

5. Reinforcing the foundations of sustainable economic growth

5.1 Transitions are necessary in various spheres

The Belgian economy strengthened in 2017, supported not only by the more favourable international economic situation, but also by the accommodative monetary policy stance in the euro area and the measures taken in Belgium, including those concerning pensions, labour costs and the labour market. However, the improvement will not be enough to achieve a structural increase in the economy's potential. In view of the major changes in the global economic environment, technological developments, environmental pressures and population ageing, it is vital to create the conditions for a dynamic, flexible and inclusive economy.

The economy's principal structural strengths and vulnerabilities have been well documented in earlier editions of the Annual Report⁽¹⁾. More particularly, Belgium has a diversified and internationally open economy which offers its citizens a relatively high degree of protection, but it is also an economy where the employment base remains too narrow and productivity gains have lost momentum.

Rather than produce another comprehensive survey, this structural chapter of the Report will focus on the transitions that need to be successfully completed in order to create an operating framework in which the challenges can be met. It gives a brief description of two transition objectives: they concern the ability to regenerate the business fabric in order to galvanise the economy in a sustainable way, and the means to tackle the changes affecting the labour market and people's working conditions.

In the short term, it may seem contradictory to aim simultaneously at increased productivity and greater

inclusion on the labour market while taking account of the transition to a low-carbon economy to which Belgium is committed, because more job-intensive growth may temporarily slow the apparent productivity of labour, while the restoration of productivity may seem to be at odds with a reduction in environmental pressures. However, in the long term, these objectives are mutually reinforcing and provide a sustainable, inclusive basis for growth. To that end, a whole set of reforms is needed without delay to encourage the efficient allocation of resources between firms and make it easier for people to adapt to the changes in employment.

5.2 Ensuring a more efficient allocation of resources

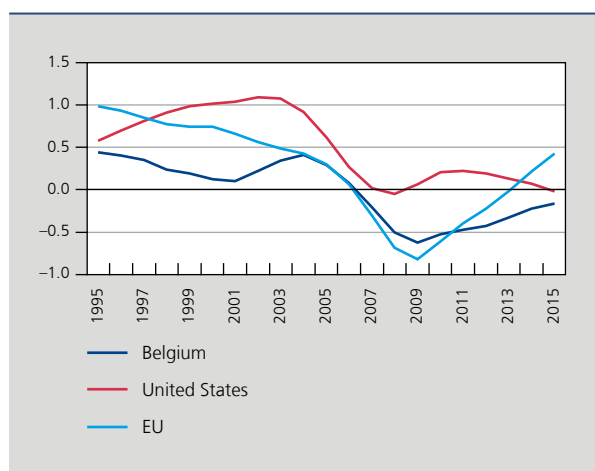
Even though the Belgian economy is among the most productive in Europe, the productivity gains – whether measured in terms of value added per worker or according to the concept of total factor productivity – have been at structurally low levels for many years, as they have in most of the advanced economies. The economic and financial crisis depressed the gains still further, and in Belgium the recovery did not bring a rapid return to the pre-crisis pace of productivity growth. Yet in the long run, productivity growth is the main factor driving up value added and the revenue generated in the economy.

Despite differences inherent in the nature of the data⁽²⁾, that slowdown is evident both from the macroeconomic information obtained from the aggregate national

(1) See in particular chapter 6 "A dynamic and inclusive economy" in the National Bank of Belgium Report 2016.

(2) For example, the results obtained on the basis of microeconomic data are much more sensitive to outliers.

CHART 69 TOTAL FACTOR PRODUCTIVITY ONLY PICKED UP SLIGHTLY IN BELGIUM AFTER THE FINANCIAL CRISIS
(smoothed series, annual percentage changes)



Source : Conference Board.

accounts statistics and from the microeconomic results of firms. It is particularly noticeable in both market and non-market services branches.

Manufacturing industry branches in fact continued to record substantial productivity gains. Conversely, the gains measured for service activities weakened significantly. This divergence in dynamism is due partly to varying sources of productivity growth: for industrial firms, most of the

productivity gains are attributable to internal efficiency improvements, e.g. via increased automation of the production chains or development of new products, but in services – be it in the market or non-market sector – there were fewer internal sources of productivity growth in the period 2000-2015.

