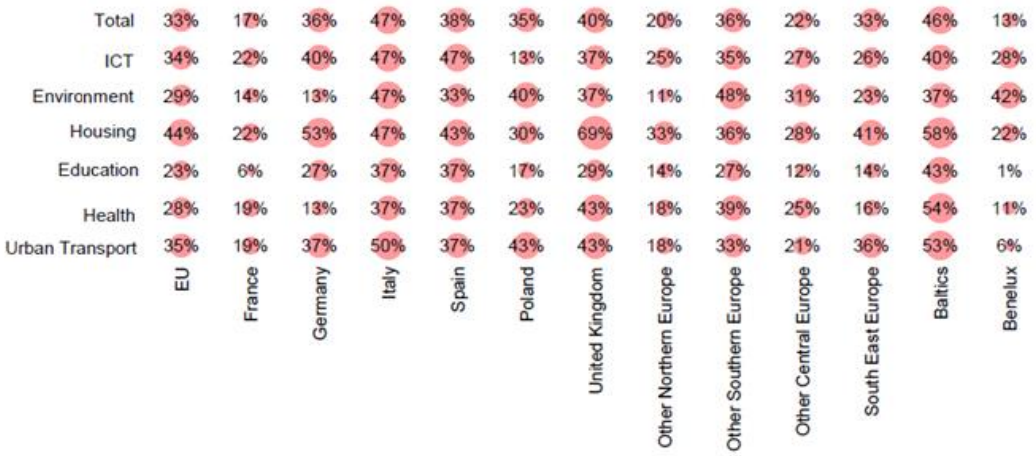
Figure 29: Perceived Investment Gap by a sector, EU-28, 2017



Source: EIB Group Survey on Investment and Investment Finance 2017

[41] EIB, EIB Investment Survey, Municipal Infrastructure European Union Overview, 2017, http://www.eib.org/attachments/efs/eibis_2017_municipality_eu_overview_en.pdf

Figure 30: Perceived Investment Gap by Country or Region, 2017



Source: EIB Group Survey on Investment and Investment Finance 2017

Furthermore, there are also growing concerns over natural disasters and hazards (e.g. flooding, hurricanes and earthquakes), and demand for enhanced resilience of the built environment, especially in urban areas to prevent damages caused by natural geologic processes. Infrastructure is ageing in many regions of the EU and requires appropriate maintenance and upgrading. Funds run by public sector alone would be presumably insufficient to bridge the investment gap. EFSI helps to leverage private capital to finance infrastructure construction projects of common interest[42].

On the other hand, non-residential buildings have also influenced investment conditions in construction. Drivers for state intervention in supporting investments in **non-residential public sector buildings** are diverse, depending on the country. In Italy for instance, more than half of all public schools (about 44,500) was built without any anti-seismic safety measures, and about 30% requires urgent maintenance[43]. Moreover, fewer than 40% of these buildings are in possession of a certificate of habitability/viability[44]. In Sweden, the forecasted population increases and the growing proportion of elderly people have highlighted the need for investment in construction of healthcare establishments. In Germany, municipal investment levels have been lagging behind in the past years, with the investment rate dropping by about 50% since 1991 and net investment[45] being negative since 2003[46].

Innovation

Innovation drives investment in construction and makes it more efficient by increasing capital and labour productivity and reducing the costs and risks of construction projects.

As noted by the EU High Level Working Group on Competitiveness and Growth, digitalisation, new technologies, new materials and recyclability will raise efficiency of construction processes and enhance the quality of buildings, safety, working conditions and environmental compatibility[47].

42 Council of the European Union, The European construction: challenges and the role of global value chains, July 2017.
In the context of the revised Energy Performance of Buildings Directive (EPBD) safety matters related to fire and seismic activities should also be considered to the renovation of existing buildings, in line with national regulations and in application of the subsidiarity principle.

44 Ministry of Education, University and Research, Scuola, presentata l'Anagrafe dell'Edilizia Scolastica. August 2015.

45 The balance of investment and depreciation.

46 DIW Berlin (German Institute for Economic Research), Municipal infrastructure in Germany requires significant strengthening. October 2015.

47 Council of the European Union, The European construction: challenges and the role of global value chain, 10958/17, Brussels, 20 July 2017

A central element of the digitalisation drivers within the construction sector is the use of BIM, short for **Building Information Modelling**. BIM is a digital tool disrupting the construction sector as a platform for central integrated design, modelling, asset planning running and cooperation. It provides all stakeholders with a digital representation of a building's characteristics in its whole life-cycle and thereby holds out the promise of large efficiency gains.

Although BIM was originally devised for buildings, the benefits it provides, such as less rework, fewer errors, enhanced collaboration, and design data that can ultimately be used to support operations, maintenance, and asset management, make it an attractive option also for infrastructure projects[48]. Research has provided evidence of the gains in productivity[49], time and cost savings, and therefore it allows construction businesses consistently to assess their performance and to acquire more accurate overview of their work.

The revised **Energy Performance of Buildings Directive**, introduces a new article which advocates the definition of an optional Smart Readiness Indicator (SRI) for buildings, rating their readiness to adapt to the needs of the occupants and to improve their performance. The SRI will characterize the ability of a building to:

- manage itself,
- interact with its occupants, and
- take part in demand response and contribute to smooth, safe and optimal operation of connected energy assets.

The SRI will also support the uptake of technical innovation in the building sector, where there is a lack of investment despite short payback periods.

Innovative work process organisation, made possible through e.g. the implementation of **lean construction** principles also holds substantial potential for increasing the attractiveness of investment in construction, in particular in sustainable construction projects, which are increasingly in demand by customers. A recent study found that lean construction and sustainable construction provide for benefits such as improved corporate image and sustainable competitive advantage. Additional advantages such as improved process flow and productivity, improvement in environmental quality and increased compliance with customer's expectations are realised following integration of principles of lean construction and sustainable construction within the construction sector. Just-in-time, visualisation tool, value analysis, daily huddle meetings and value stream mapping are the most common lean tools/techniques for enabling sustainability[50]. Further opportunities for efficiency gains are provided by the integration of Internet of Things (IoT) and related standards into the communication framework underlying construction management systems, so as to fully or partially automate various communication functions across the construction project lifecycle (e.g., to enable lean and close to real-time reporting of production control information)[51].

[48] JRC, Building Information Modelling (BIM) standardization, 2017

[49] Poirer, E., et al (2015) Measuring the impact of BIM on labor productivity in a small specialty contracting enterprise through action-research, Automationin Construction, Volume 58, October 2015, pp 74-84

[50] Ogunbiyi, O. et al (2014) An empirical study of the impact of lean construction techniques on sustainable construction in the UK, Construction Innovation, Vol. 14 Iss 1 pp. 88 - 107

[51] Dave, B. et al (2016) Opportunities for enhanced lean construction management using Internet of Things standards, Automation in Construction, Volume 61, January 2016, pp. 86-97

4.
Obstacles to investment in the construction sector

Despite the upturn in economic activity in the construction sector across Europe, a number of obstacles to the sustainable growth of the sector remain. Building on the existing research on barriers to investment in Europe[52], this section considers specifically some of the main cross-cutting economic and non-economic barriers to investment in residential and non-residential buildings and public infrastructure, ranging from regulatory uncertainty and fragmented markets to weak public planning and project preparation capacity and financing bottlenecks.

In general, buildings and the construction market have specific characteristics, problems and barriers. Buildings are assets with a long lifetime, meaning that buildings have a natural trend for low replacement and refurbishment rates.

There is a general lack of understanding among households and building owners of their energy use, and potential savings related to different energy efficiency measures. The lack of attractive financing products, limited information on building stock, limited uptake of efficient and smart technologies also contribute to obstacles to investment in construction sector.

The provisions of the EPBD focus on the depth of energy efficiency measures in buildings, however the reported gap between the estimated savings at design stage and actual savings after renovation may lead to mistrust and contribute to lower the impact of the information given to citizens.

Despite being cost-effective, the renovation of buildings requires up-front investment. Landlords may have little incentive to invest in housing stock improvements as return on capital employed can be limited. Split incentives play a role and are also present in office buildings and other rented space such as shopping malls. However, there are no provisions in the EPBD with regards to split incentives. These are indirectly addressed by other legislation (e.g. Article 7 of the EED, which has an effect on the renovation rate in some regions). In response to these challenges, there is a lack of attractive financing products on the market, in particular because financial institutions do not incorporate all the benefits of energy efficiency investments (higher asset value, better liquidity position of borrowers, lower credit default rate of renovation loans compared to standard loans, etc.) into their offering of financial products[53].

There is also a general lack of information on the building stock in Europe. The data that can provide this information shall be made available to building owners and for statistical and research purposes as a means to achieve the objective of filling this knowledge gap. For this reason, the European Commission used external expertise to assist the setting up of the EU Building Stock Observatory[54] to monitor the energy performance in buildings. This resulted in the development of a list of relevant indicators, a methodology for data collection and a website. The EU Building Stock Observatory website is integrated in DG Energy's website and contains a database, a datamapper and factsheets. The topics covered include building stock characteristics, energy needs and consumption, technical building systems, certification schemes, available financing mechanism and social aspects, such as energy poverty.

Risk and return on investment in the construction sector

Investment returns are one of the most important factors in investment decisions, as returns need to be high enough to compensate for the risk and the cost of capital. Looking at investment in the construction sector, analysis by the EIB shows that the nominal internal rates of return in the construction sector in the EU have historically been lower than those in other sectors of the economy, particularly so in the aftermath of the crisis of 2008-2009 (see Figure 31). In turn, the analysis found that the decline in corporate returns on assets played a statistically and economically

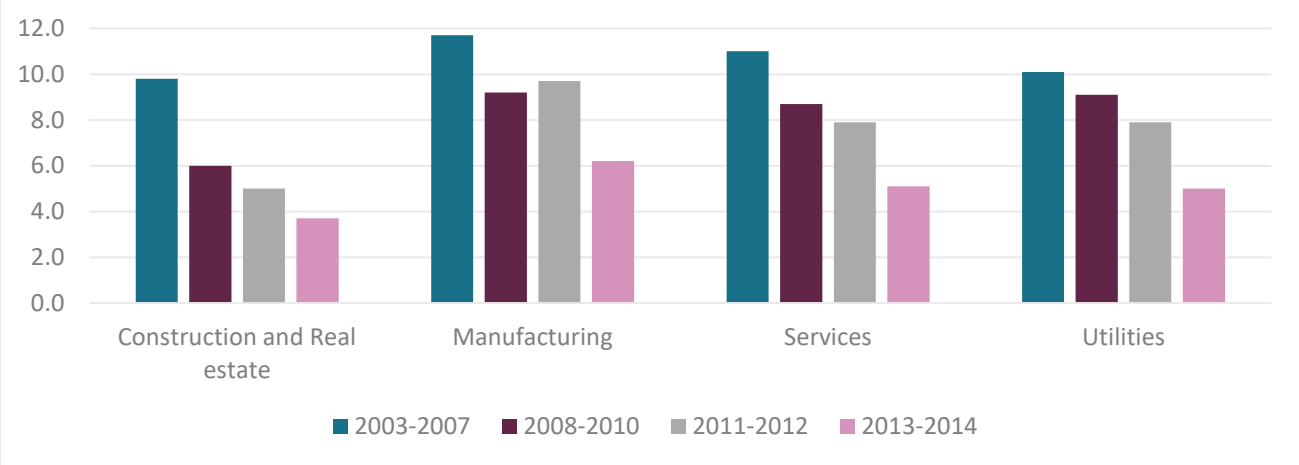
52 EIB, 2016, Breaking Down Investment Barriers at Ground Level EIB, 2016, Investment and Investment Finance in Europe

53 EC, Commission Staff Working Document, impact assessment, Proposal for a Directive of the European Parliament and of the Council amending Directive 2010/31/EU on the energy performance of buildings, 2016. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016SC0414&from=EN

54 The EU Building Stock Observatory is accessible at: https://ec.europa.eu/energy/en/eubuildings

significant role in the decline of construction sector investment - a one percentage point (p.p.) increase in the internal rate of return is associated with a 1.6% increase in the average investment rate[55].

Figure 31: Nominal interest rates of return in the non-financial corporate sector, EU-28, 2003-2014 (%)



Source: ORBIS, Bureau van Dijk and EIB staff calculations[56]

While initially, the economic and financial crisis and their negative impact on private demand played a significant role in the decline of corporate returns (e.g. the collapse of the real estate bubble in some European countries left a large amount of spare residential dwelling capacity in its wake), other factors sustained the downward trend. In general, investors' expectations for the overall economic growth were downscaled, reflecting an understanding that the investment boom in the run-up to the financial crisis in 2008 was unsustainable, and that productivity growth had slowed down. In fact, falling productivity growth in Europe, both in absolute terms and relative to the US, is likely to be the key driver of falling rates of return. Productivity in the construction sector, in particular, remains lagging behind that of other industries, owing to i.a. slower uptake of digitalisation and innovation as discussed in the following paragraphs[57].

There is a data gap for the building stock in the EU

Construction companies find the uncertainty about the investment prospects to be a barrier to investment at the national level

70%

Uncertainty about the investment prospects in the sector plays an important role in firms investment decisions – on average, 70% of construction firms in Europe find it to be a barrier to investment. Notably, the country differences in the assessment of this barrier suggest that a lot of the uncertainty that firms report appears to be related to the national context rather than developments in a global or European perspective.

The highest share of firms naming uncertainty as a barrier to investment is in the Greek construction sector, followed by the Greek infrastructure, service and manufacturing sectors in that order. The next highest share of firms identifying uncertainty as a barrier are those in the Italian construction sector, followed by the Italian manufacturing,

55 EIB, 2016, Investment and Investment Finance in Europe
56 EIB, 2016, Investment and Investment Finance in Europe
57 EIB, 2016, Investment and Investment Finance in Europe

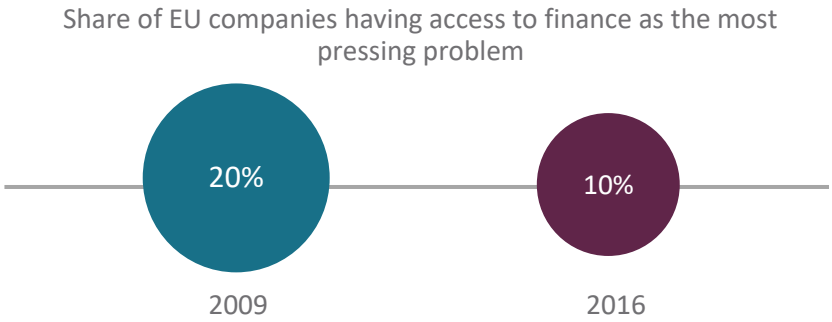
infrastructure and service sectors. The chain of sectors continues in this manner, with sectors within each country tracking each other very closely in their responses[58].

