6. Productivity, competitiveness, and the sustainability of the Belgian economy

While, from an economic point of view, Belgium is in good shape despite the successive shocks of recent years, it still faces a number of structural challenges. Firstly, Belgium's public debt is high and rising, raising concerns about the sustainability of its public finances. The challenge is to strike a balance between implementing fiscal policies aimed at reducing the deficit and guaranteeing the provision of efficient public services (for more information, see chapter 8). Secondly, like many other European countries, Belgium is also faced with an ageing population. These demographic changes are having an impact on the viability of the pension system, on healthcare costs and on the labour supply. In addition, the labour market, which has been under pressure in recent years due to labour shortages, remains relatively rigid, with little professional and geographical mobility. Moreover, the participation rate remains low compared to other European countries (for more information, see chapter 5). Finally, productivity growth and the competitiveness of Belgian businesses are two additional key challenges, discussed in more detail in this chapter, which have a significant influence on GDP growth.

Economic growth, as measured by traditional performance indicators (e.g. competitiveness, productivity, employment, etc.), is, by itself, insufficient to guarantee prosperity. It must also be inclusive and sustainable. Economic development must be accompanied by an equitable distribution of wealth across the population, reducing the risk of poverty and income inequalities, if it is to be inclusive : equal access to education and employment also contribute to this. This chapter thus features a box on indicators of sustainable development. The final section describes Belgium's progress towards the climate transition, *the* major challenge of the coming decades.

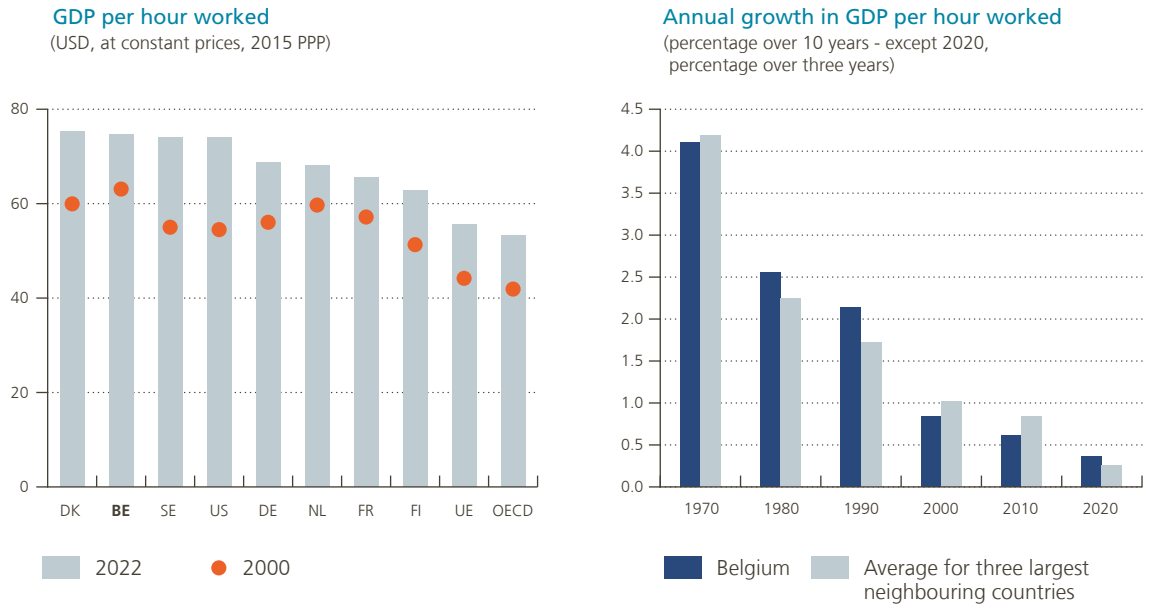
6.1 What levers can be used to revive productivity growth ?

A number of challenges need to be met in order to return to high productivity growth

Belgium is one of the most productive countries in the world, but productivity growth is slowing. Belgium boasts a commendable economic position on a number of fronts. Its population is characterised by high levels of education and skills, while its businesses maintain a competitive edge, particularly in terms of innovation. The economy has a considerable level of capital intensity, and the country is an attractive destination for many multinationals. All of these factors contribute to making Belgium one of the world's most productive economies, which has been the case for several years. However, while, for example, apparent labour productivity, measured as the level of GDP produced per hour worked, is high, its growth has seen an underlying decline since the 1970s, and this slowdown has intensified over the last decade. Although productivity growth reached 4 % in the 1970s, it fell to 2.5 % in the 1980s and to almost 2 % in the 1990s, before dropping below 1 % in the 2000s. While this slowdown was common to (almost) all advanced economies, it was particularly pronounced in Belgium. It is important to emphasise that productivity growth has followed a specific

Figure 6.1

Belgium has high productivity, but it is growing less quickly than elsewhere



Sources : Eurostat, OECD.

trajectory in recent years, largely influenced by the impact of the coronavirus crisis. On average over the period 2020-2022, GDP per hour worked increased by 0.4 % in Belgium, compared with growth of 0.3 % in neighbouring countries. According to the most recent estimates, growth in GDP per hour worked remained low in 2023, at only 0.3 %.

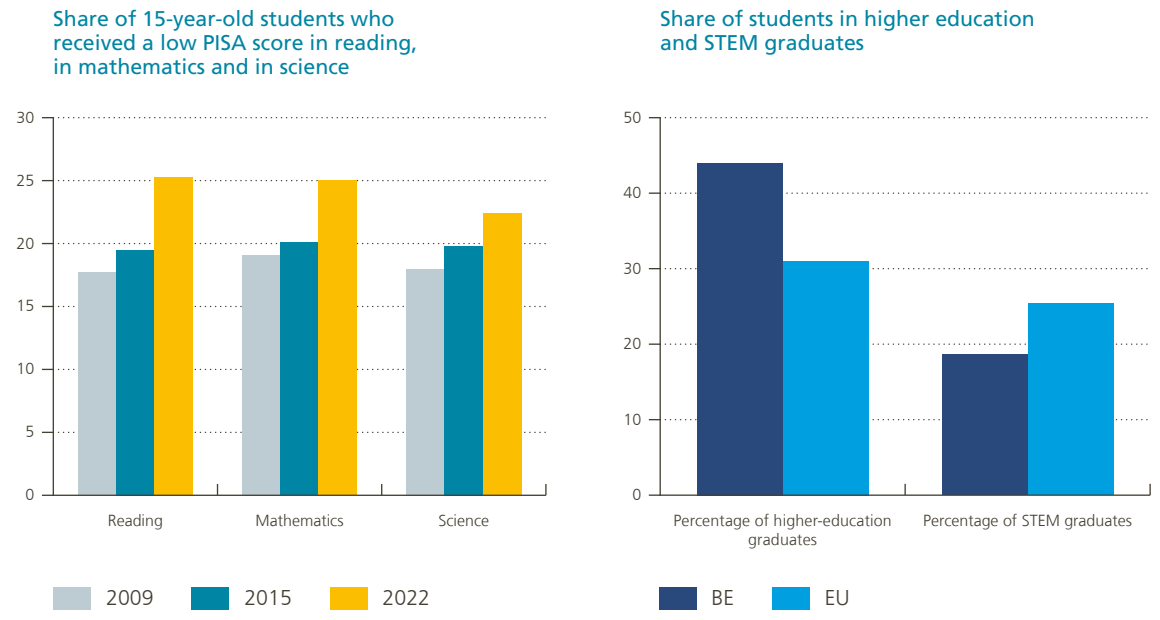
The decelerating trend in productivity growth can be attributed to a number of factors. One major factor is the development of the services sector, with services recording lower average productivity growth than manufacturing. In addition, growth has been concentrated within a small number of firms and has not been dispersed across the market, thereby hampering overall growth. Significant restrictions on competition are also playing a role. According to the OECD's[1] indicator on the country's regulatory framework, in 2018 (the latest update) Belgium had a higher level of regulation (1.69) than the OECD average (1.38). This difference was particularly marked with respect to access to certain professions, but also in relation to the cumbersome procedures in place to obtain business permits and licences. The lack of dynamism in market entry and exit by firms creates a stagnant environment and hinders the optimal reallocation of resources from declining or inefficient firms to growing or technologically advanced ones.

Education and training have a role to play in current and future productivity growth. In the future, digital skills will be increasingly in demand. However, participation in lifelong learning, which provides the opportuntity to refresh or acquire new skills, is insufficient in Belgium, especially amongst the less educated. Moreover, while a healthy percentage of people graduate from higher education in Belgium (44 % in 2022, compared with an EU average of 33 %), too few students opt for STEM (science, technology, engineering and mathematics) subjects. Yet these disciplines will be called upon more and more often by businesses in the coming years. This reality is contributing to the creation of an imbalance between labour supply and demand, thus hampering productivity growth. Regardless, even if desirable from a social inclusion standpoint, the fact that part of the low-skilled population is

1 The indicator is measured on a scale from 0 to 6, where 0 represents the least restrictive system and 6 the most restrictive system.

Figure 6.2

The declining quality of education threatens future productivity growth



Sources: Eurostat, OECD.

entering the labour market could mechanically restrain productivity from advancing steadily. However, in its 2019 report[1] analysing productivity in Belgium, the OECD showed that the trade-off between the employment rate and productivity is not empirically proven, as the composition of the workforce tends towards a higher level of education on average over time. The percentage of people graduating from higher education in Belgium duly rose from 27 % in 2002 to 44 % twenty years later.

The deterioration in the acquisition of basic skills by secondary school pupils could also limit productivity growth. The results of the OECD's PISA survey, which assesses the performance of 15-year-olds in a range of subjects, gives an indication of the quality of the Belgian education system compared with those of other countries. The latest survey, dating from 2022, was inevitably influenced by the consequences of the Covid-19 crisis on the education system (i.e. successive prolonged closures of educational establishments and distance learning). Compared with the previous results from 2018, student performance weakened on average in OECD countries, and Belgium was no exception. This was true for all three disciplines covered by the survey, namely mathematics, science and reading. It was also true for all three of the country's communities. Despite this decline, the results remain close to the OECD average in terms of level. Nevertheless, if this downward trend continues, it could have a negative impact on the employability of future graduates and on the acquisition of skills essential to the economy.

Artificial intelligence could change the way the economy works

Digital technologies are developing rapidly and can impact productivity. In recent years, new digital technologies have experienced unprecedented growth, revolutionising various aspects of our lives. Innovations such as artificial intelligence (AI) are

1 See OECD (2019), *In-Depth Productivity Review of Belgium*, OECD Publishing, Paris.

reshaping industries and transforming the economic landscape. The coronavirus crisis reinforced this trend, particularly through the widespread use of teleworking. Recent research shows that the acceleration of digitisation is likely to have a positive, albeit limited, impact on productivity growth, with relatively heterogeneous effects depending on the sector and the type of business. The investment required to support the acquisition of digital skills or to provide necessary additional infrastructure is holding back productivity gains.

Artificial intelligence, in particular, is playing an increasingly important role in the economy. Figures show that over 10 % of firms in Belgium are already using AI. This puts Belgium in a relatively good position compared with other European countries. That said, the use of AI is still heavily concentrated amongst the largest firms. While large firms, with 250 or more employees, account for only 1 % of all firms in Belgium, 41 % of them are using AI technologies. For very small firms, with two to nine employees, research shows that barely 4 % use AI.