Taking account of the weaker internal productivity growth in the services branch, it is important to reallocate productive resources from the least to the most efficient firms or to newcomers in the optimum way to maximise the contribution that this branch makes to aggregate growth. Various indicators, such as low rates of business creations and closures, and a high survival rate for inefficient firms, point to a structural lack of dynamism in the population of Belgian firms.

Few new businesses...

One of the first indicators of the weak dynamism of the reallocation of resources is the business creation rate. Although the figure in Belgium came to 6.4% in 2015, its highest level since 2012, it has been structurally one of the lowest rates in the EU since 2008. While no similar data are available for the more recent period, the figures published by Graydon suggest that an upward trend was maintained in Belgium in 2016 and 2017, as the number of firms registering for VAT for the first time was 9% and 13% higher respectively than in 2015. Although this indicates the trend in business creations, these data overstate the level of new economic activities since they are not adjusted to exclude new registrations that are purely fiscal or

TABLE 16 SLOWER AGGREGATE PRODUCTIVITY GROWTH REFLECTS A WEAK PERFORMANCE IN SERVICES
(annual average percentage changes)

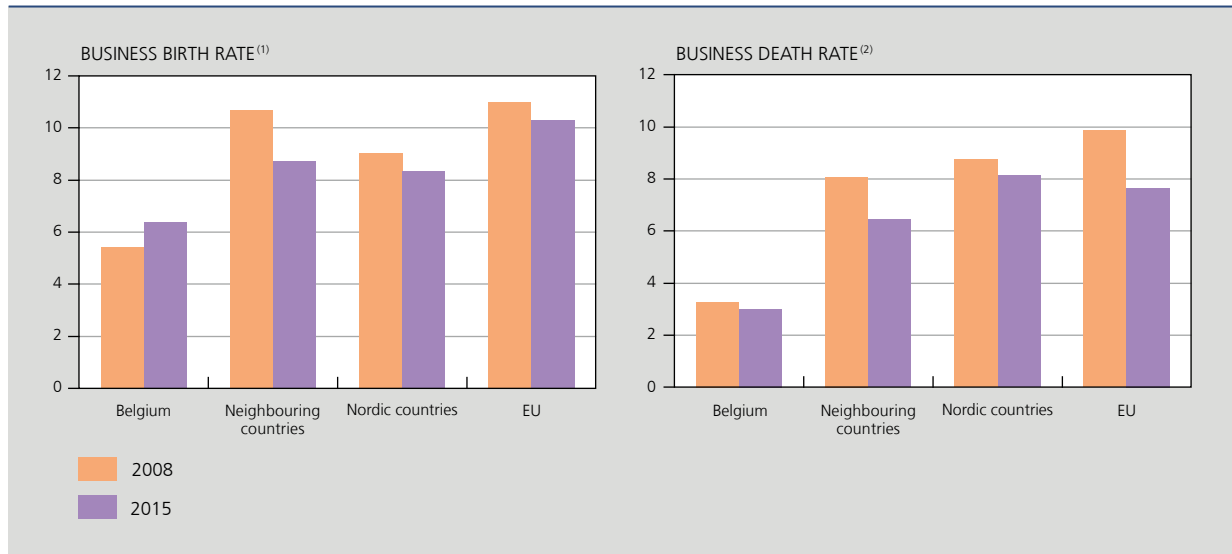
Period	Total economy ⁽¹⁾	Industry and market services ⁽²⁾	of which:	
			Industry ⁽²⁾	Market services ⁽²⁾
2000-2005	1.2	1.0	3.5	0.7
2006-2010	0.5	1.1	2.6	0.6
2011-2015	0.6	0.5	2.9	-0.4
2000-2015	0.7	0.9	3.0	0.0
<i>p.m. Productivity gains in existing firms (median, 2000-2015)</i>			1.7	0.0

Sources: NAI, NBB.

(1) On the basis of the aggregate data published by the NAI.

(2) On the basis of the individual data from the annual accounts of firms, adjusted to align the financial years with the calendar years. The branches of activity considered in this analysis cover the whole of industry (NACE Rev. 2 branches NACE 10 to 33) and the market services branches (branches 45 to 82, excluding branches 51 (air transport), 64 and 65 (banks and insurance), 68 (real estate activities) and 78 (employment activities)).