Access to finance

Access to finance plays an important role for company growth, however, it is a potential obstacle to investment in construction at different levels – for construction firm investment, for household investment and public investment.

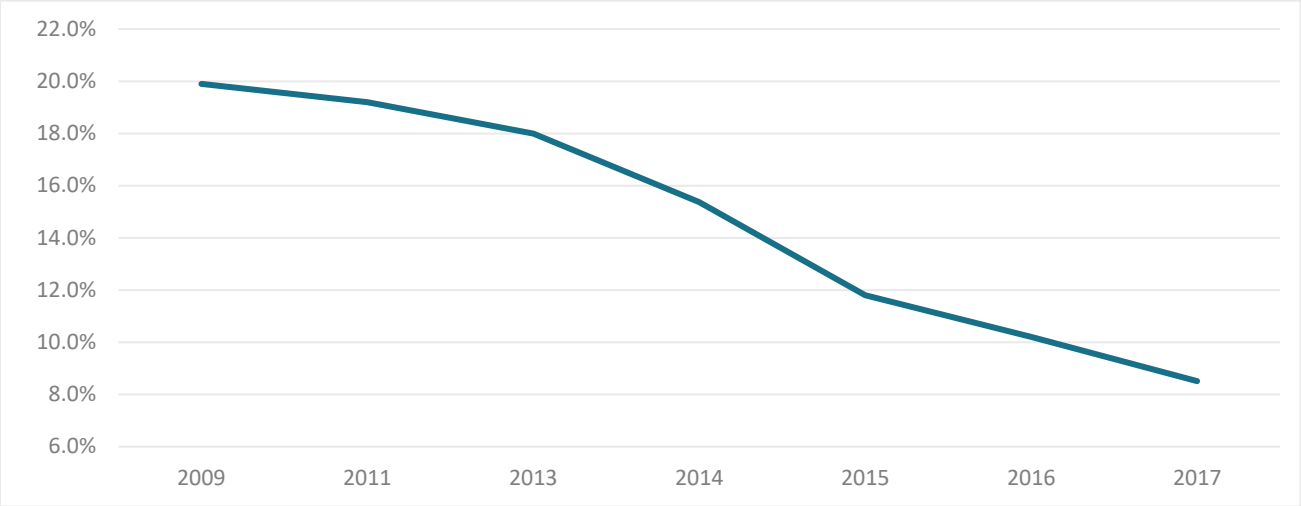
The construction sector is typically characterised by relatively **low profit margins, low-price procurement, and strained supply chains**, and thus access to finance for the construction sector has traditionally presented a challenge, particularly for small businesses. In fact, difficulties in accessing finance are often considered one of the main constraints for the development of the construction sector. Thus, a recent survey of EU firms found that close to **10% of construction firms in the EU can be classified as finance-constrained.**

Firms that were rejected when seeking finance, received less than asked for, or did not seek external finance because they thought that the borrowing costs would be too high or that they would be turned down anyway, are classified as finance-constrained. Nevertheless, data from the SAFE survey presented in Figure 32 shows that access to finance has improved substantially since the high financing constraints experienced in the aftermath of the 2008-2009 crisis.



[58] EIB, 2016, Investment and Investment Finance in Europe

Figure 32: Share of construction firms that rate access to finance as their most pressing problem, EU-28, 2009-2017

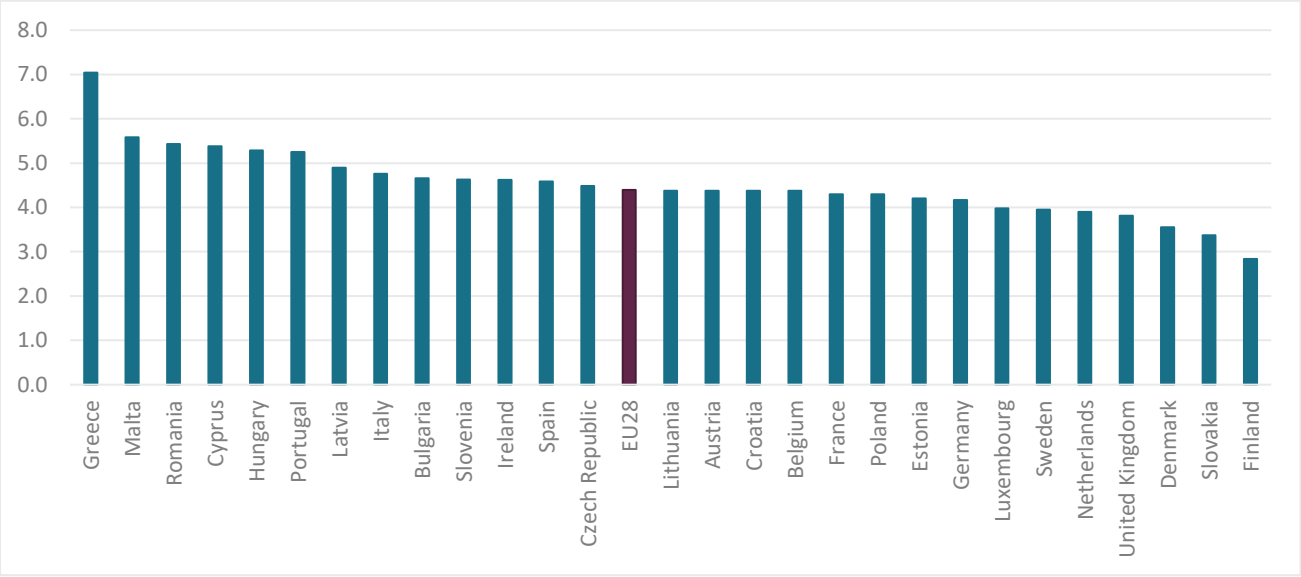


Source: SAFE Survey

Note: Until 2013 the survey was bi-annual, hence there is not data available for 2010 and 2012

Country level data (shows that in 2017, access to finance in the construction sector is a bigger obstacle in the MS which are still recovering from the financial crisis like Greece, Cyprus, Portugal, but also in Romania, where construction firms have the highest credit risk, with a non-performing loan ratio of 30.6% in September 2017.

Figure 33: Share of construction firms that rate access to finance as their most pressing problem, EU-28, 2017 (%)



Source: SAFE Survey

It is interesting to consider the results of a 2017 government analysis of access to finance in Sweden, which did not find sufficient evidence to confirm that lack of access to finance is an obstacle to housing construction in general, but identified a set of factors that lead to financing difficulties or potential contraction in lending[59]:

- The Basel rules, which mean that banks need higher capital adequacy for small and medium-sized companies;
- Small projects in weaker markets are not prioritized by banks, even if there is a repayment ability and sometimes there is no bank with local knowledge, which leads to risk premiums or denied loans;

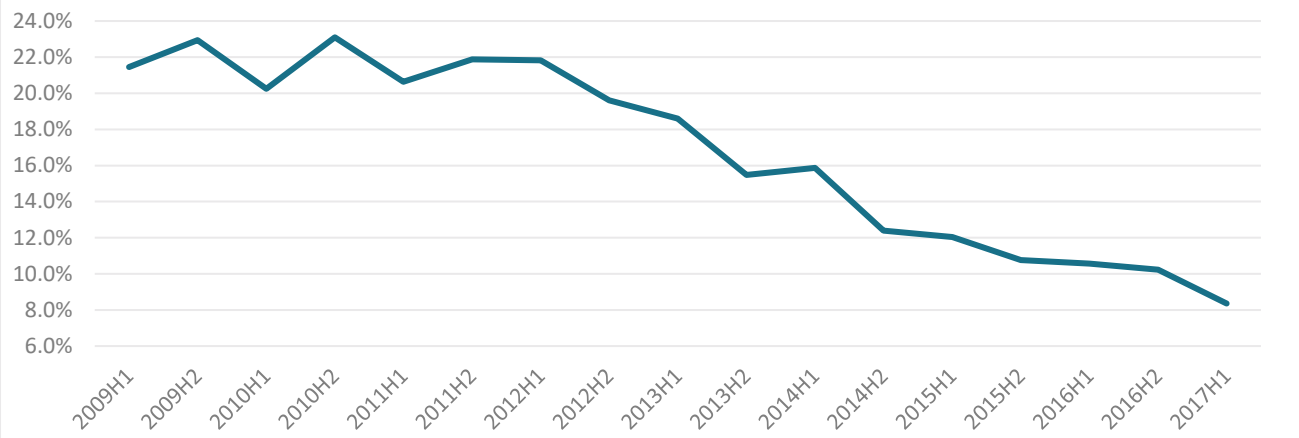
[59] Regeringen. Lån och garantier för fler bostäder. December 2017.

- Smaller players often lack equity - even after small investments into new construction projects, it may take several years to rebuild the equity and be able to make further investments;
- Smaller operators may need external financing already during the design phase, which can be hard to obtain. This is the case in particular for builders' associations and cooperative tenant associations.

Access to finance is a particular issue for SMEs

As can be seen from Figure 34, a relatively higher than the average share for the sector (in Figure 32) reports access to finance to be their most pressing problem, with the factors affecting this to be found in their weak equity ratios (the amount of equity used to finance a company's assets), limited financial scope and lack of specialised knowledge in financial management.

Figure 34: Share of construction sector SMEs that rate access to finance as their most pressing problem, Euro area, 2009-2017



Source: ECB, SAFE survey database

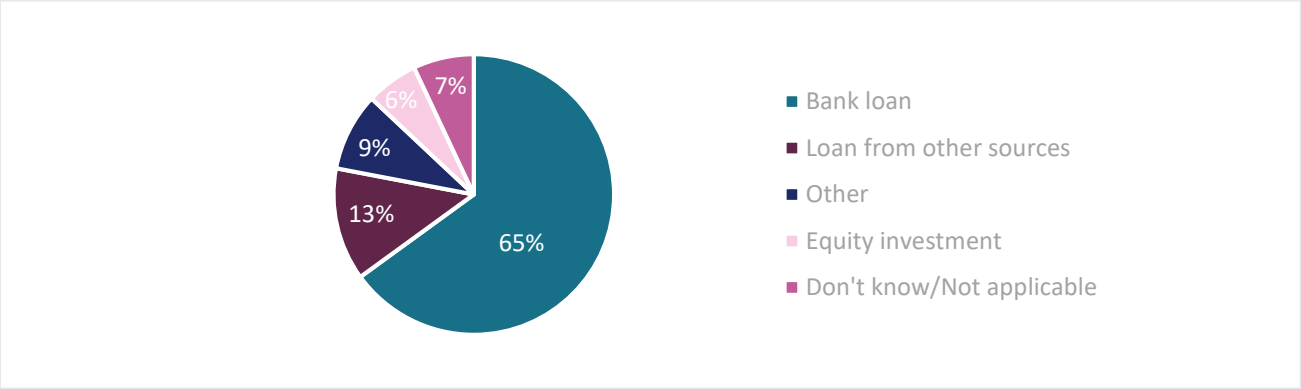
SAFE survey respondents report that the main barriers to loan financing in the construction sector are:

- insufficient collateral or guarantee (15%)
- and high interest rates (12%).

In terms of factors needed for accessing future finance, respondents see the need for policy intervention. Tax incentive, facilitating access to public measures such as subsidised loans, grants and similar are considered the most important elements in terms of policy support. Availability of guarantees for loans is also viewed as critical by surveyed SMEs in construction.

SMEs in construction are relatively conservative when considering external financing options (Figure 35). The preferred type of finance to realise growth ambitions for construction sector SMEs are bank loans (65% of all respondents).

Figure 35: Relevant types of finance for SMEs in construction, EU-28, 2017



Source: EC, 2017 Safe report

Financing of the large construction enterprises presents other characteristics and challenges compared to SMEs. Established companies such as the top EU construction companies are generally less hurdled by access to finance but may equally be affected by squeezing profit margins.

As a general tendency, construction firms require relatively little external financing, if they focus on construction as their core business. Among the top 20 European companies in construction, the ones that are not strongly diversified have relatively low levels of debt[60]. Conversely, higher levels of debt often correlate with activities outside the scope of construction only, as these require greater capital. If construction companies engage in public-private partnerships, project finance, or mergers and acquisitions (M&A) activities, the need for financing rises. In fact, among the 20 largest construction companies in Europe, higher rates of indebtedness correlate with activities outside the construction domain. Nevertheless, the average net debt to EBITDA ratio of the top 20 construction firms in Europe has been consistently decreasing from 3.1 in 2012 to 2.1 in 2016, mainly as a result of a 27% reduction of net debt and a 5% EBITDA growth in that period[61].

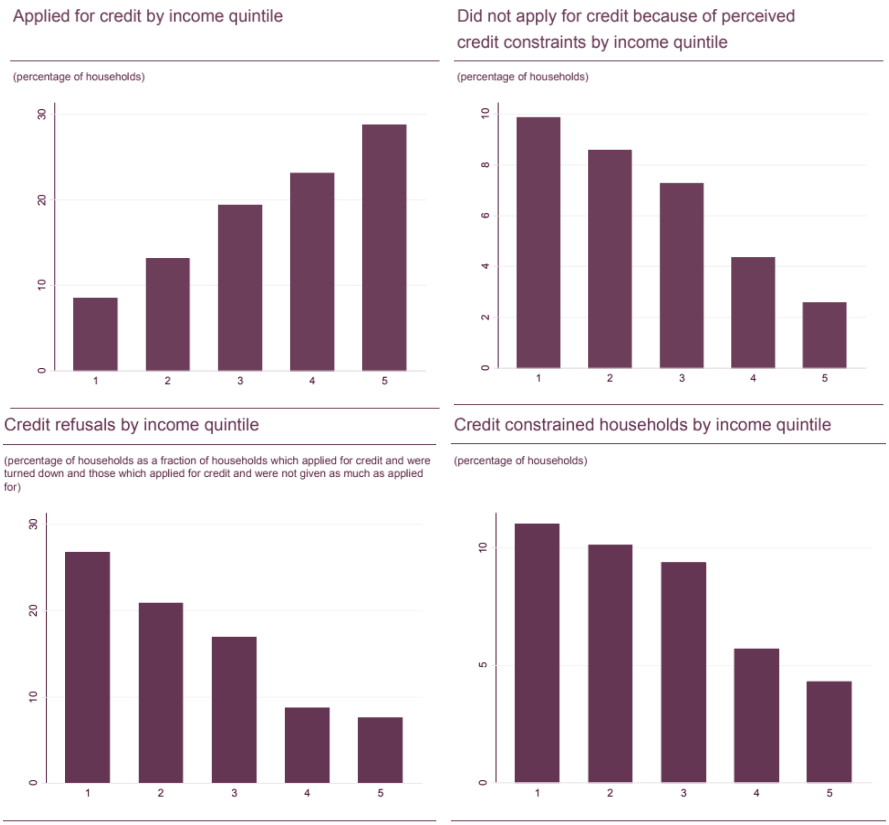
Specific issues – Access to finance for households

60%-80% of household loans are mortgages

The recent economic recession has been associated with a severe worsening of consumer access to bank credit. While data on access to mortgage financing across the EU is not readily available, evidence of the main trends can be gleaned from the 2015 ECB survey on access to finance for consumers (households)[62], showing that mortgages represent between 60% and 85% of loans to households in the EU[63]. The survey found that compared to 2013, the share of Euro area households who applied for applied for credit within the last three year decreased for the total population from 23.0% in 2013 to 18.6% in 2015 (-4.4%), and for all the demographic breakdowns considered, namely household size, housing status, wealth quintile, age, work status, and education. The decline in credit applications is more severe for the largest households (-10.6%) and for relatively young households (-5.7%). The fraction of those who did not apply for credit because of perceived credit constraints in 2015 and 2013 was broadly the same, but it did grow in the case of large households with four members (+1.5%), for the youngest households (+1.6%) and for the least educated households (+2.1%).