However, there are a number of obstacles to the development of AI. To improve the spread of AI, it is important to understand the obstacles firms face. According to the Statbel survey on the use of ICT and e-commerce by businesses, a lack of relevant expertise is the main barrier to the adoption of AI technologies. Incompatibility with existing equipment, software or systems, high costs and difficulties linked to the availability or quality of necessary data are also cited by respondents. Legal and ethical aspects, despite their importance, are at the bottom of the list.

Once widely adopted, AI could have a significant impact on business productivity. Regarded as a general purpose technology, like the steam engine or electricity in previous industrial revolutions, AI has the potential to completely reshape the economic landscape and generate major productivity growth.[1] In fact, according to the Federal Planning Bureau,[2] 18.5 % of the most productive firms are currently using AI, compared with just 7.5 % of the least productive. This link between the adoption of AI and firm-level productivity persists even after taking into account firm size, age, the industry in which it operates and the additional investment it makes in information and communication technologies.

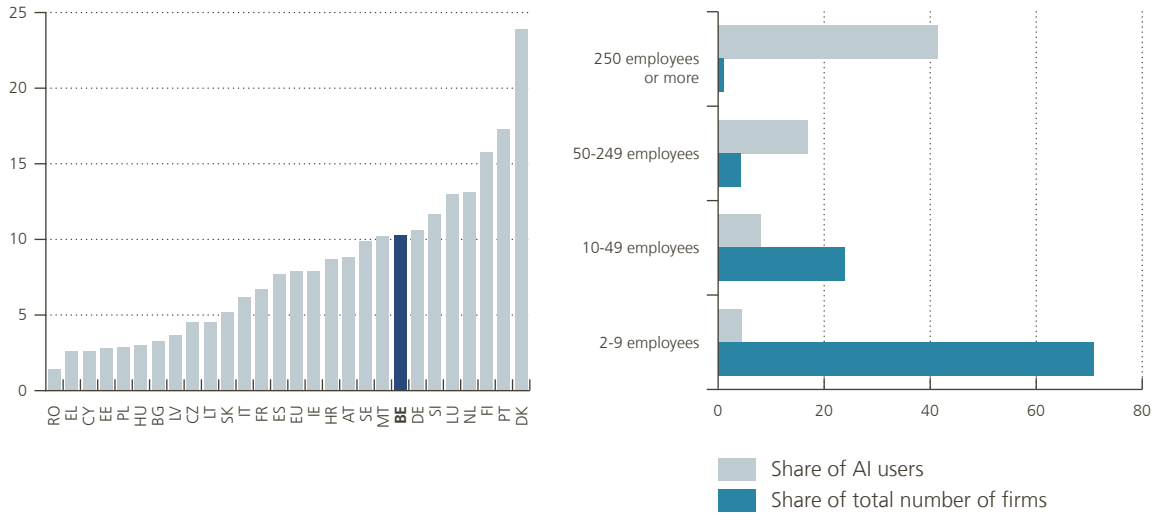
1 For more information, see C. Piton (2023), "The economic consequences of artificial intelligence: an overview", NBB, *Economic Review.*

2 Federal Planning Bureau (2023), *Utilisation de l'intelligence artificielle par les entreprises en Belgique,* article no. 16.

Figure 6.3

The use of artificial intelligence is on the rise amongst firms

(firms using at least one AI technology, percentage, 2021)



Sources: Eurostat, NBB.

However, the deployment of AI is not without risk. One of the main challenges associated with the development of AI is the elimination of certain jobs. As automation becomes more widespread, routine and repetitive tasks are likely to be performed by AI systems. Ethical considerations are another major challenge. The biases inherent in AI algorithms and the lack of transparency in decision-making processes pose ethical dilemmas. The ubiquity of AI also raises issues concerning data confidentiality and security. The collection and analysis of vast quantities of data to feed AI applications pose questions about individuals' right to privacy and the risk of data breaches. The energy consumption induced by the large-scale deployment of artificial intelligence is a further concern, given the ambition to achieve climate neutrality. Finally, the cost of implementing AI technologies could be an obstacle, particularly for small and medium-sized enterprises (SMEs), generating the risk of a digital divide in relation to larger firms.

Teleworking is another important digital development of recent years, one that could have a positive impact on worker productivity if used optimially. The Covid-19 pandemic significantly increased the number of employees regularly working remotely (from 7 % in 2019 to 16.4 % in 2022, with a peak of 26 % in 2021), raising questions as to its potential effects on workers and productivity. Working from home is often seen as positive for employees, as it offers them a better work-life balance and reduces the need to commute. On the other hand, there are also negative aspects, such as limited social interaction, longer working hours, difficulties in disconnecting from work, reduced teamwork, and a weakened sense of belonging to an organisation. A hybrid system combining teleworking and office work allows workers to benefit from the advantages of the former while limiting its disadvantages, thereby improving individual productivity.[1] From the employer's point of view, the possibility of teleworking broadens the talent pool by facilitating recruitment from a wider geographical area. In addition, teleworking can reduce the need for capital investment, particularly in real estate, leading to cost savings for businesses in terms of space and property. If both labour and capital productivity are considered, teleworking could contribute to an increase in total factor productivity, although this benefit may take time to appear.

1 See in particular A. Bergeaud, G. Cette and S. Drapala (2023), "Telework and Productivity Before, During and After the COVID-19 Crisis", *Economics and Statistics,* 539, 73-89 and C. Criscuolo, P. Gal, T. Leidecker, F. Losma and G. Nicoletti (2023), "The Role of Telework for Productivity During and Post COVID-19", *Economics and Statistics,* 539, 51-72.

6.2 More dynamic firms for greater competitiveness

Analysis of firm competitiveness must go beyond labour costs alone

The current economic conditions of rising labour costs are having an impact on the competitiveness of Belgian firms. The high inflation seen in 2021 and 2022, and the automatic indexation of salaries that followed, mean higher labour costs for Belgian firms. As a result, their competitiveness has deteriorated compared with neighbouring countries. However, this disadvantage will gradually be overcome in the medium term, provided (1) the zero margin for real wage increases over the next few years (due to the legislation safeguarding competitiveness) is respected, (2) wage negotiations in neighbouring countries push wages upwards there, and (3) there are no new price shocks (for more information, see chapter 3).

Other, more structural, factors are also affecting Belgium's competitiveness. Analysis of the international positioning of Belgian firms is not limited to changes in labour costs alone. The efficiency of the reallocation of resources through firm turnover also plays a role, as does the degree of innovation within the economic fabric. Belgium's dependence on imported energy products and raw materials places it at a disadvantage. Finally, the overall attractiveness of the country in the eyes of foreign investors will also influence the global competitiveness of firms established in Belgium.

Firm turnover does not allow for a sufficiently efficient reallocation of resources

Entrepreneurial dynamics are less strong in Belgium than in other European countries. According to Eurostat data for 2020 (the latest year available), the rate of business creation, at 6.9 % of total active businesses, is not only lower than the European average (8.9 %), but also lower than that of comparable countries (with the exception of Sweden). In contrast, the rate of business destruction is relatively low, at 3.2 %, compared with an EU average of 7.2 %. The survival rate of businesses after five years is over 60 %, compared with 47 % on average in the EU. While this could be a sign that businesses are more robust, it also means that the market is less dynamic and that resource reallocation may not be sufficiently efficient.

Several factors explain this lack of dynamism among businesses. These include a certain over-protection of established businesses and administratively burdensome liquidation procedures, which are likely to slow down not only the exit but also the entry of the most innovative and therefore the riskiest entrepreneurial projects. The insolvency framework, as assessed by the OECD, illustrates this phenomenon by taking into account personnel costs in the event of bankruptcy, the lack of prevention and monitoring, and the obstacles to restructuring. Although the country's insolvency framework has improved over the years, Belgium remains the second most complex and costly country in this regard. The lack of incentives to establish a business is also due to current legislation and regulations. According to the World Bank's "Ease of doing business" indicator, which takes into account the regulatory framework of the 190 countries surveyed, Belgium ranks 46th, well behind Denmark (3rd), Sweden (10th), Finland (20th) and Germany (22nd). Although lower down the ranking, France (32nd) and the Netherlands (42nd) are nevertheless more favourable to entrepreneurship than Belgium.

The aid provided to businesses during the coronavirus crisis to keep them afloat did not lead to further zombification of the economy. During the Covid-19 crisis, a large amount of financial support was granted to businesses due to successive lockdowns and measures taken to slow the spread of the virus. According to data gathered by Statbel, this support led to a significant reduction in the number of business bankruptcies in 2020 (–32 %) and 2021 (–9 %). The number of bankruptcies rose again in 2022 (+42 %) and in 2023 (+11 %), but remained at a level similar to that seen before the crisis, signalling that there was not a backlog of delayed bankruptcies. This raises the question of whether there is a growing risk of business zombification. However, the data show that the share of zombie businesses has been falling steadily since 2011, as has their share of total employment.

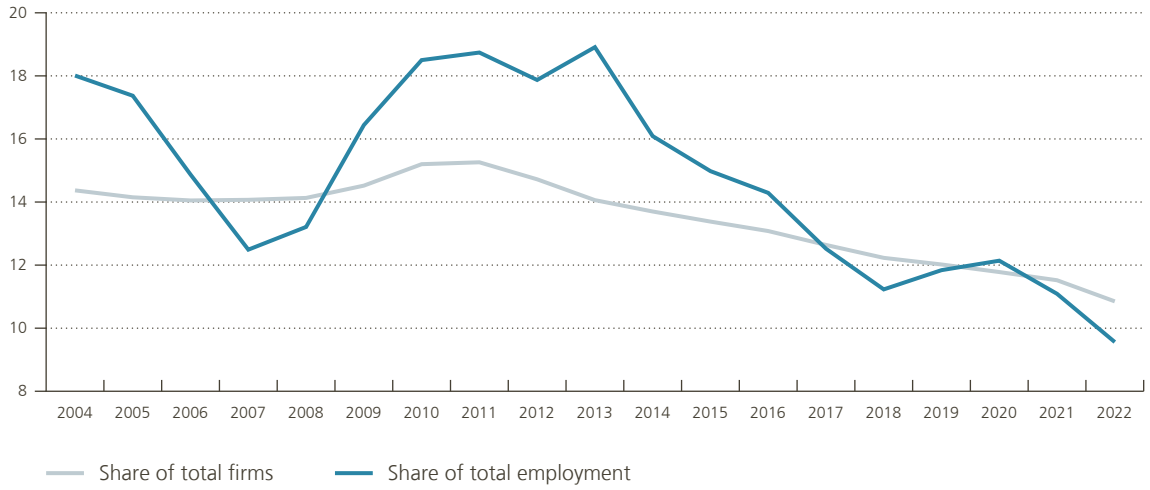
Entrepreneurial dynamics vary by sector. The rate of business creation in Belgium ranges from 3.9 % in the real estate sector to 8.9 % in the information and communication sector. This rate is lower than those observed in neighbouring countries for most sectors, with the exception of construction and hospitality. The differences between sectors are less pronounced for business failures, where the rate varies between 1.8 % in the real estate sector and 5.3 % in the hospitality sector. It should also be noted that the rate of business destruction is systematically lower than in Belgium's three main neighbouring countries, for all sectors analysed.