CHART 70 THE GROSS BUSINESS CREATION RATE IN BELGIUM, THOUGH RISING, IS STILL ONE OF THE LOWEST IN THE EU
(in %)



Source: Eurostat.
(1) Number of business creations in *t* divided by the number of businesses active in *t*.
(2) Number of business closures in *t* divided by the number of businesses active in *t*.

administrative. Even taking account of these encouraging recent developments, the discrepancy in relation to other countries will diminish only gradually.

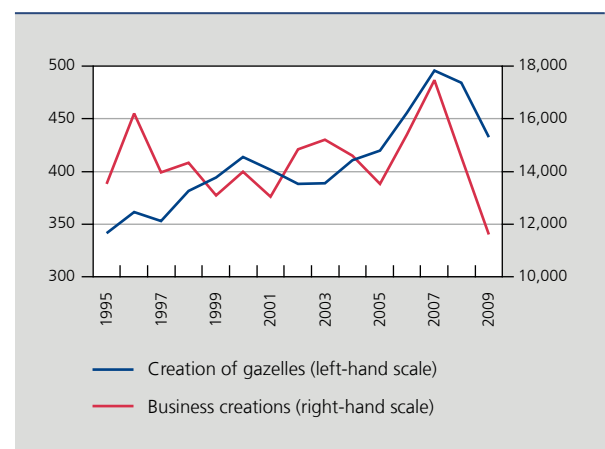
Although they are proportionately less numerous, almost 75 % of firms created in Belgium between 2006 and 2010 still succeeded in staying in business for at least five years. Though this survival rate after five years declined to just over 60 % for companies set up at the height of the 2009-2010 financial crisis, it is still particularly high compared to the rates in France, the Netherlands, the Nordic countries (at around 50 %) and Germany (40 %).

This performance may be interpreted in a positive way. For example, it can be considered as a sign of the good quality of new Belgian firms. Data from the Global Entrepreneurship Monitor for 2015 in fact indicate that young entrepreneurs in Belgium are motivated by the desire to set up a business with strong growth potential, rather than by the desire or the need to create their own business for personal development or subsistence reasons. A less favourable interpretation, illustrated below, would be that the absence of high-potential but risky projects means that – while the risk of failure is lower – opportunities are being missed.

Of the new businesses created between 1997 and 2009, 3.5 % were high-growth firms or “gazelles”, and 6 %

recorded moderate growth. A young business is regarded as a gazelle if, in its first five years of activity, its workforce or turnover grows by an annual average of at least 20 % for a minimum of three consecutive years; for young businesses achieving moderate growth, that threshold is set at 10 %.

CHART 71 NUMBER OF BUSINESS CREATIONS AND GAZELLES⁽¹⁾
(by year of establishment)



Source: NBB.
(1) Firms which, in their first five years of activity, recorded at least 20 % annual average growth in their workforce or turnover for at least three consecutive years.

Even though they are usually very small firms when they are first established, gazelles offer the best job creation prospects in the medium term. According to a recent study⁽¹⁾, they are active in all branches of the economy and have a set of characteristics predisposing them to generate high growth, such as a high rate of investment in intangible assets or a relatively better skilled workforce. These good prospects extend beyond the first five years of activity: 47 % of gazelles continued to record annual average growth of their workforce or turnover of at least 10 % between their fifth and tenth years of activity.

As well as growing rapidly, gazelles tend to be over-represented in the upper tail of the productivity distribution. Thus, 30 % of gazelles are in the top quartile of the productivity distribution from their first year of activity. Their entry into the market therefore has a positive overall impact on aggregate productivity. Moreover, the productivity growth of these firms tends to be more sustained during their first five years of existence. In the period from 1998 to 2014, gazelles achieved productivity growth which was 7.7 percentage points higher than that of young firms with low or negative growth.

TABLE 17 PERFORMANCE OF YOUNG FIRMS FIVE YEARS AFTER THEIR CREATION

(autonomous firms created between 1995 and 2009; in %, unless otherwise stated)

	Gazelles ⁽¹⁾	Young firms with weak or negative growth ⁽²⁾
Share of equity capital in the balance sheet	14.2	24.0
Return on equity after tax	20.9	13.1
Proportion of exporting firms	25.0	2.7
Proportion of importing firms	31.2	4.8
Firms employing highly-skilled staff	36.8	4.8
Firms investing in intangible assets	40.1	27.6
Median investment in intangible assets (in €)	27 000	14 000
Firms investing in tangible assets	97.0	93.7
Median investment in tangible assets (in €)	285 000	72 000

Source: NBB.