60 Deloitte, European Powers of Construction, 2016. https://www2.deloitte.com/be/en/pages/real-estate/articles/european-powers-of-construction-2016.html
61 Ibidem.
62 ECB, Statistics Paper Series The Household Finance and Consumption Survey: results from the second wave. No 18 / December 2016
63 European Banking Authority, Consumer Trends Report 2017

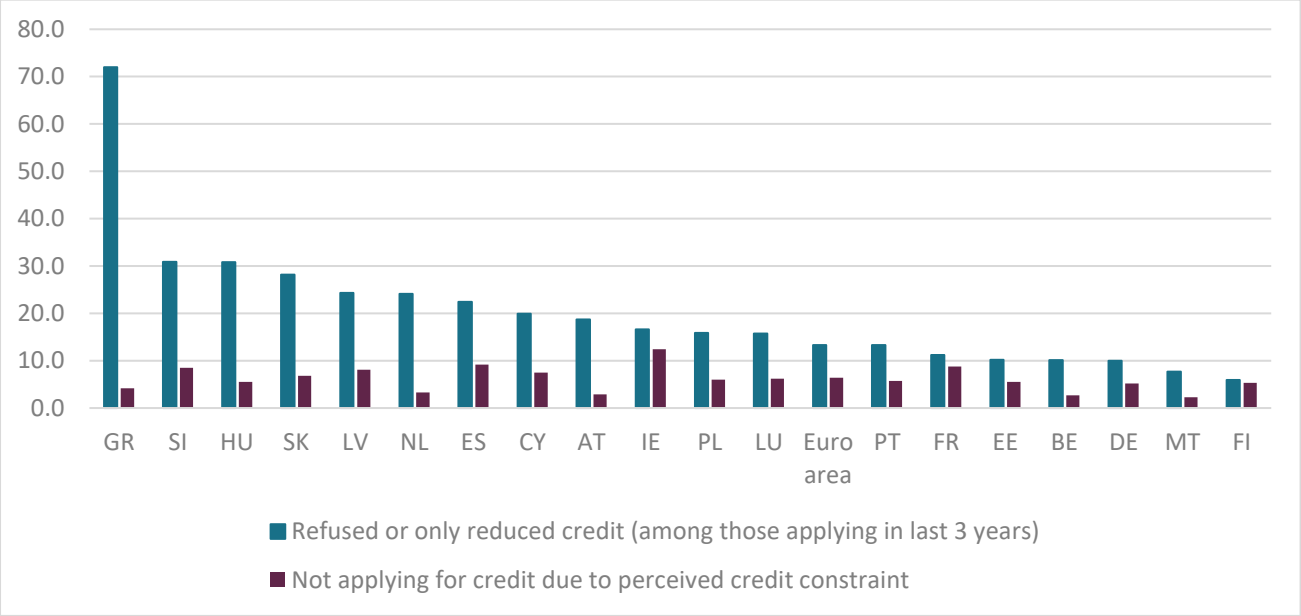
Figure 36 Credit demand and constraints for households, Euro area average, 2015 (%)



Source: ECB 2015 HFCS

Despite the slightly lower confidence in households' ability to access financing, the survey found that there was a reduction in the proportion of households who were (partially) refused a loan, conditional on applying for credit, from 16.4% in 2013 to 13.3% in the 2015 (-3.1%). As such, the share of credit-constrained households stood at 8% overall. The country level data presented in Figure 37 offers evidence of the severe financing difficulties for Greek households in the aftermath of the sovereign debt crisis.

Figure 37: Credit constraints for households, Euro area, 2015



Source: ECB 2015 HFCS

Despite the potential reduction in access to mortgage financing in certain Member State and for certain household segments, as of 2017, there has been an increase in the volume and value of mortgages in almost all MS, driven by a decrease in interest rates and an increase in the price of real estate in the EU[64].

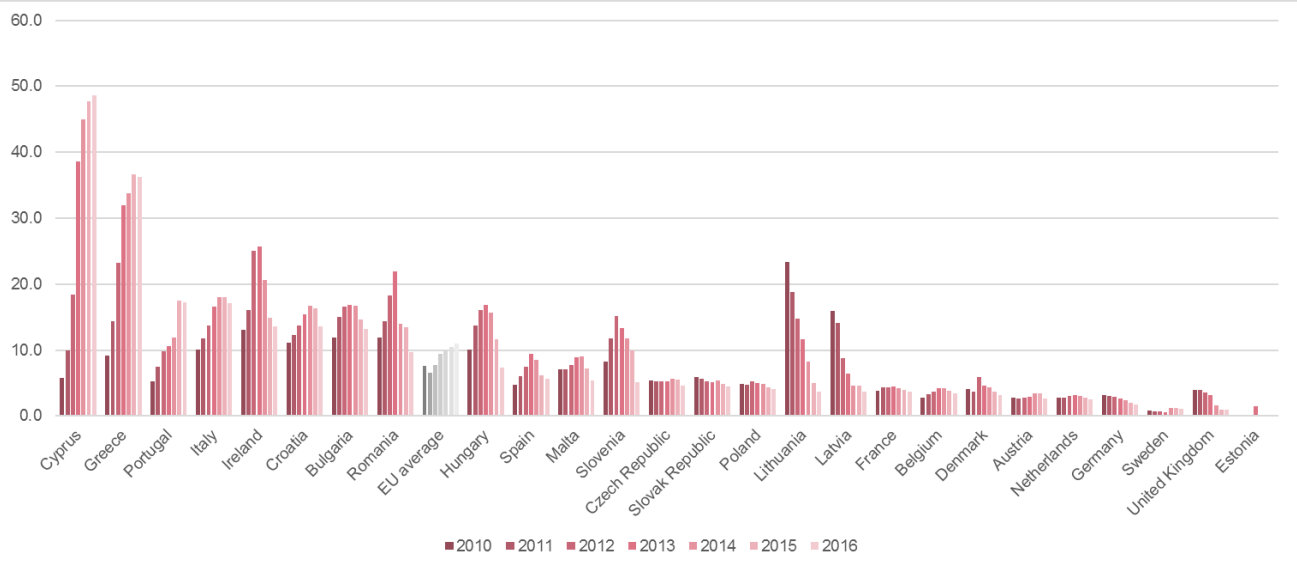
Specific issues - Non-performing loans

The total number of insolvencies in the construction sector is declining across Europe.

The construction sector contributed to 20.6% of all business insolvencies in the Western Europe[65] and to 13.0% of all business insolvencies in Central and Eastern Europe[66] in 2015. Compared to 2014, the incidence of corporate insolvencies in the construction sector declined by 5.1% in Western Europe and by as much as 30.9% in Eastern Europe[67].

Banks in Europe have been increasingly burdened with **non-performing loans** (NPL), due to business insolvencies and overexposure to mortgage lending in economies where housing bubbles came apart. According to IMF data (Figure 38), on average EU MS had a share of NPLs of 10.9% in 2016, up by 3.3 percentage points from 2010, driven by the increase in NPLs in a number of EU MS over that period. Notably, NPLs accounting for close to 50% of total gross loans in Cyprus and 36.3% in Greece.

Figure 38: Non-performing loans to total gross loans, EU-28, 2010-2016 (%)



Source: IMF (FSI)

Notes: Data not available for Luxembourg and Finland

The construction sector was particularly affected by NPLs. While EU-wide data on the share of NPLs in the construction sector is not readily available, some country level data points can be used to illustrate the main trends. For example, in Cyprus, construction sector NPLs represented 17% of all NPLs and the NPL ratio for construction sector loans stood at 72% in 2016 and at 54% for real estate activities. In Italy, the construction and real estate sectors accounted for EUR 43.3 billion and EUR 20.8 billion worth of non-performing loans, i.e. 27.4% and 13.1% of the total non-performing loans in the economy (EUR 158.3 billion) and for over 40% of the corporate non-performing loans. This has contributed to the risk-averse approach to lending and to the ensuing considerable reduction in the credit extended to the construction sector in the country.

64 European Banking Authority, Consumer Trends Report 2017

65 Defined as Belgium, Netherlands, Luxembourg, France, Germany, UK, Greece, Italy, Ireland, Spain, Portugal, Austria, Switzerland, Sweden, Denmark, Finland, Norway

66 Defined as Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Serbia, Slovakia, Slovenia

67 Creditreform. Corporate insolvencies in Europe 2015-2016. 2017

Banks have been burdened by sharp increases in **non-performing loans to households**, notably mortgages. However, EU MS have experienced diverging trajectories with respect to household indebtedness and related non-performing loans, according to the overall economic situation and health of national banking system.

Credit to households grew rapidly in Central and Eastern Europe after the fall of communism due to the privatisation of the housing stock and the increased availability of credit. Yet, not all CEE countries developed in the same way, as illustrated by the emergence of a foreign-currency mortgage crisis only in some CEE countries, including Hungary and Poland. Both in Hungary and Poland households took on loans denominated in foreign currency prior to the economic crisis, which were cheaper as compared to the local currency. Yet, the proportion of foreign-currency mortgages varied significantly between these two countries, standing at 40% for Poland and 70% for Hungary[68]. As the local currencies fell, mortgages became more expensive, making it more difficult for households to service their debt. In Hungary, this led to a rapid increase in the share of non-performing mortgage loans. To stabilise the mortgage market, the Hungarian government took the following actions: in 2012, it set up the National Asset Management Company (NAMC), which purchases foreclosed properties with non-performing loans and offers the former debtor the option to rent the dwelling at a reduced rent; in 2014, it converted all foreign-denominated loans into forint. In Poland, mortgage defaults were less marked than in Hungary, but foreign currency fluctuations put mortgage holders at greater risk. In response to these developments, Polish bank regulators have imposed tighter underwriting rules for foreign-currency loans[69].

Furthermore, MS that experienced a housing bubble, such as Ireland and Spain, have also seen higher shares of NPL and increasing default rates. In Ireland, credit to households expanded fuelled by rising housing prices. The burst of the housing bubble was accompanied by high levels of mortgages in the area, which peaked in 2013 at 17.3% of the total value of the outstanding stock of mortgages. Since then, this value decreased to 12.1% in 2015[70]. In contrast, household debt was comparatively low in Spain, yet NPL increased. Finally, the countries that were affected by the economic crisis but had a more stable housing market, i.e. Italy and Portugal, have also seen increases in defaults, albeit at a more modest rate[71].

Specific issues – Trade credit

Despite the current dominance of bank loans as the main source of financing for SMEs, trade credit is an important financing alternative in the general economy, and to the construction sectors of many of the analysed MS.

According to the Survey on the Access to Finance of Enterprises, **36% of SME considered use of trade credit as a relevant financing source** in 2017 compared to 20.2% in 2009, indicating an important increase in its relevance over the past years. In general, this type of financing practice is more established in countries such as the UK, Ireland, Hungary, Sweden, Spain and Italy, whereas it is less widespread in Germany and Romania, although the overall weight of trade credit in the total economy is not always reflected in the construction sector.

According to a recent survey, trade credit is used predominantly in business-to-business (B2B) transactions and is granted preferably to domestic customers. Most domestic B2B sales on credit were observed in Denmark (56.4%), Greece (52.1%) and Ireland (48.2%), compared to the average of 42.6% in Western Europe in 2017. Conversely, Austria and Germany (26.5% each), and Switzerland (28%), had the lowest average percentage of sales made on credit terms in 2017[72].

68 OECD, Household debt in OECD countries: Stylised Facts and Policy Issues, February 2016
69 Ibidem.
70 Central Bank of Ireland, Household Credit Market Report, 2016
71 OECD, Household debt in OECD countries: Stylised Facts and Policy Issues, February 2016
72 Atradius, Payment practices barometer Western Europe. April 2017. https://atradiuscollections.com/global/reports/payment-practices-barometer-western-europe-2017.html

Trade credit terms are granted to a few sectors in the economy (such as consumer durables, chemicals, electronics, business and financial services) with construction being one of them. In the construction sector, trade credit consists of a "cascade" system among the various tiers of sub-contractors, whereby lower tier constructors[73] receive credit from outside the sector, which they pass on to the next level of contractors, and ultimately to the client. In the UK, trade credit is recurrent across the entire construction supply-chain, from contractors to construction products manufacturers. Its importance as a proportion of the balance sheets of UK construction firms is higher compared to companies in the general economy. This applies to both credit taken from suppliers and credit granted to customers. Indeed, trade credit and debit account for 32% and 20% of the balance sheets of UK construction companies, respectively, compared to 11% and 8% for other firms[74].

Conversely, the situation in Spain indicates that the importance of this financing practice is less marked among construction SMEs. Indeed, although trade credit in the Spanish economy amounted to 33% of the GDP in 2014, construction and real estate SMEs had a trade debtors-to-total assets ratio of about 8% and a **trade creditors-to-total liabilities ratio** of about -2.5% in 2013, showing the lower weight of trade credit in their balance sheets. In comparison, these values in industries like wholesale/retail trade, accommodation and food were about 18% and -18%, respectively. A similar situation is observed in Italy, where trade credit is not a widespread financing option among Italian construction companies, despite accounting for 55.7% of the total value of domestic B2B sales[75].

Inadequate preconditions for investment

Lack of skilled labour

The insufficient availability of staff with right skills is among the main long term obstacles to investment in the EU overall and in particular in the construction sector, where a recent survey of EU firms found that close to 70% of all firms consider it to be an investment barrier[76]. Looking across the country differences, the lack of skilled labour is most pressing among medium-sized and large construction companies in Finland and manufacturing firms in the UK (where employers traditionally have to compete for talent with the high tech sector and financial sector, respectively).

A detailed discussion on the impact of the lack of skilled labour for the construction sector is presented in the European Construction Sector Observatory Analytical Report on Thematic Objective 2 "Improving the Human Capital Basis".

Slow uptake of innovation

While innovation in construction processes is among the main driver for efficiency gains in the construction sector, its slow uptake across the sector and the EU in effect represents an obstacle to investment growth - current inefficiencies at the construction site lead to less buildings at higher costs[77]. As noted by the EU High Level Working Group on Competitiveness and Growth, while many innovative solutions are already applied on a small scale, the sector still needs to better adapt to current technological developments[78] .