Labour shortages and the mismatch between labour supply and demand are weighing on business development. According to a survey of Belgian businesses conducted by the World Bank in 2020, 41 % cited a lack of suitably qualified labour as a major obstacle to their development (see chapter 5 for more information on labour shortages). Indeed, for many years now, firms have been facing labour shortages, with insufficient numbers of graduates in the most in-demand fields, particularly STEM subjects. Yet these skills are in high demand as they are needed for the digital and environmental transformations of the economy. The other obstacles cited, to a lesser degree, were tax rates (18 %), labour market regulations (11 %), informal sector practices (6 %), access to finance (5 %) and political instability (4 %). This could explain why the share of high-growth firms, as measured by Eurostat, is lower

Figure 6.4

Zombie firms [1] are structurally in decline

(percentage, non-financial corporations)



Source : NBB.

1 A company is considered a zombie if it has been active on the market for ten years or more and if, for three consecutive years, its profits have been lower than its financial costs. The company only leaves zombie status once its profits have exceeded its financial costs for at least two consecutive years.

Table 6.1

In almost all sectors, business creation and destruction rates are lower than in neighbouring countries

(average over the period 2009-2020)

	Business creation rate				Business destruction rate			
	BE	DE	FR	NL	BE	DE	FR	NL
Industry	4.7	5.7	8.5	7.7	2.7	6.2	4.4	5.4
Construction	7.1	6.9	10.5	9.2	3.1	7.5	5.8	5.9
Trade	5.3	7.0	10.1	10.2	3.5	8.7	6.0	8.3
Transport	6.6	7.7	14.3	11.1	3.8	9.5	5.7	7.6
Hospitality	8.5	8.5	8.5	9.7	5.3	9.8	5.8	7.0
Information and communication	8.9	10.4	14.7	11.8	3.2	11.1	6.1	7.2
Real estate	3.9	8.3	8.0	7.8	1.8	7.3	4.2	7.3
Professional, technical and scientific activities	6.9	8.4	13.7	11.5	2.8	9.8	5.7	6.7
Administrative and support services	7.7	10.8	13.5	13.0	3.2	10.2	5.7	8.2
Total [1]	**6.4**	**7.8**	**11.0**	**10.4**	**3.2**	**8.7**	**5.6**	**7.1**

Source: Eurostat.

1 All sectors falling under NACE codes B to N, with the exception of the financial sectors.

in Belgium (6.9 %) than elsewhere in the European Union (9.4 % on average). It is also worth mentioning the obstacles that only a small proportion of respondents considered to be of major concern. These were customs and trade regulations (2.2 %), electricity costs (1.9 %), licences and permits (1.7 %), access to land (0.7 %), corruption (0.7 %), the courts (0.6 %) and crime (0.4 %).

Belgium remains a leader in innovation, which fosters competitiveness

Innovation plays a crucial role in wealth creation and can therefore have a positive impact on productivity growth. Like the Nordic countries and the Netherlands, Belgium is a leader in innovation. The innovative capacity of the Belgian economy is one of its major strengths, and its performance, as summarised in the European Commission's Innovation Scoreboard, is growing faster than the European average. Its strengths include co-publications between the public and private sectors, collaboration between innovative SMEs and other entities, the number of foreign doctoral students, international scientific co-publications and government support for business R&D. However, Belgium also has shortcomings, including a relatively low number of design applications, limited development of environmental technologies, limited exports of high- and medium-tech goods, less lifelong learning, and the lowest level of non-R&D innovation spending.

The diffusion of innovations nevertheless remains limited, which reduces the productivity gains generated by innovations for the economy as a whole. Despite Belgium's generally positive performance in terms of innovation, the latter remains concentrated mainly amongst large firms (which represent barely 5 % of the total number of firms) and within certain sectors, in particular the pharmaceutical sector. Firms at the cutting edge of technology continue to innovate and record significant productivity gains, while those lagging behind invest little in R&D, managing at best to prevent their disadvantage from worsening over time. Thus, the challenge lies less in stepping up innovation efforts than in encouraging more firms to innovate.

The current context of high prices for energy and raw materials may weaken the competitiveness of Belgian firms

After a turbulent year on the European energy markets, energy prices have fallen sharply, but remain higher than before the crisis. The effects of Russia's invasion of Ukraine affected the entire European energy supply. The war quickly necessitated a complete reconfiguration of gas supplies to the EU in favour of purchases of liquefied natural gas (LNG) on the spot market, resulting in an unprecedented rise in the price of gas in a tight market. Electricity prices moved in parallel, given the dominant effect of gas prices on the setting of electricity prices. In 2023, the gas market gradually rebalanced at EU level, as a result of a significant reduction in demand, energy-saving measures and the gradual relaxing of gas supply constraints (e.g. the increased availability of regasification terminals in the EU). However, the new dependence on LNG means that the EU is more vulnerable to movements on the global gas market given that LNG, due to its flexible nature, can be shipped to the highest bidder. This leads to increased price volatility, as markets remain alert to any potential supply disruption. Furthermore, as long as the global LNG market remains tight, pending the commissioning of new liquefaction capacity in 2025-2026, European prices are unlikely to return to pre-crisis levels.

As a result, the price competitiveness of internationally active Belgian industrial firms has deteriorated significantly in recent years. Above all, industrial producers of globally marketed basic products, for which product differentiation is limited, have seen their price competitiveness particularly exposed to the rise in prices paid in Europe compared with those paid in other regions of the world, particularly the United States. American manufacturers have access to production from unconventional gas (and oil) fields, the exploitation of which accelerated in the 2000s. This has made the country independent of international supplies, limiting the impact on the competitiveness of US firms.

The competitiveness of Belgian firms, especially those that are electricity-intensive, also deteriorated compared with neighbouring countries. At 1 January 2023, the energy cost component was significantly cheaper for German and French firms. Since the beginning of 2023, German firms have

benefited from a capping mechanism for energy costs, while the price paid by French manufacturers is an average of the market price and an advantageous tariff reflecting the historically lower cost of French nuclear electricity. The loss of competitiveness is even clearer when it comes to electricity-intensive firms. In neighbouring countries, these firms benefit from exemptions on surcharges and network costs (up to 90 % of transmission costs), which do not apply in Belgium. For non-electricity-intensive firms, these exemptions are fewer in number and the differences are narrower. The price of natural gas paid by industrial consumers is rising in all countries. The differences between countries are smaller than for electricity, due to the relatively low tax rates on gas and the absence of reductions of network costs. Although natural gas prices are more competitive in Belgium than in neighbouring countries, this advantage is being eroded.

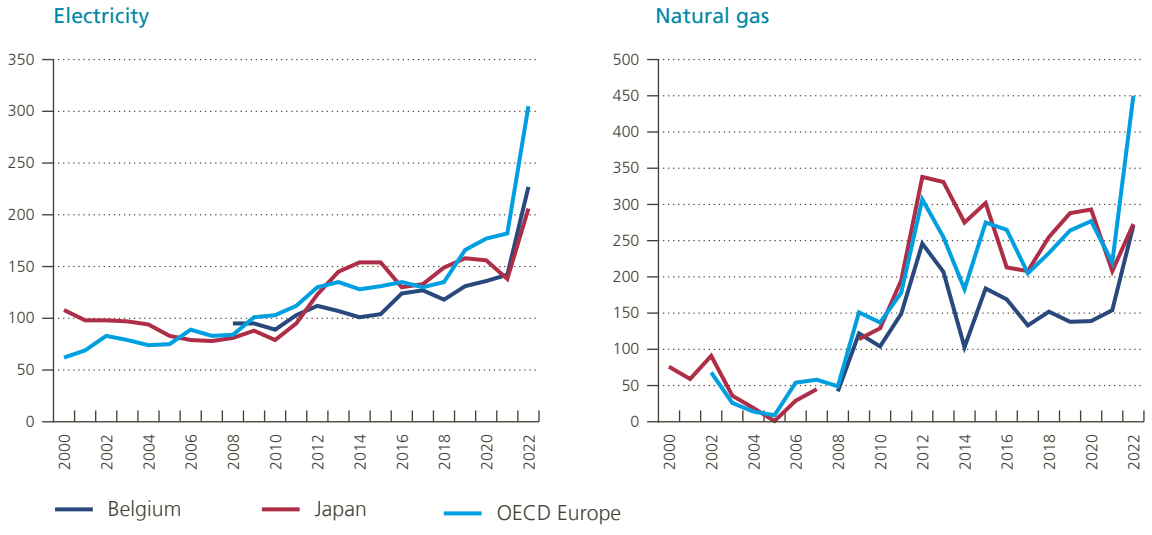
At the aggregate level, Belgium is also more dependent on imports of energy and raw materials. According to Eurostat data, the country's energy import dependency rate was 71 % in 2021, compared with 63 % in Germany, 58 % in the Netherlands and 44 % in France. This means that the most energy-intensive sectors are more vulnerable to a general rise in prices. The gap with neighbouring countries is even more marked

Figure 6.5

Energy costs weigh on price competitiveness

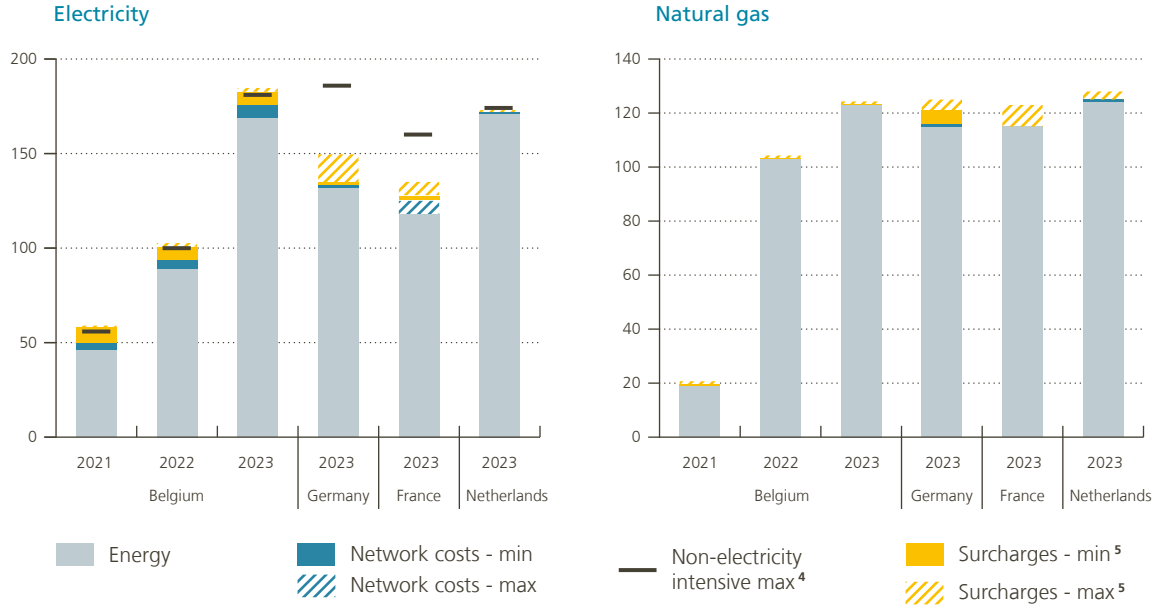
Price competitiveness is deteriorating in Belgium compared with the US...