(1) Firms which, in their first five years of activity, recorded at least 20 % annual average growth in their workforce or turnover for at least three consecutive years.

(2) Firms recording annual growth in their turnover or workforce of less than 10 % in their first five years of activity.

... and few business closures...

A second indicator of sub-optimum resource allocation is the business closure rate. That is also structurally very low in Belgium compared to other European countries: in 2015, the rate was 3 %, compared to 11 % in the United Kingdom.

While it is good to have relatively more business creations than closures, such a low closure rate should not necessarily be considered as an indicator of optimal functioning of the economy. If an economy is operating efficiently, it is usual to see a large number of market entries and exits. This low business closure rate also puts a somewhat different perspective on the interpretation of the high survival rate of new firms: in view of the difficulties and costs involved in closing a company, the high survival rate of new firms may reflect the fact that some projects for which the outcome is uncertain – they could lead to either very strong growth or a rapid exit from the market – are quite simply not launched in Belgium, and that limits the scope for creating promising businesses. Reducing the costs associated with business closures could therefore have a positive impact on the number of gazelles.

... combined with the survival of inefficient firms point to a resource reallocation problem

One final indicator reinforces that finding: the proportion of the Belgian economy comprising “zombie” firms, i.e. firms which have existed for at least ten years with operating profits amounting to less than their financial expenses for at least three successive years. Despite all, these firms, which exist in all branches, manage to remain in business as a result of various factors, such as weak competition from new entrants, regulations that are too favourable towards incumbent companies, overburdensome liquidation procedures, or malfunctioning on the financial markets. These zombie firms, which tend to be larger than the median company, are relatively inefficient since almost 65 % of them have productivity levels below the median. In 2014, according to the data from the Central Balance Sheet Office, they represented around 10 % of Belgian firms, 12 % of employment and 16 % of the capital stock. In 2013, on the basis of its own calculations, the OECD arrived at similar figures for Belgium (9 % of firms, 14 % of employment and 14 % of the capital); these figures are nevertheless much higher than for France (2 % of firms, 5 % of employment and

(1) See De Mulder J., H. Godefroid and C. Swartenbroeckx (2017), “Up or out? Portrait of young high-growth firms in Belgium”, NBB, *Economic Review*, December, 93-113.

6 % of the capital) or the Nordic countries (3 % of firms, 6 % of employment and 9 % of the capital).

While it is normal for a business to experience temporary periods of operating losses, especially in a cyclical downturn, it is rather worrying to see that these zombie firms can remain in that situation for long periods. In fact, 33 % of firms identified as zombies for the first time during the period from 1998 to 2009 were still in that position five years later without ever having come out of it for any length of time. This means that, over eight years, a third of zombie firms generated insufficient operating profits to cover their financial expenses, and that applies virtually every year. While it may be desirable for them to stay in business in the short term, that has numerous long-term implications especially if these firms do not have enough incentive to restructure. If they survive, they seem incapable of catching up technologically by means of new investment, and on average their handicap increases. By remaining in business or being incapable of restructuring efficiently, they affect the economy as a whole by curbing the growth of more efficient firms and hence the aggregate growth of productivity.

This situation has negative implications for the employability of these firms' workers, as the technological disconnect afflicting zombie firms may lead to de-skilling of their workers, who are no longer given adequate training or are not sufficiently familiar with new technologies. That not only reduces their opportunities for switching to other jobs, it also lowers their chances of finding another job if their firm closes down. In the extreme case – which does not currently apply in Belgium – the survival and increasing number of zombie firms could have an impact on the stability of the financial system if some financial institutions became over-exposed to this type of firm.

TABLE 18 ZOMBIE FIRMS TIE UP A CONSIDERABLE PROPORTION OF AVAILABLE RESOURCES⁽¹⁾
(in % of the total, by category)

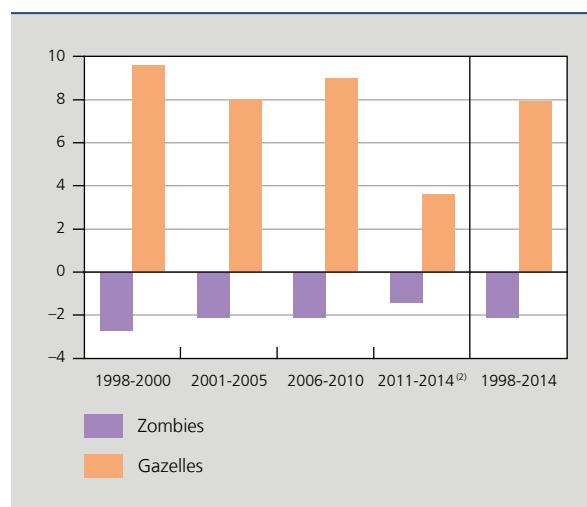
	Number of firms	Share in employment	Share in the capital
2000	8.3	11.5	17.4
2005	9.6	11.4	14.7
2010	10.7	12.2	16.2
2014	10.0	11.9	15.8

Source: NBB.