Among the factors affecting the uptake of innovation are its high upfront investment costs - implementing BIM necessitates organisations to purchase the pertinent software and hardware and train their staff in the use of that software and the impact of that cost may vary according to the financial standing of the organisation and its size. In particular, many SMEs have been unable to adapt because they lack qualified human and financial resources and therefore have been underinvesting in digital technologies.

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73 Lower tier constructors are often smaller companies further down the construction supply chain, which take on smaller scale projects.

74 Department for Business, Innovation and Skills, Trade credit in the UK construction industry. July 2013. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/210964/bis-13-956-trade_credit-in-uk-construction-industry-analysis.pdf

75 Atradius, Payment practices barometer Italy. April 2015. https://group.atradius.com/publications/payment-practices-barometer-italy-2015.html

76 EIB, 2016, EIB Group Survey on Investment and Investment Finance (EIBIS) -Investment and Investment Finance in Europe

77 European Commission, Minutes of Thematic Group 1 "Stimulating investment in building renovation, infrastructure and innovation" Working Group meeting 30th November 2017

78 Council of the European Union, The European construction: challenges and the role of global value chain, 10958/17, Brussels, 20 July 2017

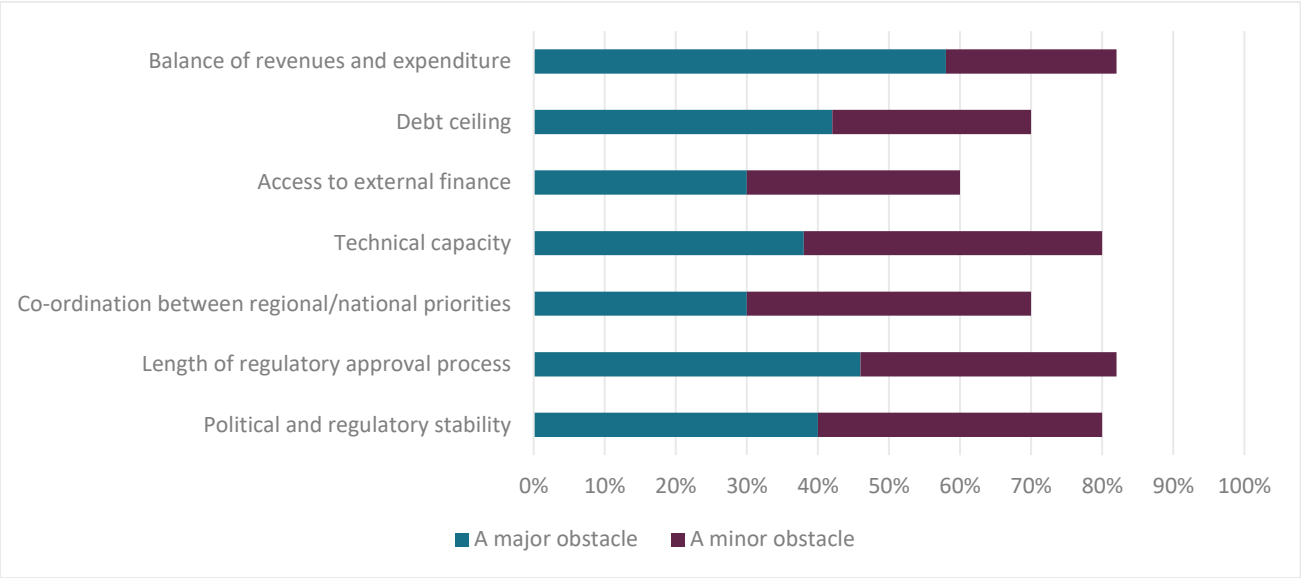
A recent survey of UK construction firms[79] found that the top barriers to the adoption of BIM reported by companies who are currently not using it are "Lack of supply Chain Buy-in", "Scale of Culture Change Required/Lack of Flexibility", "ICT Literacy of Staff/Lack of Technical Expertise" and "Cost of Software".

The implementation of BIM necessitates dramatic changes in business practices, which requires a large culture change within the organisation and entails risks and challenges that are not limited to financial considerations. As regards the implications of BIM for the supply chain management, the results reflect the complex nature of the construction sector supply chain. While BIM is seen as a driver for collaboration between clients, main contractors, sub-contractors and fabricators, and other members of the supply chain for the purpose of integrated project delivery, it requires all actors involved to be "BIM literate". Ensuring this would be particularly challenged for early adopters and could even represent a barrier to efficiency in the short term.

Obstacles to investment in public infrastructure

Investment obstacles for public authorities are of particular importance, as they represent a major group of investors in public infrastructure. A recent survey by the EIB provides an up-to-date picture of the barriers to infrastructure investment experienced by municipalities across the EU[80]. As can be seen from Figure 39, the most frequently encountered major investment barriers are tight budgets and the time it takes for infrastructure projects to get approved – reported by 58% and 48% of all surveyed municipalities, respectively.

Figure 39: Obstacles to infrastructure investment, EU-28, 2017



Source: EIB Investment Survey 2017

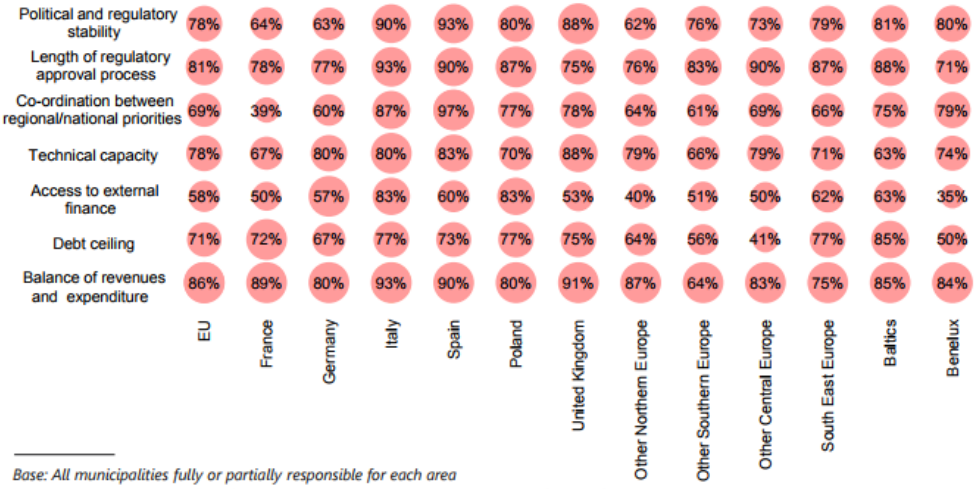
Looking at the country level results presented in Figure 40, political and regulatory instability is another important obstacle, particularly for municipalities in Italy, Spain and the UK. Access to finance is an issue in Poland and Italy, while technical capacity is a particularly pressing constraint in the UK and in Germany. Lack of coordination with other bodies plays an important role in Spain[81].

[79] Eadie, R., et al. (2014) Building Information Modelling Adoption: An Analysis of the Barriers to Implementation. Journal of Engineering and Architecture, Vol. 2(1), March 2014

[80] EIB, Municipal Infrastructure European Union Overview. EIB Investment Survey 2017.

[81] Ibidem

Figure 40: Obstacles to infrastructure investment by area, 2017



Base: All municipalities fully or partially responsible for each area
Q. To what extent is each of the following an obstacle to the implementation of your infrastructure investment activities? (Data not shown for not an obstacle at all/don't know/refused)

Source: EIB Investment Survey 2017

5.
Policy initiatives on the residential buildings market

In order to foster a stimulating investment environment for construction and given the multiple drivers and obstacles identified above, MS have adopted various policy instruments, measures and initiatives in support to the residential and non-residential construction market as well as to expand and improve public infrastructure.

The housing policies introduced in the EU MS are focusing in general on **four aspects of housing issues:**

- Policies supporting the **expansion of the residential building stock**, such as regulatory policies focusing on establishing and enforcing the legislative and regulatory landscape for the development of the housing market in the country;
- **Rental housing policies** aiming to boost social rental housing for the young and socially vulnerable population;
- Policies focusing on **promoting home-ownership** through buying dwellings on the primary and secondary market;
- Policies supporting **energy performance home improvements** and renovation works.

As these four types of policies require different approaches and target different social groups, they are analysed separately in the following sections. Thereafter, the analysis will focus on policies for the non-residential building market and on public infrastructure development, two distinct segments of construction with different policy strategies implemented by EU MS.

Figure 41 Overview of national policies on investment in residential buildings, EU-28

Source: PwC based on the CFS and PFS of ECSO

Policies supporting the expansion of the residential building stock

Residential building policies include the planning process, building rules and sustainability guidelines for construction.

A number of MS have implemented policies to address the housing shortage noted under Section 3 by simplifying the **planning process** and **building rules,** as well as **introducing guidelines for planning and sustainable construction**. In fact, construction is often hampered by complex regulations and a lack of transparency. In order to counteract this issue, the Swedish government, for instance, amended the Planning and Building Act in 2013, which simplifies and streamlines the planning and building process[82]. Among others, the amendment introduces a standard procedure for drawing a development plan. Furthermore, it limits the ability of municipalities to introduce stricter technical requirements than those stipulated by the Swedish National Board of Housing, Building and Planning, thereby reducing the burden on residential construction. Also, the transparency in the allotment of land at local level has been improved with the adoption of guidelines for land allocation (Swedish Code of Statutes SFS 2014:899), whereby the municipalities need to spell out basic conditions for land allocation[83]. In early 2017, the government presented a proposal aimed at further streamlining and simplifying the Planning and Building Act. Moreover, as part of the UK's 2015 budget, the 'Fixing the Foundation' package lays down planned actions to speed up residential construction[84]. Notably, the UK government plans to introduce automatic permission to develop brownfield sites, ensure that local authorities take greater action in putting in place local plans, as well as 'fast-track' major housing projects. Another example of such measures comes from Ireland, where the National Apartment Planning Guidelines were introduced to drive down the costs of homes by standardising the approach to residential construction.

Policy initiatives focusing on aspects related to the **financing of residential buildings** exist in about half of the EU MS. Ireland has been very active in this respect, by introducing a legislative framework for Real Estate Investment Trusts (REITs) to be traded on its stock market.

Policies may also provide financing directly to home-building companies in order to boost the supply of new residential buildings. Notably, the Irish Strategic Investment Fund created a Home-Building Investment Finance Joint Venture called Activate Capital, which provides **loans** to companies that operate in residential development. Moreover, the Home Building Fund in the UK provides a flexible source of funding managed by the Homes and Communities Agency (HCA), which acts on behalf of government, and is open to small builders, community builders, custom builders and regeneration specialists. Loans of £250,000 (EUR 283,265) to £250 million (EUR 283 million) are available with smaller loans considered for innovative housing solutions and serviced plots for custom builders. The fund provides loan funding to the development costs of building homes for sale or rent.

Sweden is the only country identified to provide guarantees to facilitate access to finance for developers, particularly smaller ones, and support housebuilding. The Swedish National Board of Housing, Building and Planning (Boverket) offers credit **guarantees** to banks and other lenders to protect them against losses, thus reducing the need for final financing or own capital for property developers. The guarantee covers up to 90% of the market value of the completed residential project.

Finally, some of the policies introduced provide **tax incentives** to the housing sector, as identified in five MS. Notably, France aimed to stimulate the supply of housing by introducing the Duflot and Pinel laws, which grant tax reductions when investing in new rental buildings. The Duflot and Pinel laws are meant to lead to the construction of 55,000 new dwellings. Indeed, the housing shortage in France is particularly acute, as it is estimated that the construction of 500,000 homes a year is needed[85]. Similarly, Hungary is expecting to revive its weakened housing sector through the reduction of its VAT rates in 2016, from 27% to 5% on the sales of newly built residential property.

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82 Swedish Government, Government Bill 2013/14:126. March 2014. http://www.regeringen.se/contentassets/181e872ad41c4501a5fe3a41b2361178/en-enklare-planprocess-prop.-201314126

83 European Commission, Sweden's national reform programme 2015. http://ec.europa.eu/europe2020/pdf/csr2015/nrp2015_sweden_en.pdf

84 HM Treasury, Fixing the foundations: Creating a more prosperous nation. July 2015. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/443898/Productivity_Plan_web.pdf

85 La-Loi-Pinel.com, 50 000 investissement locatifs dans le neuf en 2015, October 2014, https://www.la-loi-pinel.com/actualites/50-000-investissement-locatifs-neuf-en-2015/.

While some of the policies introduced by the MS tackle the wider framework for residential construction and address a variety of stakeholders, some other government actions in the regulatory domain have a more precise target in terms of **beneficiaries**. For instance, construction companies and investors may directly benefit from some of the residential construction policies discussed above. This is the case with the joint venture Activate Capital in Ireland, which benefits companies operating in the home-building business. Furthermore, the Irish Real Estate Investment Trust (REIT) regime facilitates investment in the housing market and is thus beneficial for investors too. The VAT discount in Hungary, on the other hand, has no specific targeted beneficiaries other than homebuyers.

Regulatory initiatives to boost investment in the residential construction vary among the EU countries. The Irish REIT regime represents a policy experience that fosters private investment in the housing market[86] though special organisational and market arrangements, as discussed in Box 1 below.

Box 1: REIT regime in Ireland

With the Finance Act 2013, Ireland introduced a regime allowing the establishment of **Real Estate Investment Trusts (REITs)** as investment structures to boost investment in the property market, which was severely weakened by the burst of the housing bubble in 2007/8.

With the introduction of the REIT regime, the Irish government aimed to **particularly attract foreign capital to the Irish property market** and contribute to its stabilisation. A secondary goal of the policy was to divert bank financing from property markets to other sectors of the economy to generate further growth. Finally, the REIT regime is meant to offer an alternative instrument for property investment[87].

In essence, a **REIT is a publicly listed company in charge of the ownership and management of property-related assets**. Shares of a REIT can be bought and traded on the stock market. REITs generate value for shareholders through rental income and capital growth related to the value of the REIT and its property assets. This financial architecture provides an attractive instrument for property investment, which in turn is meant to spur the growth of the residential market.

The introduction of the **REIT regime has shown positive developments since its launch**, with substantial capitals being raised. As one of Ireland's REITs, the Irish Residential Properties (Ires) was introduced in 2014 focusing entirely on the residential market. Already in 2014 it was operating 1,204 residential units with almost full occupancy[88]. In 2015, Ires portfolio counted 1,566 apartments, and its first semester pre-tax profits amounted to EUR 14.8 million[89].