(difference between unit values of electricity and gas sales to industry [1] in Belgium, in Europe and in Japan compared with the US [2], percentage)



...but also in relation to manufacturers in neighbouring countries

(price paid by a large industrial consumer [3], €/MWh)



Source: Based on data from the IEA Energy Prices and Taxes Statistics (database), all rights reserved, as processed by the NBB. FORBEG (2023), "A European comparison of electricity and natural gas prices for residential, small professional and large industrial consumers".

1 Final price paid by manufacturers, including taxes, transport/distribution costs and intermediary margins.

2 Differences calculated on the basis of unit values expressed in terms of purchasing power parity.

3 Energy prices in force in January of the year in question. Electricity consumption of 500 GWh/year with connection to the transmission grid and gas consumption of 2 500 GWh/year.

4 Flanders only.

5 Includes taxes and levies linked to green certificates and cogeneration systems (for electricity) as well as those linked to public service obligations.

for imports of materials,[1] where the rate is 73 %, compared with 40 % in Germany and 35 % in France. In the Netherlands, the rate is no less than 82 %. More specifically, the large quantities of critical raw materials (copper, cobalt, nickel and lithium, among others) that will be needed in the future for the climate and digital transitions are exacerbating Belgium's dependency rate, but also that of the EU in general. Their geographical concentration and predominant control by entities outside the EU pose major challenges.[2]

Belgium remains an attractive country overall

Belgium is making steady progress in global competitiveness rankings. It is encouraging to see our country's continued progress in the IMD (International Institute for Management Development) ranking, which summarises the attractiveness of countries around the world.[3] In 2023, Belgium ranked 13th, just behind the Netherlands and well ahead of Germany (22nd) and France (33rd). Positive developments are evident in all four categories of the overall indicator, namely economic performance, government efficiency, business efficiency and infrastructure. Of particular note is the country's remarkable 5th place position for business efficiency, a significant improvement on last year's 19th place. Considerable progress was also made in the traditionally difficult category of "government effectiveness", where Belgium moved up from 30th place in 2021 to 22nd place. This puts Belgium well ahead of Germany (27th) and France (47th), but still behind the Netherlands (12th). While this rise in the IMD's global rankings is promising for the country's prospects, there are still crucial areas for improvement, such as the lack of STEM graduates and the lack of investment in infrastructure and green and digital technologies.

The country's attractiveness is conducive to significant foreign investment. According to EY's European Investment Monitor, Belgium ranks 9th among those European countries attracting the most foreign direct investment, with 234 projects in 2022. The majority of these are in Flanders (68 %), with fewer in Brussels (20 %) and Wallonia (12 %). Numerous multinational groups are also present in the country: Statbel recorded a figure of approximately 10 700 in 2021, including almost 26 000 Belgian establishments. The presence of multinationals is not negligible, representing 2.6 % of firms and over 30 % of employment.

1 The materials taken into account include biomass (a dependency rate of 62 % in Belgium), crude metal ores (100 %), non-metallic ores (40 %) and fossil energy materials/vectors (100 %). It should be noted that, overall, Belgium and the Netherlands are characterised by a high proportion of re-exports, which could partly explain their higher rates.

2 For more information, see K. Buysse and D. Essers (2023), "Critical raw materials: from dependence to open strategic autonomy", NBB, *Economic Review*.

3 The rankings are based on 336 competitiveness criteria selected from the economic literature and international, national and regional sources, as well as feedback from the business community, government agencies and academic researchers. The criteria are reviewed and updated as new theories, research and data become available and as the global economy evolves.

6.3 The climate transition: the major challenge for the future

Numerous regulations are being introduced to ensure the transition to a greener economy

Climate policy has become an essential part of the EU's economic policy and, therefore, of Belgium's. Since ratifying the Kyoto Protocol in 1997, the EU has gradually set itself more binding emission reduction targets. In 2018, the EU and its Member States committed to achieving total decarbonisation by 2050. However, the complete elimination of emissions appears more difficult to achieve in certain economic sectors. Most experts now consider that the elimination of carbon dioxide has a role to play to compensate residual greenhouse gas (GHG) emissions by 2050. The objective of net-zero emissions has been enshrined in EU law since the adoption of the European Climate Act in 2021. The latter also sets an interim target of a 55 % reduction in GHG emissions by 2030, compared with 1990 levels.

Although not negligible, the overall cost of achieving climate neutrality appears manageable from a macroeconomic point of view. These ambitious climate policy objectives will require a profound overhaul of the Belgian economy. At present, the country's GHG emissions total around 115 million tonnes of CO_2 equivalent per year. A recent analysis by the NBB [1] showed that, overall, in terms of euros per tonne of CO_2 equivalent removed, a carbon price of no more than € 200 per tonne of CO_2 would probably enable most of the economy to be decarbonised. This finding suggests that full decarbonisation could cost less than € 20 billion in total per year, or around 3.5 % of current GDP and 2.5 % of GDP in 2050. However, the analysis shows that the cost of decarbonisation varies substantially from one sector to another. While this estimate is of course also subject to considerable uncertainty, it gives an idea of the (purely theoretical) cost of the transition to climate neutrality. The literature (see, for example, the IMF, [2] McKinsey, [3] and France Stratégie [4]) presents broadly consistent results. Cost-benefit analyses of different options will be essential to guarantee the cost-effectiveness of climate policy instruments, in order to ensure an optimal policy mix. Box 6.1 looks at the reduction of GHG emissions from buildings through the decarbonisation of heating production.

With regard to the objective of reducing emissions by 2030, the EU has adopted a package of climate measures called "Fit for 55". This package describes a number of key actions designed to implement climate policy and enable the decarbonisation of the European and Belgian economies:

- **Strengthening carbon pricing:** The European Union Emissions Trading Scheme (EU ETS) is a carbon emissions cap-and-trade scheme for emitters in the power generation and industrial and domestic aviation sectors. It currently covers around 40 % of EU emissions. Since its launch in 2005, GHG emissions from the sectors to which it applies have fallen by 37.3 %. The EU's

1 Speech by Governor Pierre Wunsch at the conference on "The macroeconomic implications of climate action" organised by the Peterson Institute for International Economics in June 2023. A recording and additional documents are available at https://www.piie.com/events/macroeconomic-implications-climate-action.

2 IMF (2022), *Near-term Macroeconomic Impact of Decarbonization Policies,* World Economic Outlook 2022.

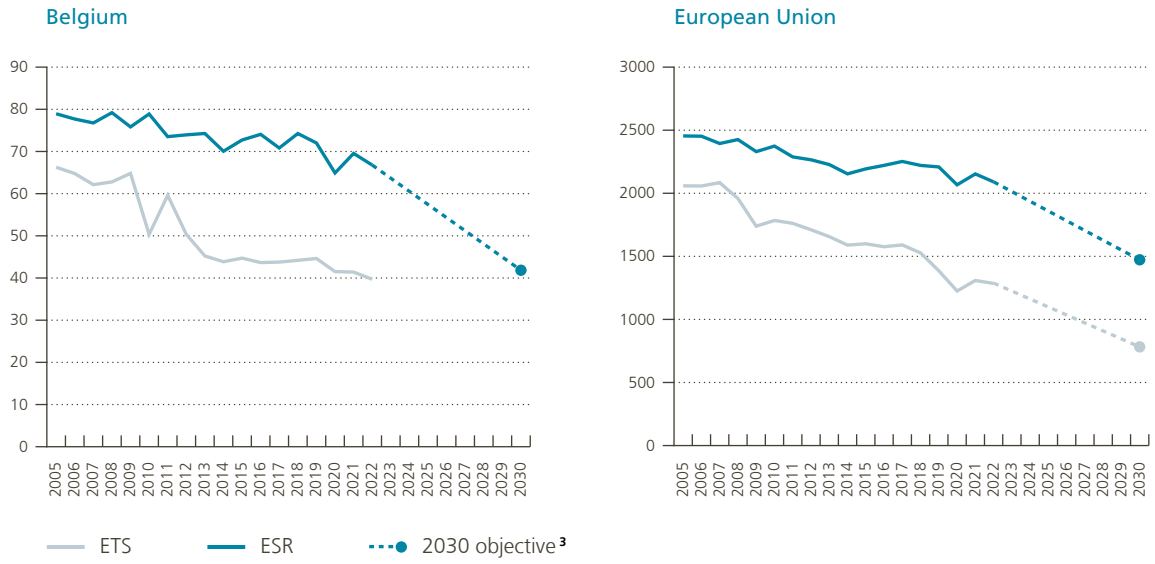
3 McKinsey Sustainability (2023), *Net zero or growth ? How Belgium can have both,* Brussels.

4 J. Pisani-Ferri and S. Mahfouz (2023), *Les incidences économiques de l'action pour le climat,* France Stratégie.

Figure 6.6

GHG emission reduction targets have been further strengthened by the European Climate Law [1]

(GHG emissions in millions of tonnes of CO_2 equivalent) [2]



Sources: EC, EEA, Eurostat.

1 The ETS (Emissions Trading System) regulates emissions from the most energy-intensive firms in the EU. The ESR (Effort Sharing Regulation) regulates all emissions not covered by the ETS. These include emissions from road transport, buildings, waste treatment and agriculture.

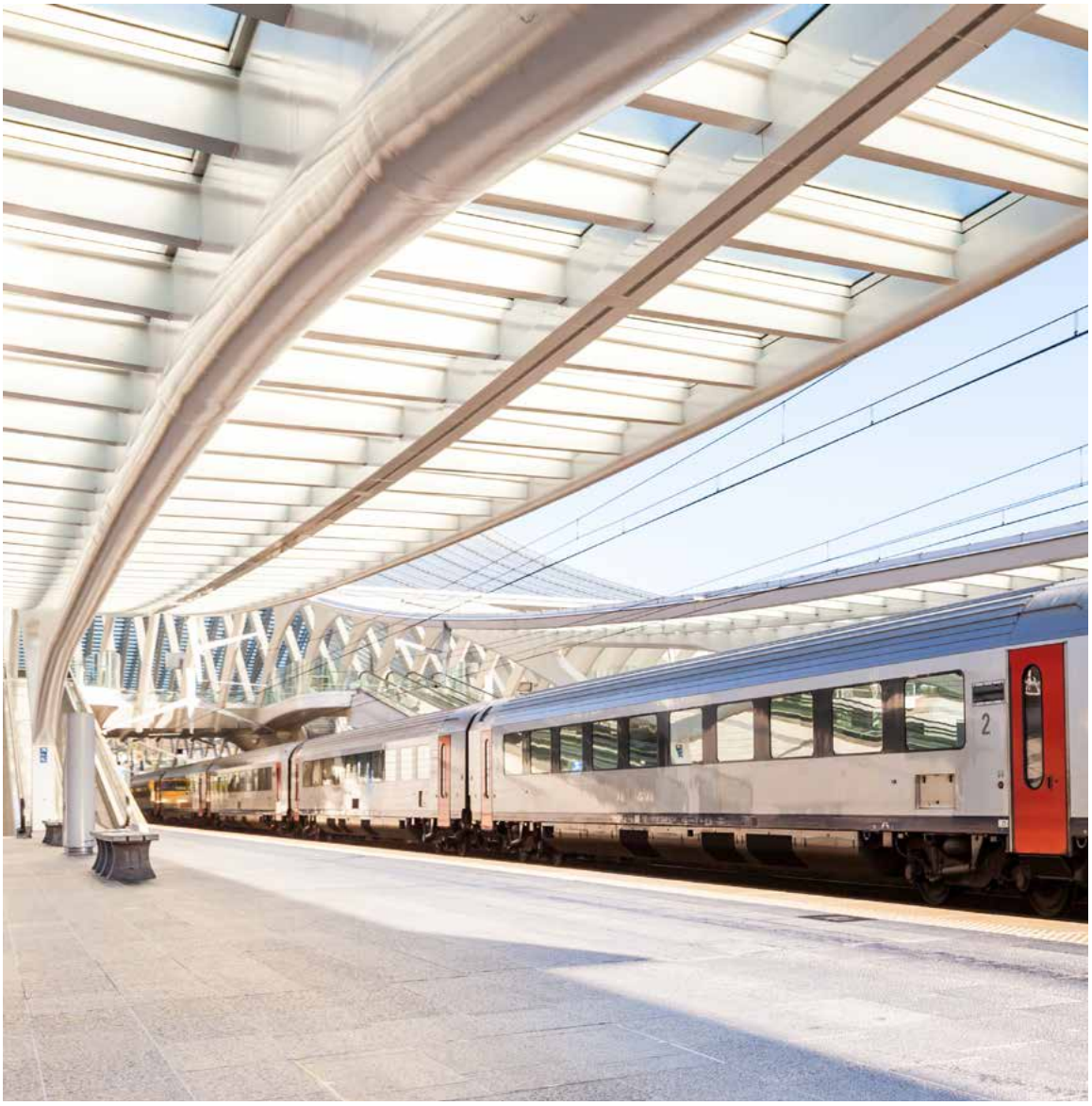
2 The figures presented do not include emissions from the "land use, land-use change and forestry" sector, which are subject to other regulations.