(1) A private sector firm is classed as a zombie in a given year if it has existed for at least ten years and the ratio of operating profits to financial expenses was less than 1 for the last three years.

CHART 72 GAZELLES BOOST AGGREGATE PRODUCTIVITY GROWTH WHILE ZOMBIE FIRMS⁽¹⁾ HOLD IT BACK

(differences in the growth of apparent labour productivity compared to other firms, in percentage points)



Source: NBB.

- (1) A private sector firm is classed as a zombie if it has existed for at least ten years and its ratio of operating profits to financial expenses was less than 1 in the last three years. A gazelle is a new firm which, in its first five years of activity, recorded at least 20 % annual average growth of its workforce or turnover for at least three consecutive years.
- (2) For the period 2011-2014, only gazelles created up to 2009 are taken into account as the data needed to identify those set up after 2009 are not available. That may explain the smaller growth advantage of gazelles compared to other firms during that period.

Removing exit barriers is also a way of stimulating business creations

The steady inflow of new entrants combined with the exit of the least productive firms are two vital factors in raising productivity via a better allocation of the available resources in the economy.

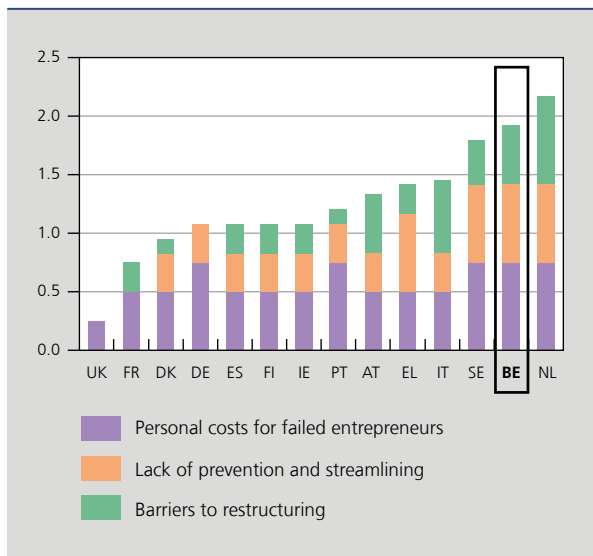
For most of the usual determinants of entrepreneurship (administrative barriers, access to finance, entry barriers, etc.), Belgium generally performs better than the EU15 average; nevertheless, there is a substantial deficit in entrepreneurial culture. Fear of failure, risk aversion and undervaluation of entrepreneur status in society are all factors that seem to hold back the creation of businesses in Belgium⁽¹⁾. It is therefore crucial to promote entrepreneurship as an attractive career choice, beneficial for both individuals and society.

The greater stigma attached to failure in Belgium is connected with the costs incurred by failing entrepreneurs, which are among the highest in the EU15. Although the regulations on the liquidation of firms are aimed at other

(1) See De Mulder J. and H. Godefroid (2016), "How to stimulate entrepreneurship in Belgium?", NBB, *Economic Review*, September, 63-80.

CHART 73 RULES ON LIQUIDATION WERE AMONG THE MOST STRINGENT IN THE EU15 IN 2016

(synthetic index of regulation, a higher value indicates stricter regulations)



Source: OECD.

stimulate the creation of firms in Belgium. Moreover, that increased competition would not necessarily cause more established businesses to close, but could instead encourage them to be more innovative and reduce any technological handicap, thus boosting aggregate productivity still further.