The **benefits of REITs** can be summarised as follows. Firstly, REITs provide an attractive investment opportunity for investors wishing to enter the property market through the purchase of shares. Additionally, REITs diversify risks related to the property market via collective investment across a portfolio of various real estate assets. The favourable tax treatment also contributes to the appeal of the scheme. Secondly, tenants of REIT-owned properties benefit from professional management and long-term investment in residential property, which helps securing supply of high quality, safe and affordable rented housing. Thirdly, partly due to the standardisation and international recognition of REITs as financial products, REITs are successful in attracting foreign investment to the Irish market. This contributes to the growth of the sector, particularly after its implosion in 2007/8. Finally, with the introduction of REITs, the property market is provided with alternative means of financing. The expected effect is to reduce dependence on bank financing, allowing banks to provide credit to other sectors, thereby also benefitting the overall economy.

[86] REITs aim to spur investments both in the residential and non-residential markets, depending on the typology of properties in their portfolio. This box specifically focuses on an instance of residential REIT. An instance of a non-residential REIT is illustrated in '
Policy initiatives on the non-residential building **market**'.

[87] PwC, 2013 Finance Act. https://www.pwc.ie/media-centre/assets/publications/2013_finance_act.pdf

[88] Irish National Parliament, Written Answers Nos. 1-30.
http://oireachtasdebates.oireachtas.ie/debates%20authoring/debateswebpack.nsf/takes/dail2015020400069#WRA00700

[89] Irish Times, Ires Reit reports pre-tax profits of €14.8m in first half. August 2015. http://www.irishtimes.com/business/commercial-property/ires-reit-reports-pre-tax-profits-of-14-8m-in-first-half-1.2312332

Policies supporting the rental market

The lack of and the increasing need for housing, including social housing, for young people has pushed policy initiatives towards the development of rental housing options for socially sensitive groups of the population. The progressive dilution of private rental markets in the EU was heavily affected by the alignment of market and policy incentives favouring ownership as the best option to meet accommodation needs (taxation benefits, easing of financing conditions, expectations frenzy, etc.).

Biased incentives towards ownership fostered demand for owned housing (both new and second-hand), leading to rapid increases in house prices relative to rentals.

Price-to-rental ratios reached an all-time high for most EU countries in 2007-2008, signalling potential overheating pressures in housing markets, since under an equilibrium situation households should be indifferent between buying and renting[90]. Despite the differences between the countries, the national governments are implementing a set of policies aimed at increasing the affordability and the amount of rental housing across Europe.

Particularly, a number of MS have implemented **incentives schemes for the construction of rental housing**. These span from subsidies, fiscal policies to different types of financial instruments, as described below.

For instance, the Swedish government has introduced a series of **measures stimulating investment** in construction. In order to address the housing shortage, the government introduced the Stimulus for increased construction (Stimulans för ökat byggande/ Investeringsstöd) in 2015. Under the responsibility of the Ministry of Enterprise and Innovation, this initiative seeks to provide incentives to increase construction of new properties destined for the rental market, particularly in urban areas with high population growth/housing pressures (Stockholm, Göteborg and Malmo). The budget amounts to SEK 2.7 billion (EUR 278.8 million) for 2017 and SEK 3.2 billion (EUR 330.4 million) for 2018. The programme, which entered into force in January 2016, aims to achieve the construction of 15,000 new flats per year.

Some MS were also identified to have implemented **fiscal policies**. These aim to play a positive role on the supply in order to lower rental prices. For example, in France, to boost investment in rental properties, the Pinel law was introduced in 2014. It offers a tax reduction for people investing in the purchase of a new property, provided that it is rented out for at least 6 years, up to a maximum of 12 years. Tax reductions range from 12% of the amount of the investment in case the property is rented for 6 years. This goes up to 18% if the rental period is 9 years and 21% for a 12-year rental commitment. Moreover, in 2016, new tax measures were also launched by the Italian government to boost the country's property market. These include the abolition of the TASI and IMU tax for principal homes and a 25% discount on the IMU tax for houses being let on an 'agreed rental' (canone concordato) contract - a contract with a minimum period of three years plus two years of automatic renewal, which also includes compliance to the local authorities' minimum and maximum rents.

The mix of rental market policies include fiscal measures.

Government rental housing policies are using a set of **financial instruments**, aiming to increase the effectiveness of investments and limit the burden to the budget. Those initiatives are mostly funded via national budgets, European funds (especially for Central and Eastern Europe, where national budgets are weaker) or a mix of both.

Rental housing policies can be financed from the credit, provided nationally by public development entities or at EU level, by the EIB. Thus, EIB is financing in this way the Polish rental policies, aiming at refurbishment and construction of rental social housing. Another instance of such initiatives the Rehabilitate for Rent programme (Reabilitar para Arrendar), set up to address the priority of urban renewal with an initial budget of EUR 50 million from a loan from the European Investment Bank (EIB) to the Instituto da Habitação e Reabilitação Urbana, (IHRU). The interventions foreseen under the programme include the rehabilitation or reconstruction of social dwellings, municipal spaces for

[90] European Commission, Rental Market Regulation in the European Union. 2014. http://ec.europa.eu/economy_finance/publications/economic_paper/2014/pdf/ecp515_en.pdf

public use and public buildings (including student accommodation). Since its introduction in 2015, the programme has funded the rehabilitation of 258 buildings, which will lead to 359 new dwellings being put on the rental market at reduced rent[91].

In the Czech Republic, a **guarantee programme** for rental apartment development exists to support investment loans for the construction of rental housing and associated infrastructure. The Fund guarantees up to 70% of the unpaid principal sum of the credit, with a maturity period of up to 40 years. For 2017, SFRB envisages the possibility to provide guarantees up to a maximum of CZK 500 million (EUR 19.4 million). An additional key instrument in the delivery of direct support to housing and construction is the **State Housing Development Fund** (SHDF) established in Slovakia, which provides low interest loans for the construction of rental dwellings and refurbishment of the housing stock. The SHDF has also been the institution implementing EU financial instruments since 2013. Namely, Slovakia adopted the JESSICA (Joint European Support for Sustainable Investment in City Areas) initiative through the SHDF, aiming to support the energy performance of residential buildings through low-interest loans, by using EU Structural Funds. JESSICA I and JESSICA II supported the insulation and complete renovation of residential buildings in urban area through EUR 110 million worth of EU funds.

Another means to support the rental market are **subsidy schemes**, implemented across many EU MS to provide direct support for the beneficiaries in the form of partial coverage of the rental fees (*Plan Estatal de Vivenda,* Spain; Rent-to-Own, Hungary; *Piano Casa*, Italy; *Rent Subsidy Plan,* Cyprus; *Rental Subsidy,* Luxembourg; *Porta 65 Jovem,* Portugal). Rental social housing schemes and intermediate tenures which contribute to subsidising households are also analysed below.

In Spain, two programmes under the State Housing Plan (*Plan Estatal de Vivenda*), led by the Ministry of Public Works, provides a targeted direct support with partial payment of the rental fees. The subsidy under one such programme accounts for 40% of the annual rent (with ceiling EUR 2,400 per dwelling) (see Box 2 for details). Similarly in Italy, the Housing Plan (*Piano Casa*) facilitates access to housing by subsidising part of the rent through the National Fund to support access to rented properties, boosting the availability of social housing and making the lodging accessible. Furthermore, Germany has a longstanding practice of providing a housing allowance to low income people in order to support the payment of rent. This policy is enshrined in the Law on Housing Allowance (Wohngeldgesetz). The amount of the allowance was increased in 2016 and ranges from approximately EUR 300 to EUR 1,000 depending on the size of the household, the cost of the rent and the overall household income.

Rental social housing is provided in most of countries analysed, but the sale of dwellings is also possible in some cases. In Romania, for example, the Housing Rental Units for Young People (*Programul de construcții locuințe pentru tineri, destinate închirierii)* programme addresses the issues of housing affordability and lack of social housing. The programme entails the construction of rental dwellings for young people who cannot afford to buy or rent a property at the market price. The units are raised on lots offered by city councils, and can be bought by the tenants after minimum one year of lease. According to the implementation body, there were more than 150,000 requests from young people, and 88,000 apartments were allocated in 2014.

Some countries offer provisions for **intermediate tenure**, a shared ownership solution where tenants buy a share of the dwelling from the housing associations and pay a rent for the remainder, as has been increasingly adopted in the UK.

In Poland, rental housing policies are focusing on the refurbishment and new construction of rental social housing, and support payments of rents to boost the affordability of lodging (Fund of Apartments to Rent). Fund for Rental Housing is an initiative taken by the Bank Gospodarstwa Krajowego, aiming to offer attractive quality and affordable apartments for rent in the largest Polish cities. Hungary, in turn, purchases the properties with non-performing loans via Rent-to-Own scheme managed by the National Asset Management Company (NAMC) and offers them for reduced rent to the former owner as a measure to reduce excessive indebtedness due to the mortgage crisis in the country.

[91] Idealista, “Reabilitar para Arrendar”: 359 houses with conditioned rentals come to the market. March 2017. https://www.idealista.pt/news/imobiliario/habitacao/2017/03/14/32983-programa-reabilitar-para-arrendar-coloca-no-mercado-359-casas-apos-investimento-de-13

Box 2: State Housing Plan (*Plan Estatal de Vivienda*, Spain)

After the crisis, Spain was lacking a balance between the construction of new buildings and the development of rental housing. The country was looking for a solution to reactivate the construction sector, generate employment, obtain cost savings and promote energy efficiency, in line with European Directives.

The biggest initiative implemented in recent years is the **State Housing Plan 2013-2016**, which has a budget of **EUR 2.5 billion**, to be allocated in two annuities in the form of grants and funding for rental housing, building renovations and urban renewal. The plan is funded by the Ministry of Public Works – Secretary for Architecture, Housing and Land (EUR 2.3 billion) and the Autonomous Regions (EUR 216 million). The total public investment is EUR 2.5 billion.

The Plan's measures related to rental housing included: i) Rental Housing Assistance: up to 40% of the annual rent with a maximum of EUR 2,400 per dwelling; ii) Promotion of public rental housing stock: up to EUR 250 per useful m^2 of housing, up to 30% of the cost of the building with a maximum of EUR 22,500 per home.

Additionally, the Plan foresees government support for the promotion of building renovations, urban regeneration and renewal, supporting the implementation of the buildings evaluation report, promoting sustainable and competitive cities.

The Government expected the Plan to award 200,000 rental housing support grants (the figure was 80,000 at the end of the previous plan) and 230,000 grant subsidies, to support the renovation of 50,000 homes, and to create 36,000 new jobs by 2016. The ministry signed 109 agreements throughout the national territory pursuant to that plan, involving the renovation of 9,271 homes, the renovation of 1,609 rental homes and the construction of 113 rental homes. That equates to a total of 10,993 houses affected, with a total investment of EUR 280.19 million, of which the Ministry provided EUR 85.85 million.

At the time, the State Housing Plan was the biggest government programme that supported rental market in Spain. It brought significant inflow of capital to the market and allowed to boost the rental market and to comply with the social liabilities of the government. The Plan was putting ambitious goals and, so far, not all of them have been achieved.

While the government position on the results of the policy implementation is quite positive, sector stakeholders remain sceptical. The complex policy faced issues related to poor management of grants by some regions, the delay in implementing the measures, the financial and regulatory fragility, and the slow award process. Management by the regions makes it difficult to measure the success of the Plan at national level, but data shows that, in most regions, success has not been as expected and has not led to a significant change in the sector.

Analysis of the **target groups** for rental housing policies revealed that they focus mostly on people with low incomes that are lacking access to housing or are not able to pay the market price for rent (e.g. Italy, Spain, Poland). Thus, Romanian Housing Rental Units for Young People programme was targeted to the young population of 18-35, whereas in Hungary the Rent-to-own policy was focused on the vulnerable categories, such as families with children. Most of the rental policies analysed, had a wide range of households with low income.

Key takeaways:

✓ Housing rental policies should be of a considerable scale to be able to make a sustainable difference. Yet, **Investment in rental housing policies** varies between EU-28 MS and does not always reflect the severity of the housing problems in the country.

✓ **Sound management of large policy implementation** should be put in place at the central and regional levels at the stage of the programme design, allowing efficient communication and monitoring process.

✓ **Political and regulatory landscape requires stability and predictability** in order to set up targets for the medium to long term and be able to achieve them.

✓ Usage of **innovative financial instruments is vital** to ensure the inflow of private capital to the policy initiatives and thus limit the financial burden on the national budgets and tax payers. However, the uptake by MS of more innovative financial instruments for financing rental housing loans are still rare in Europe.

Policies supporting home ownership

The financial crisis has had a deep impact on the residential market, particularly with regard to access to housing loans and home ownership. High unemployment rates and tightening lending conditions from financial institutions have led to a drop in loans granted and in the number of ensuing residential transactions. Thus, fewer people were found to be credit-worthy enough to secure a mortgage to buy properties, and this is especially the case for younger generations. Overall, this has put a brake to the broad construction sector as whole. To offset this trend and address the sluggish investment in the purchase of residential properties, a variety of policies has been introduced across EU MS.

A common trend among policy schemes supporting ownership is the focus on **reinstating purchasing power and ownership among young people and families** for the acquisition of a first dwelling. Examples of this type of initiative can be found in Italy, Slovakia, Poland, Romania and the UK.

- The Italian government introduced the First Home Guarantee Fund (*Fondo di Garanzia Prima Casa*), offering young families a state guarantee on their mortgages, for the purchase of their first home. The initiative gives banks and other credit institutions access to liquidity in case the mortgager should no longer be able to repay the instalments of the loan.
- Poland launched the Apartment for Young People (*Mieszkanie dla Młodych –MdM*), a State aid scheme providing young people with financial aid in the form of co-financing of a mortgage for a first apartment.
- In Romania, the government implemented the First Home Programme (*Programul Prima Casă* - PPC), under which the state issues guarantees on the mortgages granted by adhering financial institutions, thus covering half of the risks associated with housing loans.
- In the UK, the Help-to-Buy Equity Loan Scheme and the Help-to-Buy-Mortgage Guarantee Scheme provide a state loan and guarantees on the mortgage, respectively.

Specific measures exist across some EU MS to tackle the issue of **availability and adequacy of dwellings for the elderly**. For example, in Sweden, the government introduced in 2016 a scheme providing grants for the construction and adaptation of dwellings for the elderly population. The budget of the programme amounts to SEK 300 million (EUR 31 million) for 2017 and SEK 400 million (EUR 41.3 million) per year for the period 2018-2020, for a total of SEK 1.5 billion (EUR 155 million). In Germany, the Government supported the adaptation of residential buildings through the programme "Rebuilding according to age" (Altersgerecht Umbauen), running from 2009 to 2011, with a yearly budget of EUR 80-100 million. The programme was reintroduced in a loan form (2012) and grant variant (2014), funded by the public development bank Kreditanstalt für Wiederaufbau (KfW). The programme helped to finance 700,000 barrier-free apartments, which represents about 2% of the apartment stock. Nevertheless, the demand for such housing is estimated at 2.9 million by 2030 due to demographic developments[92]. In Czech Republic, the "residential apartments without barriers" programme aims to improve the housing stock by removing barriers to access for beneficiaries with reduced mobility. The budget for 2017 amounts to CZK 45 million (EUR 1.7 million).