3 Belgium's target is defined on the basis of the distribution between Member States of the efforts required to achieve the EU target in the sectors subject to the ESR.

new climate policy package strengthens the existing system (by phasing out, from 2026, the free allowances that have until now been largely allocated to energy-intensive industries and by integrating emissions from the maritime sector) and extends the scope of carbon pricing to include road transport and buildings in a new trading scheme (EU ETS 2, in addition to the sectors already covered by the existing EU ETS). In total, from 2027, some 75 % of the EU's GHG emissions will be subject to carbon pricing. By 2030, emissions from sectors currently covered by the existing mechanism will have to be 62 % below 2005 levels.

- **Redistributing revenue from carbon pricing to citizens:** By creating the European Social Climate Fund, the EU has committed to redistributing a portion of the revenue from carbon pricing to its citizens and micro-enterprises. Each EU Member State will be able to draw up a plan suggesting a way of distributing its share. The details have yet to be finalised, but redistribution should begin as early as 2026, before the launch of the EU ETS 2. The objective of the European Social Climate Fund is to address the distributional effects of carbon pricing by helping vulnerable households, transport users and micro-enterprises through support measures and investments to stimulate the energy efficiency of buildings, the decarbonisation of heating production and the adoption of zero- or low-emission mobility and transport solutions. Taking account of the uneven effects of climate policy has therefore become a key issue when drawing up climate policies.

- **Overall strengthening of climate policy instruments:** The "Fit for 55" package reflects the increased ambition of Europe's climate objectives by consolidating the range of climate policy instruments available. These also



include national GHG emission reduction targets for sectors not covered by the EU ETS (currently road transport, buildings, small-scale industry, agriculture and waste treatment). For Belgium, the updated target under the Effort Sharing Regulation (ESR) is a 47 % reduction by 2030 compared to 2005 levels. All measures adopted are listed in the national energy and climate plan and are monitored and assessed by the European authorities.

Belgium's federal structure has led to a fragmentation of powers. Coordination difficulties between the various levels of government complicate the implementation of coherent climate policies, especially as these measures and public policies cover a wide range of areas such as mobility, urban planning, taxation, innovation, training or industrial policy. The objective to be achieved at national level entails a shared effort by all entities. The Brussels-Capital Region and the Walloon Region are aiming for a 47 % reduction in emissions, in line with the target set for Belgium. The federal level is committed to taking additional measures to support the regions. However, in view of the measures proposed and taking into account the smaller commitment by Flanders, which is targeting a maximum reduction of 40 %, Belgium will achieve a reduction in its emissions covered by the effort sharing regulation (ESR) of 42.6 %, which represents a cumulative deficit

over the period 2021-2030 of 13.7 million tonnes of CO_2 equivalent at national level. Belgium is committed to keeping this deficit to a minimum and to offsetting it by using the flexibility provided for in the European regulation (e.g. savings, borrowing, trading and the acquisition of emission rights). Initial consultations resulted in an explicit recognition by all entities of the target objective. Agreement has also been reached on a joint financial responsibility mechanism for an entity or entities that, due to a lack of ambition or action, are unable to achieve their targets, thereby putting that of Belgium as a whole at risk. However, the arrangements for effort-sharing between Belgian entities have yet to be defined. In this context, a stable regulatory framework that is consistent across sectors and geographical regions is essential to make the investments needed for the transition.

Tensions between decarbonisation and competitiveness

Another key pillar of the "Fit for 55" package is the carbon border adjustment mechanism (CBAM), a tool to fight carbon leakage and preserve the competitiveness of European industry as the stringency of climate policies increases more rapidly in the EU than in other regions. The CBAM ensures that imports covered by the mechanism are subject to the same carbon price as that imposed on producers within the EU, in the absence of a common global approach. The CBAM entered into force on 1 October 2023 in a transitional phase, meaning it applies only to imports of cement, iron, steel, aluminium, fertilisers, electricity and hydrogen, – goods considered to be the most vulnerable to carbon leakage. During this phase, EU importers of the goods concerned are required to report the volume of their imports and the GHG emissions associated with their production, but they do not yet have to make any financial adjustments or payments. Under the permanent system, which will come into effect in 2026 and is aligned with the gradual phasing out of free ETS allowances for energy-intensive industries, importers will have to purchase and surrender the number of CBAM certificates corresponding to the GHGs linked to the production of the goods concerned. The price of these CBAM certificates will be based on the average weekly auction price of EU ETS emission rights. The CBAM is WTO-compliant and also provides an incentive to strengthen carbon pricing and decarbonisation efforts outside the EU. If importers can prove that a carbon price has already been paid during the production of the imported goods, the corresponding amount can be deducted. However, the CBAM does not protect emissions-intensive European exports, which face competition from less climate-ambitious regions where exporters face a lower carbon price.

Given the necessary speed of the transition and the stringency of the regulations that are to be implemented legally between now and 2050, European industries (and, in particular, producers in energy-intensive sectors) risk seeing their competitiveness weakened. While decarbonisation is a global objective, no other major country or group of countries is as advanced in its climate policies as the EU. Carbon pricing policies aim to increase the cost of using polluting energy sources and industrial inputs, so as to encourage economic actors to choose decarbonised solutions. Major technological progress has made it possible to supply energy with decarbonised electricity at a cost comparable to wholesale fossil fuel prices. Although grid balancing and storage are not included in these costs, it is widely expected that the generation costs of renewable energy will continue to decline sharply. On the other hand, technological advances are still needed to decarbonise certain industrial processes, such as the upstream use of carbon-free hydrogen and its derivatives, or carbon capture and storage. Large-scale access to decarbonised electricity at an affordable price is essential to the deployment of these technologies. Low-carbon solutions still sometimes involve higher costs than their traditional equivalents or are less lucrative. If no other options are available or cost-effective at this stage, production costs are likely to rise considerably. This is particularly true in the short term, given the rising cost of raw materials and the immediate investment required for the transition and to comply with the European regulatory framework. An undesirable consequence could be that firms relocate their production to sites established in jurisdictions that impose less stringent climate regulation on industry. This would clearly be a lose-lose situation for the EU, as it would penalise both value-added creation and employment, and there would be no significant or guaranteed reduction in global emissions, which is the primary policy goal.

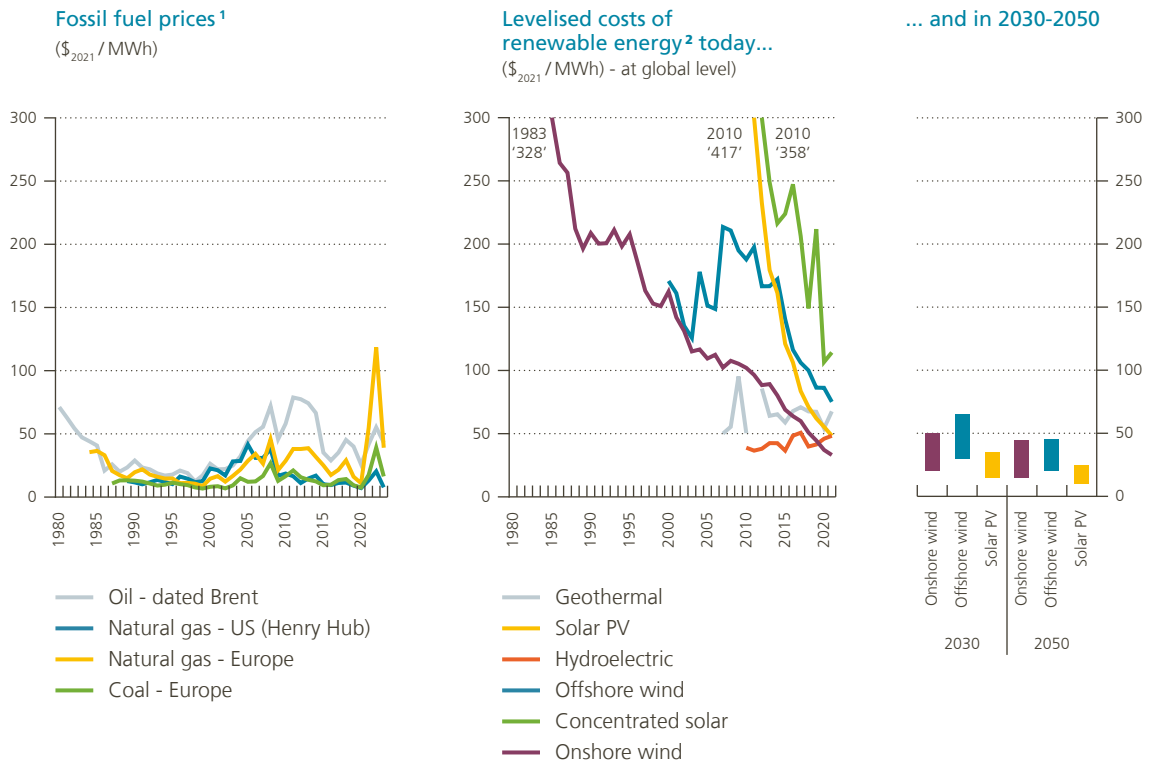
Achieving the objective of carbon neutrality requires further adaptation of Belgium's economic fabric

Until now, the reduction in GHG emissions in Belgium has been achieved in parallel with sustained economic growth. Between 1990 and 2022, GHG emissions fell by 25 %. At the same time, real GDP grew by some 76 %. Both the fall in energy intensity (energy/GDP ratio) and carbon intensity (GHG emissions/energy ratio) contributed to the drop in emissions, with average annual reductions of 1.6 % and 1.1 % respectively, over the period. The decarbonisation of the energy mix has been continuous and can be explained by developments concerning the electricity mix, firstly, through the gradual use of natural gas as a replacement for coal and, secondly, the increase in energy generation from renewables from 2005 onwards. The substitution by natural gas and the use of biofuels have also had industrial applications, helping to reduce emissions from industry. The reduction in energy intensity accelerated from 2000 onwards, reflecting improvements in efficiency in the energy transformation process (i.e. higher power plant output) and in end-use (i.e. household behaviour, more energy-saving and efficient industrial equipment). It also reflects the tertiarization of the economy, as the services sector is less energy intensive.