Measures have been taken to stimulate the entrepreneurial culture, particularly in education. However, the benefits will only become apparent in the longer term. At federal level, a legal framework defining the status of student-entrepreneurs has existed since 1 January 2017. In Wallonia, entrepreneurship is one of the four aspects of the “SME Plan”. The “Enterprising generations 2015-2020” programme was adopted in that connection; it offers a series of measures to promote entrepreneurship among young people. This type of initiative also exists in Flanders. Building on earlier measures, the Flemish Region launched an education plan over the period 2015-2019 aimed at encouraging entrepreneurship and entrepreneurial spirit, and thus activating entrepreneurial potential among students and job-seekers.

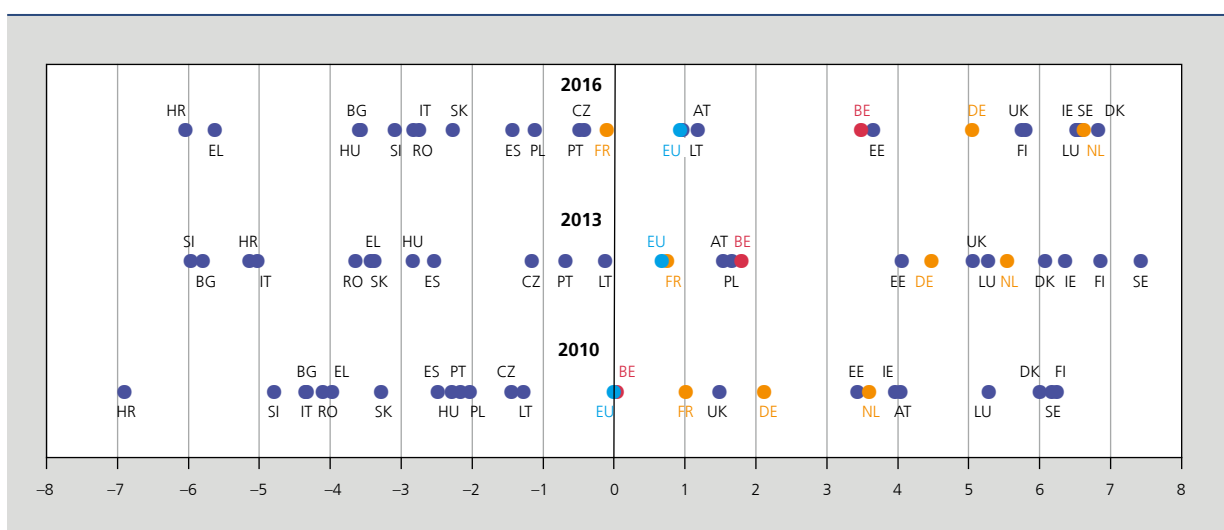
legitimate objectives such as preventing certain forms of fraudulent behaviour, over-burdensome liquidation procedures may in fact discourage the development of new projects, especially in the case of highly innovative projects with an uncertain outcome. Cutting the costs associated with failure would therefore help to

Adjusting the regulatory framework to facilitate the development of projects with high growth potential and the spread of new ideas

Apart from any reform of the legislation on the liquidation of firms, other regulatory reforms could – by improving the operation of product markets – contribute to

CHART 74 THE REGULATORY FRAMEWORK HAS CHANGED FOR THE BETTER SINCE 2010

(synthetic index of regulation, a higher value indicates a situation more favourable to the development of economic activity)



Sources: IMD, WEF, NBB calculations.

TABLE 19 STRICTER REGULATION OF CERTAIN SERVICES BRANCHES IN BELGIUM
(scale of 0 to 6, from the least to the most restrictive, 2013)

	BE	FR	NL	DE	EU
Accounting services	3.2	2.9	2.1	2.6	2.3
Legal services	4.3	3.2	2.8	3.6	3.4
Telecommunications	1.6	1.0	0.5	1.1	0.9

Source: OECD.

the better allocation of resources in favour of the most efficient firms. An unnecessarily restrictive regulatory framework that goes beyond its own objectives hampers the optimum allocation of resources, because it offers inefficient incumbent firms too much protection against competition from potential newcomers.

Since 2010, Belgium has introduced a number of reforms aimed at improving the operation of these markets. In recent years, the Belgian regulatory framework has become less strict than the European average. In particular, the indicators measuring levels of bureaucracy, administrative constraints and the flexibility of the regulations, which were very low compared to other European countries, have risen significantly. However, there is still room for progress in these respects compared to the best-performing countries in the EU.