In general, concerning the type of **financial support** available for home-ownership programmes, it can be noted that **financing instruments** appear to play an important role. Namely**, state guarantees on mortgages** are a widespread instrument to facilitate access to housing loans and promote ownership.

State guarantees on mortgages are in place amongst other in Italy, Romania and the UK, alleviates the risk associated to mortgage lending, giving the opportunity to financially precarious individuals who would not be creditworthy under actual market conditions to obtain financial support through a risk-sharing mechanism. The magnitude of the guarantees varies across countries, with the Italian and Romanian schemes covering up to 50% of the value of the mortgages, whereas under the UK Help-to-Buy-Mortgage Guarantee Scheme the government can underwrite up to

[92] Federal Ministry of Environment, Nature protection, Construction and Nuclear Safety, Förderprogramm "Altersgerecht Umbauen". http://www.bmub.bund.de/themen/stadt-wohnen/wohnraumfoerderung/altersgerecht-wohnen/foerderprogramm-altersgerecht-umbauen/

15% of the mortgage. Another type of financing option is offered in the UK through the provision of an equity loan of up to 20% of the cost of the property, under the UK Help-to-Buy Equity Loan Scheme. Conversely, **funding** seems to be a less frequent form of financial support for home-ownership policies. An instance is the Polish Apartment for Young People, which takes the form of co-funding of a share of the down payment on the property.

In Ireland, a second trend related to home-ownership policies can be identified. The country has suffered from a severe housing bubble up until 2008, characterised by exuberant investment and mortgage lending, resulting in high levels of mortgage debt ratios and household indebtedness. For this reason, the Central Bank introduced **macro-prudential measures** for residential lending to **protect the banking and household sectors** from fluctuations in the property market and reduce risks. These put a restriction on loan-to-value (LTV) ratio (80% for non-first time buyers and 90% on the first EUR 220,000 of the value of the property for first-time buyers). Moreover, loan-to-income (LTI) ratios have a maximum ceiling equal to 3.5 times the gross annual income. Such measures were also implemented by the Swedish government to address the increasing concern about the growing indebtedness of households due to mortgages. As of June 2016, mortgage loans over 50% of the value of the property have had to be amortised (i.e. paid back) at 1% every year, while loans worth 70% or more of the property's value must be amortised at 2% annually. In 2017 Sweden's financial supervisory authority Finansinspektionen proposed a new amortisation requirement for new housing loans. The so-called "debt ratio brake" (skuldkvotsbroms) requires households that borrow more than 4.5 times their gross income to amortize their debt at a faster pace. Apart from increasing households' resilience to macroeconomic disturbances, the measure is expected to lead to a slight decline in housing prices, favouring buyers who want to enter the housing market for the first time. Policy measures to offset potential risks related to the low mortgage rates and house price increases have also been adopted in Denmark, including the requirement for mortgage seekers to provide a down payment of 5% of the property value, and the requirement for commercial properties to be able to generate positive liquidity prior to being financed.

In terms of **targeted beneficiaries**, home-ownership policies put the focus on young people and families, initially setting more restrictive requirements with respect to age, income bracket and number of children.

Demographic eligibility criteria has often been amended and expanded, to facilitate access to the schemes. For instance, the First Home Guarantee Fund (*Fondo di Garanzia Prima Casa*) in Italy has been modified and opened to anyone, regardless of their age and income, although priority is given to young couples below the age of 35, single parents and other vulnerable categories of beneficiaries. Similarly, the Polish Apartment for Young People (*Mieszkanie dla Młodych –MdM*), initially supporting only beneficiaries under 35, has lifted this requirement for families with at least three children. In addition, the amended scheme also extends its support to beneficiaries with three or more children who already own a property, unlike the Italian counterpart. Similarly, the UK Help-to-Buy Scheme is open to all potential and existing homeowners, with no salary cap or joint income limits.

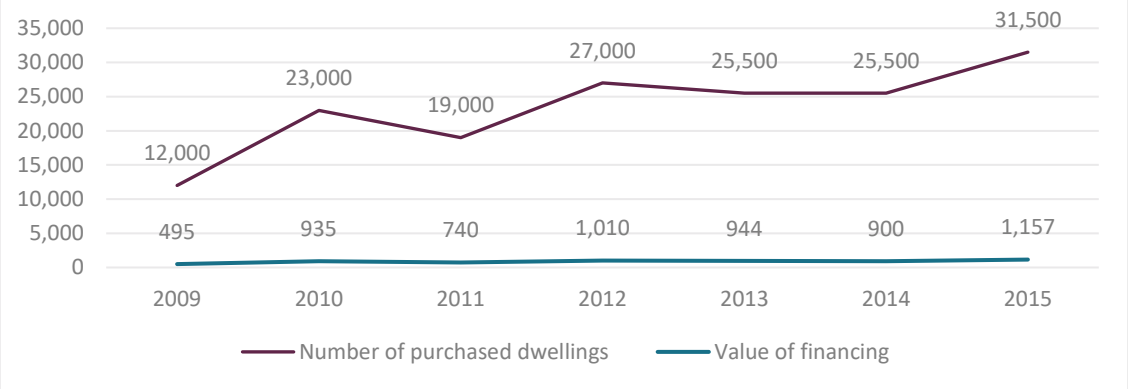
The following box provides an example of a successful home-ownership programme in Romania, showcasing its strengths and weaknesses.

Box 3: Romania's First Home Programme (*Programul Prima Casă*)

The First Home Programme (Programul Prima Casă - PPC) was launched in June 2009 by the Romanian Ministry of Public Finances. Approved and implemented through Law no. 368/2009 and Government Decree no. 717/2009, it is managed by the Government's National Guarantee Fund for Loans to Small and Medium Enterprises (Fondul Naţional de Garantare a Creditelor pentru Întreprinderile Mici şi Mijlocii - FNGCIMM). The programme aims to facilitate the acquisition and/or construction of dwellings by issuing state guarantees covering up to 50% of the value of the mortgages taken by beneficiaries from adhering credit institutions. This risk-sharing mechanism was introduced to counteract the risk-averse approach to lending of the Romanian banking system following the crisis, and to respond to the ensuing decreasing LTV ratios, which were putting a brake to access to housing finance. Thus, under the programme, beneficiaries can be granted a mortgage with a LTV of up to 95% of the value of the property, requiring only a 5% initial down payment. Guarantees can be applied to loans with a maximum value of EUR 57,000 (for existing dwellings) and EUR 66,500 (for construction of new dwellings). The budget of the programme is defined yearly, with the total ceiling for guarantees reaching RON 2.98 billion (EUR 667.4 million)

for 2014, RON 2.84 billion (EUR 635.9 million) for 2015 and RON 1.69 billion (EUR 378.6 million) for 2016. Since its inception, and up to November 2015, about 163,000 guarantees were issued, for a total value of about RON 13.9 billion (EUR 3.2 billion). The programme has seen a positive uptake and evolution in terms of dwellings purchased and financing granted under it.

Figure 42: Dwellings purchased and housing loans granted under the Programul Prima Casă, Romania, 2009-2015



Source: FNGCIMM, 2015.

One of the **key strengths of the PPC is its advantageous credit conditions** compared to other housing loan options available on the market. For instance, the initial deposit (5%) required to apply for a mortgage under the programme is much less than that required for traditional mortgages, which is usually around 20-30% of the value of the property. Secondly, because guarantees under the PPC are granted only in RON, the programme contributed to the long-term asset development in national currency.

However, one of the main **weaknesses of the PPC resulted from the limit set on the maximum value of the loans on which guarantees can be issued**. These limits skewed demand towards properties in the EUR 60-70,000 price range, pushing developers to force down the prices of newly-built residential dwellings so that they could be eligible under the programme. This depreciation of newly built properties resulted in profitability issues for developers and in a drop in new residential projects.

Key takeaways:

✓ Financial institutions play a major role in the uptake by beneficiaries of national initiatives mentioned above. Therefore, it is crucial to design policies in such a way that it remains **advantageous for the beneficiaries**, without deterring banks and credit institutions from adhering.

✓ Thus, in order to fulfil the former caveat, facilitating the access to the policy instrument (for instance, guarantees on mortgages) by **relaxing eligibility requirements** (in terms of age and income) has been recognised as a key success factor. Secondly, such schemes should allow the issuing of mortgages with a higher LTV compared to traditional housing loans, so as to provide a real alternative for beneficiaries.

✓ As for the second caveat, adhesion by **financial intermediaries should be secured by ensuring that the policy instrument is not exceedingly risky or unprofitable**. This can be achieved by applying market interest rates on the mortgages covered by guarantees, as opposed to artificially low interest rates, in order to avoid discouraging banks from offering the scheme to beneficiaries.

Policies supporting energy efficiency and renovation improvements

In order to foster energy efficiency improvements and renovation works, MS have implemented various measures, described further in the ECSO analytical report on TO3 “Improving energy and resource efficiency”[93].

[93] PwC, European Construction Sector Observatory – Analytical report on TO3 “Improving energy and resource efficiency”, February 2018

The Commission has launched the "Smart Finance for Smart Buildings" (SFSB) initiative which, in close cooperation with the European Investment Bank (EIB) and the MS, support the development of flexible energy efficiency and renewable financing platforms at national level to make more attractive financing options available on the market. This initiative will:

- **Encourage the more effective use of public funds**, in particular throughout financial instruments and investment platforms. One tangible result would, for example, be to combine – and make a better use of – the different financial resources available and give the possibility for households to get an easier access to tailor-made renovation loans. Additionally, a guarantee could be provided by the EIB to local banks, reducing the risk associated to their portfolio of credits, and allowing them to provide more attractive energy efficiency loans to final beneficiaries.
- **Support aggregation and assistance with project development**, for example by helping project promoters develop ambitious and aggregated investment programmes by reinforcing existing Project Development Assistance facilities at EU level and by encouraging the development of dedicated one-stop-shops at the local level.
- **Make energy efficiency investments more trusted and attractive for project promoters**, financiers and investors by providing them access to market evidence and performance track record available from the De-risking Energy Efficiency Platform (DEEP)[94] and by developing a commonly accepted framework for underwriting investments in this area.

Particularly relevant in order to increase investment in this area, are financial measures, in forms of **grants, loans or guarantees,** which are offered in almost all EU MS.

An example of a **grant** scheme is the "Better Energy Homes" programme offered in Ireland by the Sustainable Energy Authority. Since 2006, homeowners can receive a grant, covering up to 30% of the cost of improving the energy efficiency of their homes. Depending on the type of work undertaken, a ceiling applies. For instance, for external wall insulation, a grant of up to EUR 4,599 for detached houses can be received. Furthermore, in Austria, through the support of the EIB with a EUR 150 million framework loan, the Bausparkasse der Österreichischen Sparkassen AG funds energy efficient renovation and the sustainable construction of buildings through **loans**. Funds are available for both private and public sector projects resulting in documented energy savings and increased use of renewable energies, thus improving the quality of housing in the country. Finally, with regards to **guarantees**, the Luxembourgish government put in place a scheme managed by the Ministry of Housing, which guarantees eligible individuals wishing to take out loans for the renovation of their dwellings up to EUR 131,630.

Fiscal measures also play an important role in order to increase investment, but are much less widely used and were only identified in a handful of MS. For instance, the French government offers a 30% tax credit (Crédit d'impôt pour la transition énergétique – CITE), up to a maximum of EUR 8,000 (EUR 16,000 for couples) over a five-year period on the expenditures incurred for energy efficiency renovation works. On the other hand, tax deduction schemes also exist, for example in Sweden. In fact, the Swedish Government has introduced the Repairs, Maintenance or Conversion and Extension Work deduction programme back in 2008. It offers a 50% tax deduction up to a maximum of SEK 50,000 (EUR 5,300) per person per annum. However, it can only be claimed for the costs of labour, not for materials. It applies to construction works on a residential property older than five years, as well as repair and maintenance interventions to restore a dwelling to its former condition, regardless of its age.

Finally, MS also put in place **regulatory reforms** in order to give further impetus to improvements in the area of energy efficiency, going beyond EU regulations in this area. For example, in December 2016 the Ministerial Order for Minimum Energy Performance Requirements was amended in order to increase the minimum energy efficiency requirements for new buildings in Cyprus. Thus, as from January 2017, all buildings that are renovated should at least reach the energy class B, given technical and financial constraints. In 2018, a law will come into force in Lithuania requiring all new buildings to be built as A+ class, and from 2021 the highest A++ class. Another example can be found in the decision of the Italian government that by January 2019, all new public authority buildings should be NZEB.

[94] DEEP is an open source database for energy efficiency investments, performance monitoring and benchmarking. With the aim of de-risking investments, the data platform helps project developers, financiers, and investors to better assess the risks and benefits of energy efficiency investments. https://deep.eefig.eu/

6.
Policy initiatives on the non-residential building market

Investment levels in the non-residential sector were impacted by the crisis, leading to an investment backlog with respect to public buildings for social use, such as schools and community centres, since this is highly dependent on the state of public finances, and was often one of the first areas that underwent budget cuts during the crisis. As a result, the condition of these facilities has significantly deteriorated, an issue affecting most of the analysed countries in Southern, Central and Eastern but also Northern European countries. The situation is further aggravated by the lack of interest from private investors in these areas, as well as the waning private investment in commercial and retail properties.

For this reason, a number of policies has been put in place to revive investments in non-residential construction. A first common purpose that can be identified in national initiatives across EU MS is to address the poor quality of **non-residential buildings for public use** by supporting investment from municipalities and local authorities. Examples of these schemes were identified in countries such as Italy, Sweden, Romania and Germany. For instance, the German Federal government implemented measures to strengthen its own investment spending as well as that of the federal states and municipalities amounting to an average of about EUR 8.5 billion of investment or 0.3 % of GDP annually over the period 2016-2018.

An example of a financing policy for non-residential buildings for public use is the **municipal investment promotion fund** of EUR 7 billion which was set up for 2015-2020 as part of the **Municipal Investment Promotion Act** to **boost spending on the maintenance, repair and conversion of local infrastructure** and the rehabilitation of schools. By mid-2017, 87% of the funding available for infrastructure investment has been committed to more than 10,000 different investment projects. In parallel, the federal government is reforming federal fiscal relations in order to facilitate investment at municipal level.