By mobilising efforts to improve energy efficiency, the authorities are aiming to limit the impact of human activities on the use of resources and related GHG emissions. Increasing energy efficiency goes hand in hand with the electrification of end-use consumption and the substitution of fossil fuels with carbon-free energy sources. Since 2012, efforts to reduce energy consumption in Belgium and at EU level have been on the agenda of the Energy

Figure 6.7

The costs of generating renewable energy are increasingly competitive with fossil fuel prices



Sources: IRENA (2022), *Renewable Power Generation Costs in 2021*, BP (2022), *BP Statistical review of world energy 2022,* LSEG, IEA (2022), *World energy outlook 2022.*

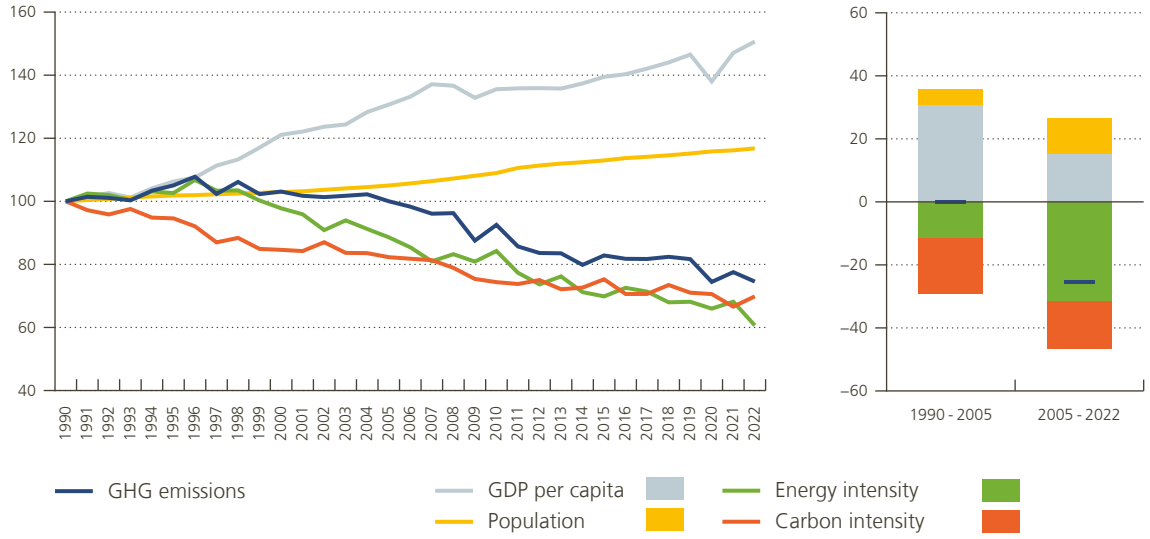
1 Wholesale market prices.

2 The levelised costs of renewable energy only take into account the costs of generating the energy, excluding the costs of grid balancing and seasonal storage.

Figure 6.8

The fall in GHG emissions in Belgium is linked to a reduction in energy intensity and carbon intensity

(change in the index, 1990 = 100 (left-hand graph) and breakdown [1] of cumulative changes in GHG emissions over the periods 1990-2005 and 2005-2022 (right-hand graph))



Sources: EEA, Eurostat.

1 Breakdown of GHG emissions in Belgium according to the Kaya identity: GHG emissions = population x (GDP/population) x (primary energy consumption/GDP) x (GHG emissions/primary energy consumption).

Efficiency Directive. The latter requires specific national measures to promote energy efficiency in various areas. At firm level, the authorities are making use of several levers to encourage businesses to adapt and improve their production processes, including regulation, financial incentives, and the provision of information on energy-efficient products and systems. Obligations in terms of energy audits and energy management systems have been introduced, particularly for large energy consumers. These obligations are enshrined in sectoral energy agreements. Firms commit to reducing their energy consumption and, in return, may benefit from financial support and partial exemption from certain charges relating to their energy bill.

The objective of reducing GHG emissions is a challenge for the manufacturing industry. In Belgium, 41 % of GHG emissions linked to GDP production come from the industrial sector. [1]

1 Sector-specific figures do not take into account emissions from households (e.g. using natural gas for heating or fossil fuels for vehicles), which account for 24 % of Belgium's total emissions.

This sector represents a significant share of the economy, accounting for 14 % of value added and 10 % of jobs (or 513 000 workers). Although manufacturing is also the biggest emitter of GHGs in the EU, its share of the total is much smaller than at domestic level, at 26 %. The Belgian economy is still largely based on the services sector (58 % of value added and 61 % of employment), which (with 8 % of GHG emissions) is less polluting than industry.

While the ecological transition has long-term economic benefits, it also generates short-term costs. Industries that rely heavily on fossil fuels will face increasing costs as regulations and taxes on carbon emissions come into force. Meeting new environmental standards often entails large-scale investment in technology upgrades, pollution control measures and the adoption of more sustainable practices. Switching to cleaner technologies requires significant upfront investment in research, development and implementation. Abrupt or poorly managed environmental transitions can lead to economic disruption.

The ecological transition is also bringing its share of new economic developments and, with them, value added and jobs. Based on the Eurostat definition, the environmental goods and services sector[1] employed 71 000 people on a full-time equivalent basis in 2020. Although this number remains small in relation to the total number of people in employment, it has been rising steadily since 2014 (the first year for which data are available). In terms of value added, the environmental sector contributed 1.7 % of GDP. Although this share is increasing, it is still below the EU average of 2.5 %.

1 The accounts of the environmental goods and services sector (EGSS) provide an analysis of the economic sector engaged in the production of environmental products, which include goods and services designed for environmental protection or resource management. On the one hand, environmental protection products aim to prevent, reduce and eliminate pollution and other forms of environmental degradation. They include measures to restore damaged habitats and ecosystems; electric vehicles, catalysts and filters to reduce pollutant emissions; sewage and waste treatment services; and soundproofing work. On the other hand, products related to resource management aim to protect natural resource reserves from depletion and include elements such as renewable energy production; energy-efficient and passive buildings; seawater desalination; and rainwater harvesting.

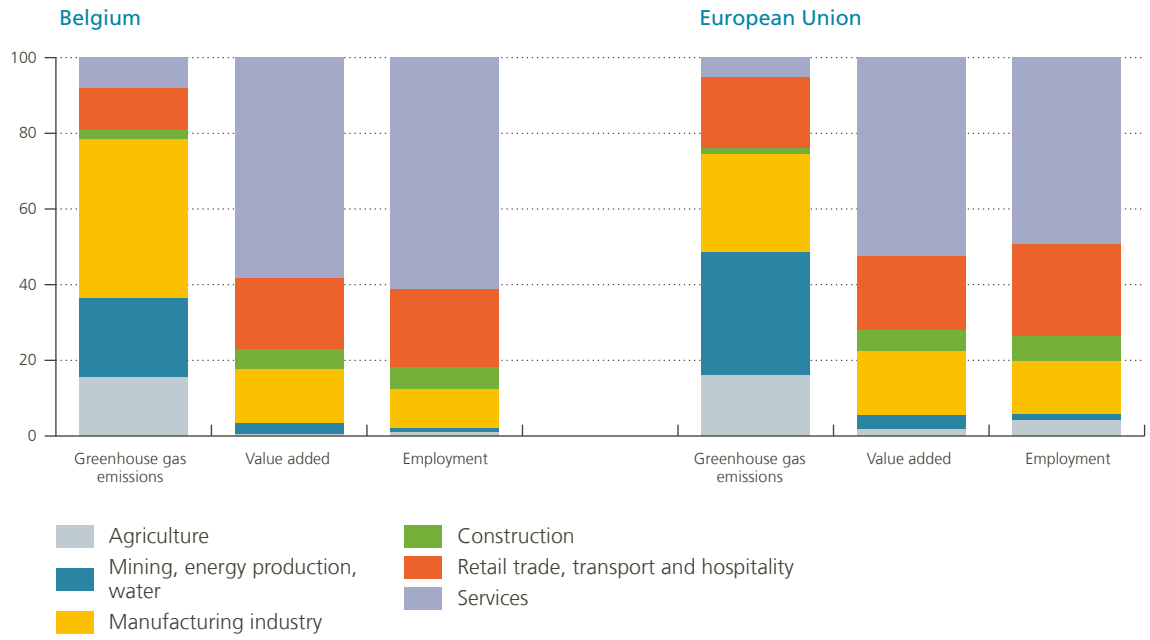
The key role of electrification in decarbonisation

Electrification is an essential lever for decarbonisation, but it is currently being held back by the unfavourable relationship between the price of electricity and that of fossil fuels in Belgium. Decarbonised electricity offers businesses and households the opportunity to reduce their CO_2 emissions by electrifying activities that are major GHG emitters, such as road transport and buildings (see Box 5). Electrification can also improve the cost-effectiveness of the current range of climate and energy policy instruments. However, electrification in Belgium is currently hampered by the high cost of electricity compared with fossil fuels. Although the electrification of buildings does not require parity between electricity and fossil fuel prices, given that heat pumps are around three and a half times more energy efficient than gas boilers, the ratio remains high by international comparison. In Belgium, compared with other European countries, retail electricity prices are the

Figure 6.9

The manufacturing industry, a major GHG emitter, is an important sector in Belgium

(percentage of total, 2022)



Sources: Eurostat, Statbel.

Note: GHG emissions are those emitted during production (excluding household emissions) and are calculated in tonnes of CO_2 equivalent; gross value added is expressed as a percentage of GDP; employment is assessed by taking into account the number of people in work.