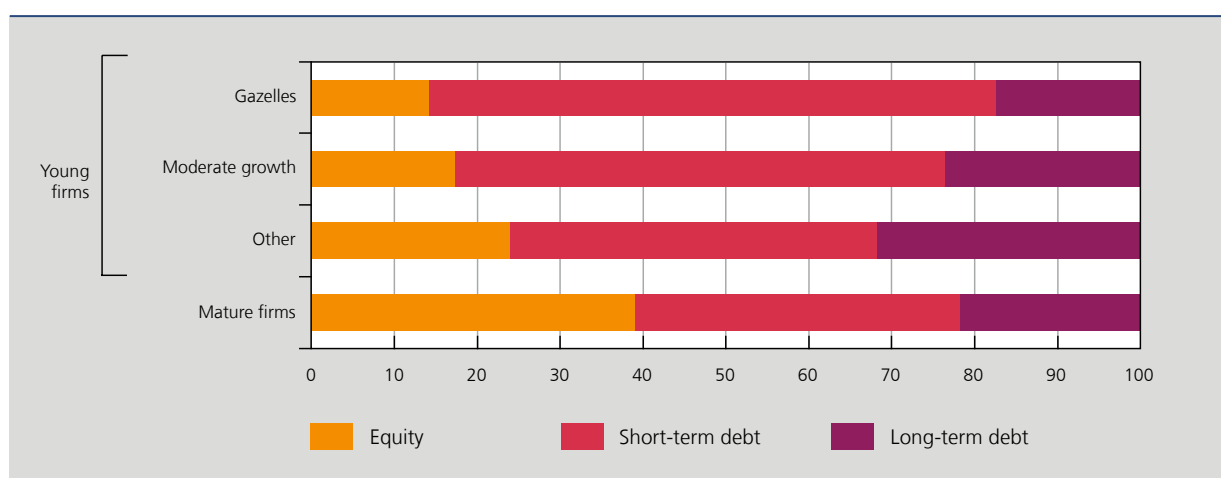
Thus, the weak productivity gains in the services sector may be due partly to market inefficiencies resulting from regulations which have yet to be adjusted. The market efficiency indicators published by the OECD reveal that in legal and accounting services and in telecommunications, the regulations are relatively stricter in Belgium, compared to neighbouring countries and the EU average. While certain measures taken since 2017 – such as the introduction of the Easy Switch procedure making it easy for consumers to switch between telecommunications operators – should improve the efficiency of this market, other services sectors could benefit from structural reforms.

In general, the Belgian regulations are such that the economy is extremely open to international trade. Moreover, they seem to offer a framework which is generally favourable to investment and the establishment of multinational companies, key vectors for the spread of technological innovation. Conversely, some aspects of the regulations could still be improved in order to take advantage of the changes in the economy, and particularly the digital revolution. For example, delays in adapting the legal framework governing night work have seriously hampered the development of e-commerce in Belgium compared to neighbouring countries.

Making access to venture capital easier for (young) high-growth firms

Apart from cultural or regulatory impediments, problems concerning access to finance could also limit the

CHART 75 FUNDING STRUCTURE OF YOUNG FIRMS⁽¹⁾
(in % of the total liabilities, autonomous firms created between 1995 and 2009, situation after five years of operation)



Sources: NBB calculations based on the annual accounts of firms.

(1) A young firm is classed as a gazelle if it is less than five years old and records at least 20% annual average growth of its workforce or turnover for at least three consecutive years. If that growth ranges between 10% and 20%, the young firm is deemed to produce moderate growth. Mature firms comprise all firms in existence for 10 years or more.

creation of businesses or restrict their growth in their initial years of activity. From a macroeconomic point of view, it is important that firms with the highest growth potential can readily find the funding sources necessary for their creation and development. Yet at the level of the funding structure of young high-growth firms, it is typically observed that the share of equity capital in total liabilities is relatively small, and that they make greater use of short-term borrowing to finance their development.

While this does not imply that the funding base of gazelles is more fragile, it must be said that young high-growth firms seem to have difficulty in attracting venture capital. Their risk profile is, by nature, more pronounced than that of other young firms. In addition, they tend to invest more in intangible assets which are not so easy to use as collateral. These characteristics impede funding via bank loans, which incidentally are a less appropriate solution than venture capital. The recent enlargement of the federal tax shelter to SMEs and the tax framework favourable to crowdfunding are positive signals for innovative firms with high growth potential. By improving their access to the capital markets, these tools should help to match innovative young firms' funding methods to their risk profile.