Drivers for state intervention in supporting investments in non-residential public sector buildings can be diverse, depending on the country. For instance, given the poor condition of Italy's extensive school building stock, the government introduced a comprehensive School construction government strategy (Strategia del governo per l'edilizia scolastica), with a total budget of EUR 3.9 billion for a broad range of interventions, including renovation of schools, safety improvements, anti-seismic upgrades, energy efficiency and construction of new buildings, such as sports complexes and student accommodation. The strategy has currently allowed the completion of over 12,000 interventions and is supported by the European Investment Bank (EIB). The Swedish government is focusing on several investments in healthcare, such as the construction of the New Karolinska Solna University Hospital in Stockholm, to be completed in 2018, and the refurbishment and extension of three hospitals in Södermanland by 2023. In Romania, the National Company for Investment (*Compania Naţională de Investiţii* – CNI), under the Ministry of Regional Development and Public Administration, manages the National Programme for Public or Social Buildings (*Programul naţional de construcţii de interes public sau social*), which finances the construction of public buildings, such as cultural institutions, hospitals, educational institutions, sports halls and swimming pools. As for Germany, the Federal government's National Investment Pact for Municipalities aims to increase investment in public sector construction, such as schools and community centres.

A second trend related to the revival of non-residential building investments can be identified, namely with regard to **commercial and retail properties**. In Ireland, due to the cautious approach of private investors over the last years, the Department of Finance introduced a Real Estate Investment Trust (REIT) Regime (see Box 1) or the creation of a more favourable legal/tax environment to attract private (and particularly foreign) investment in the country's real estate and construction sectors. REITs are publicly listed companies owning and managing property-related assets, predominantly offices, shopping centres, warehouses and commercial sites, and aiming to generate returns on investments. As a result of the legislation, the Green REIT and the Hibernia REIT were created, boasting a commercial

property portfolio of EUR 968 million and EUR 739 million, respectively, and a rental income of EUR 55.7 million and EUR 73.7 million, respectively.

A further trend with respect to commercial and retail properties is observed in some Central and Eastern European countries, such as Hungary and Poland, which have taken action to specifically protect and support investment in local retail and commerce through dedicated legal frameworks. In Hungary, a law from 2012 banned the construction of shopping centres above a specific size. The law, initially set to expire at the beginning of 2015, was amended and extended in December 2014, so that as of February 2015 the construction of retail spaces over 400 m^2 has to be cleared by a competent authority. This measure, affecting predominantly foreign-owned retail chains in favour of local ones, is however predicted to slow down construction of large retail spaces. Similarly, Poland introduced policies restricting the development of retail properties with sales areas exceeding 2,000 m^2 unless they appear in the general municipal zoning documents.

In terms of the magnitude of investments, the **available budgets** foreseen by national governments to support non-residential building policies vary considerably between MS, depending on the breadth of required interventions. These range from RON 695.75 million (EUR 155.4 million for 2015) for the Romanian National Programme for Public or Social Buildings, to SEK 14.5 billion (EUR 1.6 billion) and SEK 3 billion (EUR 323.6 million) for the Swedish healthcare investment projects, to EUR 15 billion per year for the German National Investment Pact for Municipalities. Italian support to school construction varies from EUR 1.1 billion for the School Construction Plan to EUR 3.7 billion for the Miur Plan.

Non-residential buildings can benefit from public-private partnerships in funding.

With respect to the type of **financial support** available for non-residential building investment schemes, it can be noted that both funding and financing play an important function. For instance, in Italy, school construction schemes make use of both types of instruments, with the School Construction Plan employing mainly grants (funding), whereas the Miur Plan is based on a combination of both. Indeed, out of the total EUR 3.7 billion of planned investments under the latter scheme, up to EUR 940 million originate from loans provided by the European Investment Bank. A further financing trend can be observed in countries such as Germany and Romania. Although the policies implemented in these MS target primarily public administrations and are based on public financial resources, they put the emphasis on the importance of **involving private actors** also in projects of public interest. Thus, the German National Investment Pact for Municipalities seeks to increase the level of private investment in public sector non-residential buildings (such as industrial, commercial, educational, health and other buildings). Similarly, the Romanian National Programme for Public or Social Buildings can be financed through state sources (the budgets of the Ministry of Regional Development and Public Administration and local authorities), but also from private contributions (either form natural or juridical persons).

As discussed above, investment in non-residential buildings for public use is a major area of policy intervention across the analysed MS. The following box provides an example of a successful measure in this domain, allowing to draw a series of lessons learnt.

Box 4: Italy's School Construction Plan (*Piano di edilizia scolastica*)

The alarming condition of Italy's extensive school building stock has led the government to identify school construction interventions as a key investment priority, ultimately benefiting both staff and students, as well as the national construction sector. Within this context, the Ministry of Education, University and Research (Miur) launched the School Construction Plan (Piano di edilizia scolastica) in July 2014, with an initial budget of EUR 1.1 billion, subsequently increased through various amendments to over EUR 1.3 billion.

The Plan entails a series of interventions on more than 21,200 schools, falling under three main pillars, namely #ScuoleNuove, #ScuoleSicure and #ScuoleBelle. The first programme entails the construction of new school buildings and major renovation works, with a total budget of EUR 344 million for over 920 interventions. Financial support for this area of the Plan originates from the unlocking of the beneficiaries' (local authorities) own resources from the constraints of the Stability Act. The second programme involves over 2,300 works to improve the safety of school buildings, such as asbestos removal, funded through state grants to provinces and municipalities, for a total of EUR 550 million. The third pillar supports over 17,900 small maintenance works

(7,801 for 2014 and 10,160 for 2015), functional restoration and décor interventions, with total available resources amounting to EUR 450 million in the form of direct grants to schools.

As of October 2015, 425 interventions out of the planned 920 and 1,118 interventions of the planned 2,300 were completed under #ScuoleNuove and #ScuoleSicure, respectively. As for #ScuoleBelle, 7,235 interventions out of the planned 7,801 for 2014 were concluded between July 2014 and December 2014, with all available funds being utilised. As of July 2015, the first 5,290 interventions under #ScuoleBelle had been financed (out of the total 10,160 for 2015), with the remaining 4,870 due for completion in the first semester of 2016.

The School Construction Plan has generally proved to be successful, with all three programmes having achieved encouraging completion rates and efficient resource utilisation. This is due to improvements in the accessibility and governance of the available resources compared previously existing initiatives in this area, as well as measures to accelerate the procurement and realisation of interventions. For instance, the introduction of a Mission Structure (Struttura di missione) to facilitate the coordination of the financing, simplify the bureaucratic procedures and improve the utilisation of resources was one of the key strengths of the Plan, together with the unlocking of financial resources from the constraints of the Stability Act. However, criticisms in relation to the effectiveness of #ScuoleBelle and the allocation of available funds have been raised by the main beneficiaries (parents, consumer associations, construction sector), which would like to see the resources of this sub-programme redirected towards safety improvement interventions under #ScuoleSicure.

Key takeaways:

✓ Taking into account that interventions in non-residential construction often entail public investments, it is important to **consider transparency and bureaucracy** when designing policy schemes, since such interventions are often subject to sub-optimal use of public funds. Therefore, the integration of measures in the policy to simplify and accelerate public procurement practices and improve the utilisation of available resources is crucial.

✓ Policies should envisage a **financing model that foresees the involvement of private investors**, as a way to address the investment backlog. To this end, the previously suggested measures that relieve the burden of bureaucracy would play a decisive role in attracting private investment, which is often deterred by the intricacy of the regulatory environment. Moreover, schemes to reinstate the confidence of private investors in the non-residential sector and leverage on foreign capitals should be further encouraged.

7.
Policy initiatives on public infrastructure development

To foster investment in the development of public infrastructure, MS are relying both on EU policies and their own national strategies and initiatives. Both are presented in turn below. The development of new infrastructures and their maintenance is of utmost importance for the development of MS across the EU. This section puts a particular focus on transport infrastructure since a well-developed network is the basis for competitiveness, cohesive territorial development and enhanced market opportunities.

EU policies and funding for infrastructure investment

The optimal functioning of European transport infrastructure is considered a key element for the realisation of the Single Market, as well as a means to strengthen the EU's economic, social and territorial cohesion. As such, transport policy has long featured in the financial priorities at the EU level. Dedicated instruments for European transport policy have been evolving since the 1980s, which have focused on creating an intermodal Trans-European Transport Network (TEN-T). The TEN-T is also central for achieving the goals of Europe 2020 Strategy. To raise to the challenge of infrastructure investments, the EU's financial envelope dedicated to transport has been substantially increased in the 2014-2020 Multiannual Financial Framework.

Connecting Europe Facility and Trans-European Transport Network (TEN-T)

The EU's main involvement in infrastructure is through the **Trans-European Transport Network (TEN-T)**, an EU-wide transport infrastructure policy. The **Connecting Europe Facility (CEF)** is the funding instrument for the realisation of inter-connected EU infrastructure policy in the field of transport, energy and digital services.

The development of TEN-T is the main priority under the CEF, as EUR 22.4 billion is earmarked for transport projects out of the EUR 30.4 billion total budget of the CEF[95]. The financial envelope for transport policy was tripled in the programming period 2014-2020, underscoring the importance of infrastructure as a lever for competitiveness and reflecting the infrastructure-financing gap due to tight national public budgets.

The primary objective of TEN-T is to create a pan-European network of transport corridors aiming to remove bottlenecks, upgrade infrastructure and streamline cross-border transport in the EU. To this end, nine TEN-T "core network corridors" are defined, which connect EU MS through roads, railways and other infrastructures. As part of TEN-T, revised guidelines and methodologies for the construction of transport infrastructure guarantee a harmonised legal and financial framework for the implementation of projects.

The implementation and funding of the TEN-T core network corridors can be supported by different sources of EU and national funding. While the CEF Transport is dedicated specifically to TEN-T, the **European Structural and Investment Funds (ESIF)** and other EU grants may also provide funding to TEN-T related projects (see more details in the section on ESIF below). Moreover, TEN-T projects are also eligible for financing by the **EIB**. In this respect, the **Loan Guarantee Instrument for TEN-T Projects (LGTT)** has been devised as a new financial instrument for TEN-T Projects, and will be funded by the EU and the EIB.

Examples of TEN-T implementation

The TEN-T core infrastructure is scheduled for completion by 2030. The boxes below provide instances of the implementation of some TEN-T projects across the MS.

[95] European Commission, Connecting Europe Facility. https://ec.europa.eu/inea/en/connecting-europe-facility

Poland is part of two of the nine core network corridors, namely the **North Sea-Baltic Corridor and the Baltic Adriatic Corridor**. The European Regional Development Fund (ERDF) and the **Cohesion Fund (CF)** are contributing to the development of these corridors with ten major projects worth EUR 3.3 billion for the construction of 330 km of express roads. Specifically, four major projects approved in Lower Silesia and Lubusz Voivodeship are part of the Baltic-Adriatic TEN-T and receive a EUR 776.2 million contribution from the CF. Another EUR 493.3 million from the ERDF will co-finance the express road S7 as part of the Baltic Adriatic TEN-T corridor. Finally, inter-regional connections on the Via Baltica receive EUR 441.3 million in co-financing from the CF[96].

Cross-border projects are also key for the development of TEN-T infrastructure and may be particularly challenging to finance. The increased EU transport budget and co-financing rate in the 2014-2020 programming period, as well as the increased coordination through European Coordinators offer incentives for implementation, also in cross-border cases. The Brenner Base Tunnel project linking Italy to Austria can be considered a success story of cross-financing applied to a large infrastructural project. The two MS agreed on the cost of the project, i.e. EUR 7.46 billion, as the starting point for the construction of the base tunnel, initiated under the lead of the project promoter BBT SE. It is expected that the tunnel will be completed and operational by 2026[97].

The EIB has long been involved in the financing of infrastructure and TEN-T projects. This is, for instance, the case in Hungary, where the EIB contributed EUR 184 million in 2014 to co-finance the rehabilitation and reconstruction of TEN-T railway lines. The EIB's involvement contributes to financing projects with a total cost of EUR 1.2 billion, aiming to enhance the attractiveness of rail transport in Hungary[98]. In Spain in 2014, an EIB EUR 650 million loan was provided for the building and upgrading of the Mediterranean Corridor[99].

European Structural and Investment Funds (ESIF)

ESIF are the EU's primary policy instruments, aimed at delivering investment in priority areas linked to the Europe 2020 Strategy for a smart, sustainable and inclusive EU. Some MS, such as Romania and Poland, have implemented Operational Programmes dedicated to infrastructure. ESIF are co-funded with national funding and typically implemented via grants.

Romania introduced the Large Infrastructure Operational Programme (LIOP) for the 2014-2020 programming period, worth EUR 9.5 billion in ESIF co-financing, which represents almost half of the country's total ESIF allocation[100]. The LIOP will invest in transport, environment and energy projects and is a major vehicle to implement the national Master Plan on Transport, which foresees a large-scale expansion of Romania's road and railway infrastructure, as discussed in the section above. Similarly, in Poland, EUR 609 million from ESIF is earmarked for road and urban transport, including TEN-T corridors[101].

96 European Commission, 330 kilometres of new express roads in Poland to overcome bottlenecks in trans-European infrastructure - Press Release. March 2016. http://europa.eu/rapid/press-release_IP-16-842_en.htm

97 European Commission, Attracting investments towards transport infrastructure - potential lines for action. September 2014. http://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/doc/10_09_financingpaper2014.pdf

98 European Investment Bank, EIB continued supporting Hungary's growth prospects with EUR 756 million in 2014. April 2015. http://www.eib.org/infocentre/press/releases/all/2015/2015-089-eib-continued-supporting-hungarys-growth-prospects-with-eur-756-million-in-2014.htm

99 European Investment Bank, The EIB in Spain in 2014. http://www.eib.org/attachments/country/factsheet_spain_2014_en.pdf

100 European Commission, EU will invest nearly €9.5 billion in Romania for transport, environment and energy. July 2015. https://ec.europa.eu/commission/2014-2019/cretu/announcements/eu-will-invest-nearly-eu95-billion-romania-transport-environment-and-energy_en

101 European Commission, €609 million from EU Regional Funds to improve Poland's road and urban transport. March 2015. http://ec.europa.eu/regional_policy/en/newsroom/news/2015/03/eur609-million-from-eu-regional-funds-to-improve-poland-s-road-and-urban-transport

European Regional Development Fund (ERDF) has a biggest budget among all ESI Funds, reaching EUR 281.0 billion for the 2014-2020 programming period. Funding of construction-related infrastructure is planned under the theme of Network Infrastructures in Transport and Energy. The total budget for this theme reached EUR 32.3 billion in 2014-2020, representing 11.5% of ERDF budget. Poland allocated the most of this funding, EUR 10.9 billion (33.7%) for 2014-2020 period. The projects supported included, among others, renovation of the rail network in Mazowieckie, new rail connection to strengthen Baltic-Adriatic transport corridor, as well as upgrade on railways in Eastern Poland to improve the competitiveness of the region. Italy, Romania, Czech Republic and Spain were the next biggest beneficiaries of ERDF funding for infrastructure, with planned funding of EUR 3.4 billion, EUR 3.3 billion, EUR 3.2 billion and EUR 2.8 billion accordingly[102].