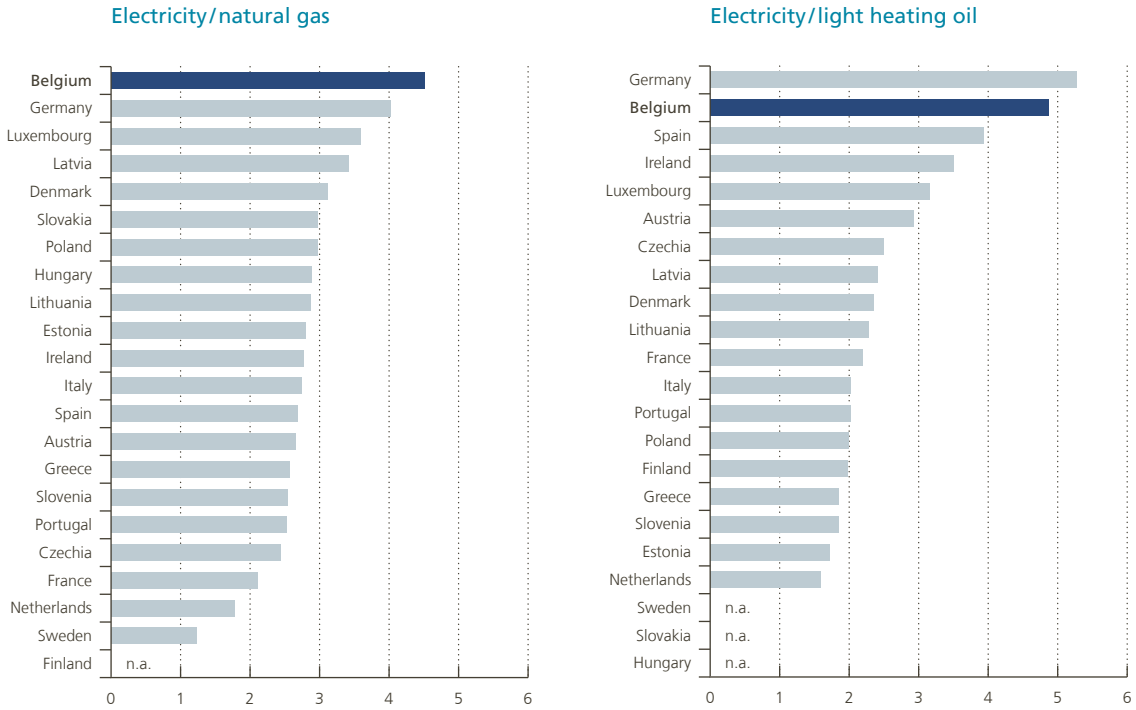
highest when compared with those of gas, and the second highest when compared with those of heating oil, which is slowing down electrification. This problem is also highlighted in recent work by the Federal Public Service for Health, Food Chain Safety and Environment, [1] which suggests that excise duties on electricity should be almost entirely transferred to fossil fuels in order to increase the profitability of heat pumps. On the other hand, the use of electric vehicles has already gained ground in Belgium, partly due to a change in the tax treatment of fossil fuel-powered cars compared with their electric counterparts.

1 FPS Public Health, Food Chain Security and Environment (2023), *The Landscape of Carbon and Energy Pricing and Taxation in Belgium.*

Figure 6.10

The high ratio of prices paid by households for electricity to those paid for natural gas (left) and heating oil (right) is hampering electrification in Belgium

(average 2016-2021)



Source: Based on data from the IEA Energy Prices and Taxes Statistics database. All rights reserved; as processed by the NBB.

BOX 5

The importance of decarbonising residential heating

Decarbonising homes (and other buildings) is an important part of achieving the Belgian and European objective of climate neutrality by 2050. In 2021, residential buildings accounted for 21 % of energy consumption and 15 % of direct greenhouse gas (GHG) emissions in Belgium, with 75 % of this residential consumption attributable to heating. GHG emissions from heating are higher in Belgium than in most other European countries with a similar climate, which can be explained by the fact that Belgian homes are, on average, larger and older. Although this box focuses on residential buildings, the same considerations apply to non-residential and public buildings.

The complete decarbonisation of residential heating will require the deployment of carbon-free heating supply technologies and a degree of reduction in heating demand. At present, the installation of heat pumps, whether in individual buildings or in heating networks, combined with decarbonised electricity production, seems set to become the cornerstone of efforts to reduce emissions from residential heating, along with, to a lesser extent, other technologies such as solar thermal systems, low-carbon fuels and waste heat recovery. Heat pumps produce heat without releasing direct emissions and, what's more, boost the energy efficiency of heating, thereby reducing total energy demand. In particular, a heat pump returns around 350 % of its energy input (electricity) in the form of heat, compared with only around 95 % for a new gas boiler. However, despite these efficiency gains, demand for electricity is set to rise considerably, especially during cold spells. In order to stem this (costly) increase, heating demand will have to be moderated to some extent through solutions aimed at reducing heat loss in buildings, such as insulating roofs, walls and floors, and replacing windows and doors. In addition, heating demand could also be curbed by reducing the average living space per inhabitant and by behavioural changes, such as lowering heating set points and heating certain parts of homes less.

Current policies aimed at decarbonising housing in Belgium are strongly focused on reducing heating demand through measures targeting energy efficiency. The three regions have set themselves the target of moving towards an energy-efficient housing stock by 2050, with an average EPC score of 100kWh/m² for the Flemish and Brussels-Capital Regions and 85kWh/m² for the Walloon Region. Only the Walloon Region currently specifies that residual energy requirements must be carbon-free. To achieve this objective, minimum energy performance standards play an important role. Firstly, the Flemish and Walloon Regions have announced increasingly stringent standards for new homeowners, which will have to be achieved within five years of the purchase of the property. The initial obligation to achieve at least an EPC label D, which is already in force for homes sold from January 2023 in the Flemish Region and will be introduced in 2026 in the Walloon Region, will be progressively tightened to an EPC label A (corresponding to an EPC score of 100kWh/m² in Flanders and 85kWh/m² in Wallonia) from 2040-2045. The three regions have also announced increasingly stringent minimum energy performance standards for all dwellings, imposing a maximum EPC score of 300kWh/m² in Flanders, 170kWh/m² in Wallonia and 150kWh/m² in the Brussels-Capital Region from 2040-2050.

This in-depth energy renovation of the Belgian housing stock, within a limited timeframe, will require huge investment and will come up against major obstacles on both the demand and supply sides. The vast majority of existing homes will need to undergo energy

renovations by 2050 in order to meet regional energy-efficiency targets, which works out to an average of 185 000 homes per year requiring major renovation over the next 27 years. Based on estimates from previous studies[1] and taking into account the rise in the cost of building materials and labour in recent years, the investment required to achieve an energy efficient dwelling stock by 2050 is estimated to be approximately € 350 billion for Belgium as a whole, or an average of € 65 000 per home. This figure could be even higher if additional costs are included, such as interior finishing costs, housing-specific costs, government administrative costs, and costs related to the management of waste streams (e.g. asbestos removal). In addition, energy-efficiency renovations are labour-intensive and could be significantly hampered by labour shortages in the construction sector, which could also lead to upward pressure on prices and increased renovation costs. On the demand side, energy-efficiency renovations are often not considered a priority by households. What's more, many households are unable to finance deep renovations (for example as they may already have an existing loan to service). Incentive mismatches may also exist between tenants and homeowners, as well as between homeowners in apartment buildings.

Changing the policy mix by placing greater emphasis on the decarbonisation of heating would increase the cost-effectiveness and speed of the climate transition. Recent research[2] has shown that a reduced emphasis on energy efficiency and a greater focus on the decarbonisation

1 M. Ryckewaert, K. Van den Houte, L. Vanderstraeten and J. Leysen (2019), *"Inschatting van de renovatiekosten om het Vlaamse woningpatrimonium aan te passen aan de woningkwaliteits- energetische vereisten"*, Steunpunt Wonen; SERV (2019) *"Klimaat- en energiebeleid 2019-2024 van alfa tot omega"*; Energyville (2022), *"De snelste weg naar A: optimale renovatiemaatregelen in het kader van de Vlaamse 2050 doelstellingen voor woningen"*; Service Public de Wallonie (2020) *"Stratégie wallonne de rénovation énergétique à long terme du bâtiment"*; Région de Bruxelles-Capitale (2019) *"Energie-Klimaatplan 2030"*.

2 A. Levesque, S. Osorio, S. Herkel and M. Pahle (2023), *"Rethinking the role of efficiency for the decarbonization of buildings is essential"*, Joule 7 (6); N. Eyre, T. Fawcett, M. Topouzi, G. Killip, T. Oreszczyn, K. Jenkinson and K. Rosenow (2023), *"Fabric first: is it still the right approach?"*, Buildings & Cities.

of heating would provide a more cost-effective pathway for the decarbonisation of buildings. It would also reduce the additional labour capacity required in the construction sector, which is a major barrier to the decarbonisation of buildings. Adjusting the policy mix may require a recalibration of existing policy instruments. For example, existing policy objectives linked to energy performance certificates are not yet aligned with decarbonisation objectives. In fact, a building with an EPC label A is not necessarily emission-free, while a zero-emission building is not automatically awarded an EPC label A. Adjusting instruments to focus more on climate neutrality would avoid the need to impose additional and unnecessary burdens on buildings that, in practice, already meet ambitions in terms of decarbonisation.[1]

Improving the energy efficiency of homes will continue to have an important role to play. Firstly, it facilitates the decarbonisation of heating, by enabling low-temperature heating and reducing overall energy demand and, above all, peak heating demand. This helps to reduce the investment in network infrastructure required for the electrification of heating. The cost-effectiveness of reducing heating demand is generally higher for energy-intensive homes where low-temperature heating is not yet possible. Secondly, investments to improve energy efficiency can have a positive return on investment for householders, by lowering energy bills, enabling the installation of smaller (and cheaper) heat pumps, and increasing property values. Furthermore, investing in energy efficiency can have other societal benefits, by increasing the security of energy supplies, as well as positive effects on health and thermal comfort thanks to a better indoor climate. This could justify placing greater emphasis on energy efficiency compared with cost-optimisation based uniquely on decarbonisation considerations. Given that calculating the optimal balance between energy efficiency and the decarbonisation of heating is very complex and that this optimal balance also depends on each specific building, Rosenow and Hamels (2023)[2] recommend policy instruments that leave multiple options open for decarbonising heating and that are not overly prescriptive. Finally, to be optimal, policies should take into account not only operational emissions but also emissions during the life cycle of buildings and renovations, including those resulting from the production, installation and disposal of building materials.

In any case, clear communication to the general public about long-term policy objectives should constitute a sizeable lever with a view to the decarbonisation of residential property. Firstly, it would enable the construction industry to better anticipate future demand for energy efficiency retrofits and investments to decarbonise heating, ensure sufficient and timely recruitment and retraining of labour, and invest in productivity-enhancing innovations. Secondly, it could increase the price discount of energy-intensive and high-GHG-emitting homes, with the benefit that buyers of such homes could spend more of their budget on energy-efficient and decarbonising renovations. Finally, it would spur and encourage households to improve the energy efficiency of their homes and reduce their GHG emissions from heating.

1 See also SERV (2023), *"Verzameldecreet V – puntsgewijze interventies missen kader en perspectief"*; Minaraad (2023), "Actualisering VEKP – transitiemaatregelen sector gebouwen", Advies Minaraad.

2 J. Rosenow and S. Hamels (2023), *"Where to meet on heat? A conceptual framework for optimising demand reduction and decarbonised heat supply"*, Energy Research & Social Science 104.

The technologies required for a large-scale deployment of renewable energy sources are in place, and ambitious targets have been set, but achieving them will require a necessary reinforcement of networks. Both electricity transmission and distribution networks will need to be upgraded and fitted with new equipment. Generation from renewables requires greater flexibility in the electricity system, be it through reduced demand, active consumer participation or the use of storage solutions. It also makes it possible to limit the need for generation and transmission capacity. Mobilising this potential for flexibility relies to a large extent on the distribution networks. The availability of suitable equipment capable of handling decentralised energy flows (through automation and the installation of digital meters and IT platforms) is vital in this respect. These enable the introduction of targeted pricing to encourage consumers to use the electricity system more efficiently. Since the introduction of the "capacity tariff" on 1 January 2023, Flemish consumers have been billed partly according to their peak consumption, encouraging them to shift the times at which they consume electricity and/or, for those with photovoltaic panels, to make use of the electricity they themselves have generated, to the benefit of the grid. A similar "incentive tariff", comprising four bands (which better correspond to peak and off-peak consumption periods), has been defined in the Walloon regulator's new tariff methodology for the 2025-2029 distribution tariffs. Its effectiveness will also depend on the accelerated deployment of smart meters (only 10 % of connections in Wallonia are equipped with them, compared with 80 % in the Flemish Region) and the presence of smart equipment capable of delivering this flexibility to consumers.