Among ESI funds, Cohesion Fund (CF) has a specific role to play in the development of the infrastructure and transport networks with the total budget for 2014-2020 reaching EUR 75.2 billion. In 2014-2020 programming period so far[103], a total contribution of Cohesion Funds into the development of network infrastructures in transport and energy reached EUR 38.8 billion, the highest among all themes supported by CF. Poland allocated the highest share of financing from this fund (EUR 17.1 billion or 44.1%), making it a key beneficiary of cohesion investment for infrastructure. Romania, Czech Republic and Hungary received EUR 4.5 billion, EUR 4.2 billion and EUR 3.2 billion accordingly.

While planning of the funds has been finalised in all the countries, financing has not yet been exhausted as implementation of projects is characterized by a long time horizon. So far Poland has employed 18% of Cohesion fund budget allocated, while Czech Republic spent 17%, Hungary reached 13% and Romania - 12% of planned funding. The further use of the funds, however, is expected in 2018-2020[104].

European Fund for Strategic Investments (EFSI)

The European Fund for Strategic Investments (EFSI) is an additional EU financing instrument relevant for transport infrastructure. It takes the form of a EUR 26 billion guarantee from the EU budget. In contrast to other EU instruments such as ESIF, EFSI aims to mobilise private sector investment. Projects applying for EFSI are screened and approved by the EIB on the basis of their bankability[105]. As of September 2017, the duration of EFSI has been extended until 2020 with the EFSI 2.0, launching additional projects with particular attention to cross-border infrastructure investments and sustainability[106].

As an example of an innovative infrastructure investment, a EUR 300 million financing agreement has been approved to the benefit of Italian state railway company Trenitalia. The agreement takes the form of a bond subscription that is also guaranteed by the EFSI. Trenitalia will use the financing for the acquisition of new regional trains[107]. It remains unclear, however, whether the EFSI and the EU guarantee attached to it will be adapted to facilitate investment in social housing. Long-term loans with low interest rates are what is needed to invest in this sector, which is complex in terms of the capital it requires, but low risk in terms of return on investment.

Other Financing Instruments

Innovative financing instruments have been devised at the EU level to strengthen the financial viability of TEN-T and infrastructure projects, which often face difficulties in attracting private-sector funding due to the relatively high levels of revenue risk at the project's early stages. The **Loan Guarantee Instrument for TEN-T (LGTT),** a joint instrument of the European Commission and the EIB, is designed to attract private sector investment for TEN-T projects. The LGTT is an EIB guarantee on capital provided in favour of commercial banks investing in high risk projects. The LGTT is financed

[102] Data portal for the ESI Funds, https://cohesiondata.ec.europa.eu/
[103] Data on August 2018
[104] Data portal for the ESI Funds, https://cohesiondata.ec.europa.eu/
[105] European Commission, The Investment Plan for Europe State of Play. March 2016. http://ec.europa.eu/priorities/sites/beta-political/files/ip-eu-state-of-play-march-2016_en.pdf
[106] European Commission, European Commission - Fact Sheet, September 2017. http://europa.eu/rapid/press-release_MEMO-17-3224_en.htm
[107] European Investment Bank, Juncker Plan: EUR 300 million loan to Italian state railways for regional trains. December 2015. http://www.eib.org/infocentre/press/releases/all/2015/2015-318-bei-piano-juncker-300-milioni-a-ferrovie-per-i-treni-regionali.htm

with a capital contribution of EUR 1 billion, which is intended to support up to EUR 20 billion of loans to the private sector. The LGTT guarantee can be claimed by the investor in case of unexpected reductions in traffic income and related financial returns during the initial ramp-up period of the operation, in order to sustain financial returns[108]. However, so far, only a limited number of projects have made use of the LGTT instrument[109].

The **Project Bond initiative** is another key initiative by the EIB and the European Commission to stimulate capital from financial markets for infrastructure financing. The Project Bond Initiative foresees the provision of loans for infrastructure projects in a two-stage manner, using subordinated and senior loans. Senior loans represent the biggest part of the external investment (at least 80% of borrowed costs) coming from a large pool of private investors attracted to medium revenues and predictable risk infrastructural projects. The subordinated loan is a part of the investment (up to 20% of borrowed costs) financed by the EIB in the form of a loan or a credit line (Project Bonds), that has to be returned after all the other loans. For investors, Project Bonds function as a "first loss piece" that they do not have to cover, or a form of a guarantee on their investments. Project bonds are mostly relevant in the context of public private partnerships (PPP) as infrastructure project promoters[110].

The box below provides an example of the implementation of the Project Bond initiative in Germany.

Box 5: EIB Project Bond operation in Germany

As the first operation under the European Project Bond Initiative in Germany, the EIB is providing EUR 170 million in the form of project bonds for the renovation and expansion of the A7 motorway, connecting Denmark and Germany, and is part of the TEN-T Scandinavian-Mediterranean corridor.

As a result of the project, the A7 motorway will be extended by 65km and will be widened to eight lanes. Worth over EUR 600 million, this deal is the largest PPP motorway infrastructure project in Germany to date, financed and carried out by a partnership between the public partner DEGES (Deutsche Einheit Fernstraßenplanungs- und -bau GmbH) as the project promotor, and a private consortium led by the construction company Hochtief as the contractor.

The EIB's involvement through the Project Bond Credit Enhancement (PBCE) is to provide a subordinated loan of EUR 90 million. This amounts to approximately 20% of the volume of the senior debt issued, thus optimising the risk profile of the investment and increasing its attractiveness for institutional investors. The EIB and the European Commission share the risk and benefits of the instrument on a portfolio basis. The European Investment Bank is also one of the key investors in the project bond, on the same level as other capital investors.

The A7 motorway project between Bordesholm and Hamburg in Germany is one of the pilot projects for the Project Bonds Initiative. The EIB will finance 5 to 10 projects during the test phase. In case of success, the Project Bonds can provide an alternative to financing projects through bank loans or public sector grants, and contribute to closing the infrastructure financing gap.

While project bonds were relatively widespread as an alternative source of infrastructure financing prior to the global economic crisis, particularly in the US, their significance vastly diminished with the collapse of global financial markets. In recent years, however, projects bonds have seen a revival. The public sector is looking for **greater participation of private sector** to finance much needed infrastructure investments. They are becoming increasingly interesting for investors, as bank lending has been tightened due to stricter Basel III regulations. Instruments such as the Project Bond Credit Enhancement (PBCE) are able to make the financial vehicle even more attractive. On the downside lie the greater risks inherent to the construction sector, partly due to the long-term development of projects.

National policy initiatives supporting the infrastructure market

EU transport infrastructure is an area of utmost importance for investment, since a well-developed transport infrastructure network is the basis for competitiveness, cohesive territorial development and enhanced market

[108] European Investment Bank, The Loan Guarantee Instrument for Trans-European Transport Network Project. 2008. http://www.eib.org/attachments/press/2008-005-fact_sheet_en.pdf

[109] European Commission, Attracting investments towards transport infrastructure: potential lines for action. September 2014. http://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/doc/10_09_financingpaper2014.pdf

[110] Deutsche Bank, Project Bond Initiative. 2013. https://www.dbresearch.com/PROD/DBR_INTERNET_EN-PROD/PROD0000000000320937/Project+Bond+Initiative%3A+Project+selection+the+key+to+success.pdf

opportunities. It has been estimated that the total cost of developing EU transport infrastructure amounts to EUR 1.5 trillion for the period 2010-2030[111].

The EU has been suffering from a **financing gap** following the crisis, mostly due to the fact that financial support for this sector originated predominantly from state budgets. Moreover, private investment in infrastructure has not been sufficiently encouraged, and its contribution is therefore only limited. Within this context, MS are introducing comprehensive overarching strategies to stimulate investment in infrastructure, specifically transport. Indeed, most of the analysed countries across the main geographical regions have foreseen ambitious medium to long-term budgets to counteract the decline in infrastructural investment.

Trends in infrastructure investment policies

Construction of new infrastructure

In general, MS where infrastructure development is currently still suboptimal or those who are willing to spur investment further, tend to concentrate the bulk of their investments in **new infrastructural construction projects**. This is particularly the case in Central and Eastern European countries. For instance, the Hungarian government has put the emphasis on developing new transport infrastructure, which will be supported by investments of HUF 1,100 billion (EUR 3.5 billion) in the coming years, eventually reaching a total investment of up to HUF 2,800 billion (EUR 9 billion) by 2020. Similarly, in Romania, to tackle the urging infrastructure problems, the Ministry of Transports proposed a revised General Master Plan for Transport (*Master Planul General de Transport)* in May 2015, detailing a series of strategic transport infrastructure interventions worth EUR 45.5 billion. In August 2017, Croatia introduced its 2017-2030 National Transport Development Strategy with the aim to invest EUR 2 billion in transport infrastructure, which will be heavily supported by EU funds. In terms of operational goals, the Strategy aims at improving passenger connectivity, long distance accessibility, and connectivity with neighbouring countries, improved freight accessibility, and a better organisational and operational set up of the transport system. The Strategy sets 37 specific objectives and 18 measures across 6 sectors: rail, road, air, maritime and inland waterway, public urban, suburban and regional transport.

Maintenance of existing infrastructure

In countries where transport infrastructure is typically better developed, national strategies tend to focus predominantly on maintenance. This is often the case in Western Europe, in countries such as Austria, France, Germany, Slovenia, Sweden and Ireland.

The Austrian initiative Target Network 2025+ (Zielnetz 2025+) launched in 2011 is dedicated to the upgrade of the railway network and constitutes a key element of overall transport strategy. The planned investments in railroad modernisation aim at increasing railroad capacity by 30%, thus allowing more transport of people and goods to run on rails. Moreover, in Slovenia, the Transport Development Strategy launched in 2015 lays out the government's medium-term investment strategy for road, railway, air and maritime transport. The improvement of transport infrastructure, and particularly the upgrade and modernisation of railways and road connections, is one of the main priorities of the government. To this end, an annual amount of EUR 200 million has been allocated for the construction and renovation of railways, and another EUR 200 million will be devoted to the upgrade of state roads. Regarding transport infrastructure, the German federal government has planned to increase the amount of investment from the current EUR 10.8 billion, to EUR 13 billion in 2017. The 2030 Federal Transport Infrastructure Plan (Bundesverkehrswegeplan (BVWP)), adopted in 2016, sets the strategy for transport investment in Germany, highlighting the importance assigned by the federal government and the EU to mobility and infrastructural investments in Germany. Some of the planned investments will be carried out as PPP projects, in line with the 11 "new generation" transport infrastructure PPPs announced by the Ministry of Transport and Digital Infrastructure in 2015.

[111] European Commission, Attracting investments towards transport infrastructure - potential lines for action. September 2014. http://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/doc/10_09_financingpaper2014.pdf

Infrastructure as a driver for economic and urban development

> Infrastructure is a strategic area of investment, with the potential to strengthen economic and urban development. Particularly, transport infrastructure investment strategies are increasingly designed so as to be anchored in the broader political, social and economic context of the country, focusing on the role of effective and efficient transport networks in addressing socio-economic issues.

In Spain, the government introduced the Strategic Infrastructure and Transport Plan 2005-2020 (*Plan Estratégico de Infraestructuras y Transporte*). The strategy considers infrastructure as a means to boost economic growth and competitiveness, social and territorial cohesion, and focuses on improving the efficiency and sustainability of the infrastructure network. The total budget of the plan amounts to EUR 249 billion, with the main investment focuses being railway infrastructure (43.7% of the budget), road transport infrastructure (25.2%) and urban transport (13%). In light of its problematic housing situation, the Swedish government has identified transport infrastructure as a priority for investment, with potentially positive spill over effects on residential construction. Thus, the 2014-2025 National Transport Plan entails a budget of SEK 522 billion (EUR 56 billion), 20% greater than that of the previous plan. Of this, SEK 281 billion (EUR 30 billion) will be channelled towards new transport projects, including a high-speed rail line between Stockholm and Linköping, and the expansion of other railway tracks[112]. Indeed, investments in roads, railways and metro lines will enhance connectivity and facilitate commuting between urban centres, improving accessibility to new areas and providing opportunities for new residential developments, thus alleviating the current housing shortage. A further example of such plan is Belgium, where the Walloon Region introduced the Infrastructure Plan 2016-2019 with a budget of EUR 640 million, which aims at rehabilitating highways, renovating and securing regional roads, and investing in hydraulic channels. Moreover, EUR 89.5 million from the total budget will be dedicated to the development of new highly efficient roads (known as Routes de l'Emploi – Employment Routes) aiming to specifically improve mobility and access to strategic areas such as business parks, urban centres of particular economic importance and healthcare facilities, thus supporting economic development and competitiveness.

[112] Global Construction Perspectives, Global Construction 2025 - A global forecast for the construction industry to 2025, 2013.

8. Conclusions

As discussed throughout the report, investment in construction in the EU has recovered following the downturn brought on by the financial and debt crises. Demographic change, regulatory requirements and innovation will likely lead to sustained growth over the coming years, but it is important to address the underlying barriers to investment, such as high risk levels, low productivity, inefficiencies, skills shortage and lack of access to finance, in order to ensure that the sector's growth is also sustainable.

In order to overcome these obstacles and take full advantage of the opportunities opened up by the discussed drivers, the following remarks should be considered looking ahead.

- ✓ Accelerating the integration of **digitalisation and innovative technologies** and practices in the construction sector holds major potential for improving the sector's efficiency, effectiveness and profitability. Increased demand by public and private investors on this point as well as policy measures that support the sector in adopting innovative tools and products will be key for the adaptation of traditional construction to the challenges presented by innovation process.
- ✓ While **access to finance** for construction firms and consumers has improved substantially since the economic and financial crises, increased focus on measures that target the remaining barriers will be important for ensuring the continued growth of investment in the sector. The existing experience with policies tailored to the needs of specific target groups can serve as a basis for MS who have a narrow range of measures in place.
- ✓ Further focus on policy measures than improve **access to housing** in the most constrained markets will be an important measure to both support construction activity and improve society welfare. However, the right balance needs to be struck between supporting home ownership and preventing an overheating of the housing market and **macro-prudential policies** such as restrictions on loan-to-value (LTV) ratios can help protecting the banking and household sectors from risks.
- ✓ The public sector will continue to play an important role in housing and infrastructure investment, but in the face of the increasing demand on public budgets, it is important that innovative **financial instruments** are used to leverage public funding and draw in investments from the private sector. Further support to ensure MS can make optimal use of the available EU financial instruments can help address some of the most pressing investment gaps and bring about direct improvements to the wellbeing and quality of life of the population, as well as improve the functioning of the internal market particularly with respect to transport infrastructure.
- ✓ Across the board, policies supporting the non-residential market were limited. Yet, such policies could play an important role in order to address the poor quality of non-residential buildings for public use and foster the construction or redevelopment of hospitals, schools as well as commercial or retail properties which could in turn support inclusive growth.