Adapting networks to the transition will come at a cost. The investment plan of the distribution network operator for Flanders, Fluvius, provides for an investment budget for the period 2023-2032 of € 4 billion over and above its normal network renewal budget. For Wallonia, the distribution network operator, Ores, is putting forward a € 4 billion industrial plan for the period 2022-2038, while Resa estimates its plan at € 820 million by 2050. On the transmission side, Elia has revised its 2024-2028 investment plan from € 6.4 to € 9.4 billion due to the increased costs of some major projects (and the inclusion of an additional year of capital expenditure). It is up to regulators to ensure that tariffs for the use of these monopolistic infrastructures cover costs and provide a fair return on invested capital, while preserving both the purchasing power of consumers and the competitiveness of businesses.

While specific measures have been put in place by the European authorities to speed up permit procedures for renewable energy projects, public opposition to transport infrastructure is also having an impact. This is the case with the Ventilus and Boucles du Hainaut high-voltage power line projects required to integrate future offshore wind generation and reinforce the onshore grid. The tensions and opposition that have arisen attest to the difficulty of reflecting subjective assessments of the impact on local residents in financial compensation. Care must therefore be taken to ensure that compensation arrangements are transparent and non-discriminatory. According to Elia, a two-year delay in the construction of these network infrastructures will result in the need for additional production capacity (of 800MW).

BOX 6

Sustainable development indicators

The Act of 14 March 2014 mandated the Federal Planning Bureau (FPB) to develop a set of indicators to measure quality of life, human development, social progress and economic sustainability. In response to this request, a "Sustainable development indicators" report is published each year. In accordance with the law, a summary is provided in the Bank's annual report. The data underlying the FPB report are available at www.indicators.be in the form of 78 indicators providing information on the three dimensions of sustainable development, structured around the 17 Sustainable Development Goals (SDGs) defined by the United Nations (UN).

Assessing progress towards the targets for individual indicators

As part of its task to evaluate federal policy on sustainable development, the FPB publishes a report on the progress made towards achieving the target under each indicator. The evaluation is based on 51 indicators – three for each SDG – evaluated over the period 2000-2022. How progress is assessed differs: where an objective is quantified and accompanied by a (target) deadline, the report indicates whether maintaining the current rate of progress would allow the target, set on the basis of various international programmes or commitments to which Belgium has subscribed, to be achieved. Where there is no target date for the indicator, the assessment specifies whether the progress made since 2000 is moving in the right direction to meet the objective.

Based on data available at the end of October 2023, no clear trend emerges: progress was assessed to be unfavourable or indeterminate for 35 out of 51 indicators. For these indicators, additional efforts will be required to achieve the SDGs. On the environmental front, progress was favourable against 8 indicators (out of a total of 16). Conversely, progress against 17 indicators (out of 23) relating to the social component of sustainable development was rather unfavourable or indeterminate. For the economic (7 indicators) and governance (5 indicators) components, progress was deemed favourable against only one indicator. An assessment was also made of progress towards each of the SDGs, identifying those for which the three indicators point in the same direction. SDG 2 (Zero hunger) and SDG 6 (Clean water and sanitation) were given the highest scores. With unfavourable assessments of progress against their three respective indicators, the situation is worrying for SDGs 4 (Quality education) and 17 (Partnership for achieving the goals) as well as for SDG 5 (Gender equality), for which progress was assessed as unfavourable against two indicators and indeterminate for the third.

International position

The report also provides an insight into how Belgium compares with other EU countries and the regional average, gauging its international position on the basis of 59 available indicators. The assessment is done for the most recent year for which data are available, without taking into account the change in this position over time or explaining any differences between countries (i.e. a static assessment). The results are mixed when compared with EU countries: Belgium is in the best performing group for 23 indicators (gender equality, R&D, development aid); for 22 indicators it is in the average performing group (education, pollution); while for 14 indicators it is among the worst performing countries (water quality, energy and climate, biodiversity). Belgium scored above the EU average against 38 indicators. Even if the country scores better than others against certain indicators,

this is not a guarantee of sustainable development and is not necessarily sufficient to achieve the corresponding SDGs by 2030. Belgium often compares more favourably with regard to social and economic components, when a component-specific analysis is made, due to its relatively well-developed social security and health systems and a GDP per capita in the top third of the EU27. When it comes to the environmental component, however, the comparison is often unfavourable for Belgium, which is a densely populated and highly urbanised country with relatively fewer natural areas. In addition, its industrial fabric is concentrated in intermediate industries, which are more energy-intensive and more polluting than final goods industries.

Breakdown by region

The positions of the regions remained very stable over the period 2015-2022. For 13 SDGs, they were unchanged against 26 of the 42 indicators broken down by region. The three regions are moving in the desired direction for 18 indicators, 13 of which have a quantified target. For five indicators, the three regions are moving in the wrong direction, while the trend is divergent between the regions for 14 indicators and there is no clear trend for the last five indicators.

Breakdown by population category

"Leave no one behind" is a guiding principle of the UN's Agenda 2030, which clearly justifies monitoring the progress made by several categories of the population, namely: by gender, income, age, education, household type and employment status. While the assessment is done on the basis of the latest available data, this does not detract from the fact that the positions of the various population categories have changed very little. Thirty-eight indicators offer a breakdown by gender: for 18 indicators, women are disadvantaged, while for 18 others it is men. The gaps persist over time, but are narrowing in some areas (poverty, early mortality from chronic diseases, road accidents, the unemployment rate, the activity rate, young people not in jobs or education, fatal occupational accidents and the risk of poverty). The gap increases for higher education graduates, to the disadvantage of men, and for the long-term disabled, to the disadvantage of women. Unsurprisingly, the breakdowns by income level (20 indicators) and education level (11 indicators) reveal a more favourable situation for the population categories with the highest income or education levels. No general trend emerges when a distinction is made by age (16 indicators), except regarding the perception of one's health, the low level of work intensity and the employment rate, for which the gaps narrow between young and old. On the other hand, these gaps widen for people receiving social benefits and for people on long-term sick leave. Six indicators, all linked to a single aspect of poverty (income, employment, material deprivation, housing), provide information by household type. The differences are very marked, with single-parent households systematically worse off for most of the indicators. The impact of poverty is also striking when assessed against employment status: the unemployed are always the most disadvantaged, with no change over time, followed by other economically inactive groups and retired people. People in paid employment systematically score best.

Composite well-being indicators

The FPB has developed composite indicators of well-being for two of the three dimensions of sustainable development: the well-being of the current generation in Belgium ("Here and Now") and that of future generations ("Later"). The indicator for the "Elsewhere" dimension, which takes into

account the impact of the Belgian way of life on people in the rest of the world, is currently being developed.

Here and now: a marked deterioration in the well-being of Belgians in 2022

Over the period 2005-2022, the "Well-being here and now" composite indicator shows a significant downward trend. This indicator measures the change in current well-being in Belgium and aims to best reflect the variations observed. After falling to a low in 2019, the indicator recovered in 2020 and 2021, but deteriorated significantly in 2022, falling back to close to its minimum level. This downturn can be explained by a continuing deterioration in the general state of health of the population – the main determinant of well-being in Belgium – which is proving too great in relation to the improvements recorded at the socio-economic level (unemployment rate, severe material deprivation and early school leaving) and in terms of social support. Further analysis by population category shows that the decline in well-being between 2005 and 2022 was statistically significant for men, the 16-24 age group, the 50-64 age group, and the fourth income quintile. Over this period, only the indicator score for those aged 65 and over increased significantly. The impact of the Covid-19 pandemic was broadly the same across the different categories, with the level of well-being remaining relatively stable. However, by 2022, all categories had seen their well-being decline, more markedly for women than for men, for the 25-49 age group, and for people in the third quintile.

Later: the well-being of future generations will be diminished by the degradation of environmental capital

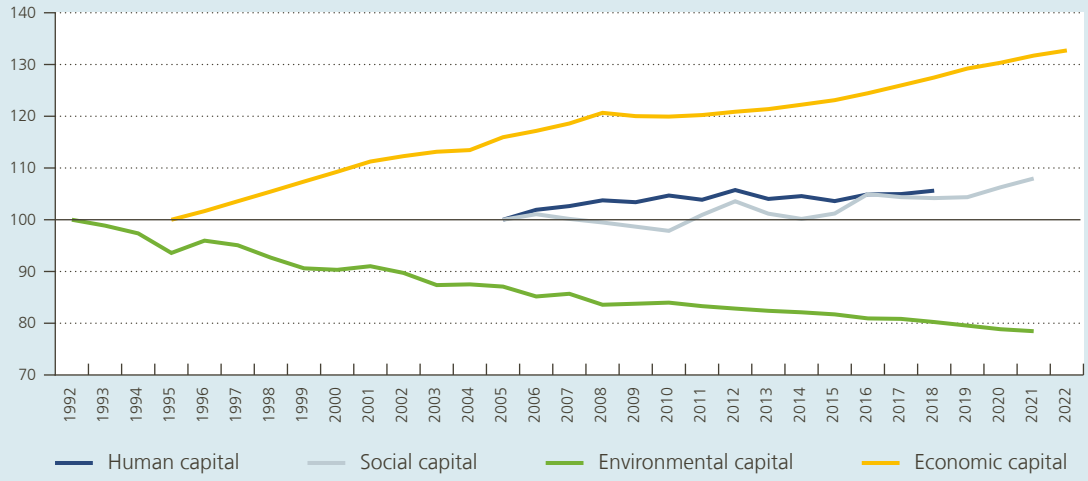
The sustainable development of a society implies that the needs of the current generation should not be met at the expense of the well-being of future generations. Given that it is not possible to determine in advance either its composition or the way in which it will be produced, future well-being (the "Later" dimension) is assessed based on a capital stock approach. This involves measuring changes in the stocks of resources needed to ensure the well-being of future generations, in accordance with the principle that a society develops sustainably if it guarantees future generations a stock of capital at least equivalent to the current level. Thus, in the conceptual framework used in the FPB report, development is sustainable if it at least preserves all capital stocks.

There are divergent trends in the indicators of capital stocks considered necessary for future generations. "Human capital" covers individual health and the qualifications and skills that contribute to employability and higher incomes. Overall, it has increased since 2005 as a result of the rise in the number of higher-education graduates, particularly from 2015 onwards, while performance against the indicator of adequate reading skills has been deteriorating since 2012, resulting in a reading level that was at its lowest in 2022. "Social capital" refers to the quality of relationships between people, both at individual and community level. Its marked rise over the period 2005-2021 is explained by an increase in confidence in society, while indicators measuring relationships with close friends and family remained fairly stable. As for "economic capital", which covers the totality of economic assets, performance increased significantly from 1995 and peaked in 2022; performances against the indicators for both physical capital stock and knowledge capital stock contributed to this increase. As for "environmental capital", performance against the four sub-indicators (air, water, land and biodiversity) continued the downward trend observed since 1992.

The update of the composite indicators confirms past trends. On this basis and given the deterioration in the environmental capital indicator, the FPB report concludes that Belgium's current development is unsustainable.

Composite indicators – "Later" dimension

(100 = reference year)[1]



Source: FPB.

1 The indicators are normalised to 100 for a reference year that corresponds to the first year common to the components of each composite indicator. As these capital types are not substitutable, they are not aggregated into a single composite indicator.