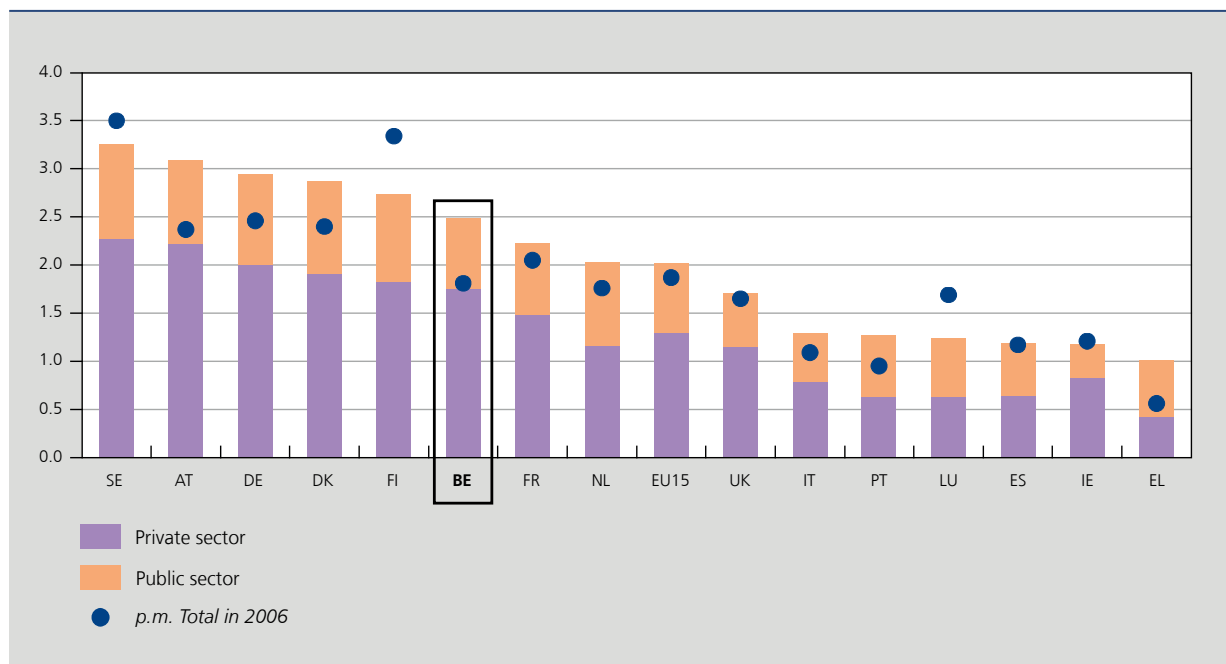
Stimulating innovation and the spread of technology to reduce the technological gap in relation to the efficiency frontier

Alongside the dynamism of business creations, innovation enables new firms and those already in the market to stand out from their competitors and approach the technological frontier, or even drive it forward, by increasing the efficiency of the production process. The development of new products likewise secures a comparative advantage for innovative firms, making it easier for them to address new markets. These various channels also contribute to increasing productivity.

Essential to nurture innovation, R&D expenditure has been rising steadily for a number of years in Belgium, where it represented 2.5 % of GDP in 2016. That is higher than the EU15 average (2 %), but still below the target of 3 % of GDP set by the Europe 2020 strategy. In Belgium, most of that expenditure takes place in the private sector, and more especially in large firms which are often subsidiaries of multinationals; in addition, it is concentrated on a small number of branches of activity, mainly chemicals and pharmaceuticals.

To provide a further stimulus for innovation efforts throughout the economy, a reform of the tax deductibility

CHART 76 R&D EXPENDITURE IS ABOVE THE EU15 AVERAGE
(in % of GDP, 2016)



Source: Eurostat.

of income generated by innovation was adopted in 2017, the aim being to extend the allowance to include expenditure on computer software protected by copyright. Since these activities must take place in national territory, this measure should help to encourage foreign firms located in Belgium to pursue their innovation efforts here, but it could also prompt domestic firms, particularly SMEs or firms with a technological handicap, to engage in this type of investment.

This tax framework favourable to innovation, combined with the Belgian economy's other advantages concerning innovation – attractive research systems, high level of business investment, and increased collaboration between firms themselves and with the government – puts Belgium among the group of EU countries which the EC describes as "strong innovators" since 2010, behind the Nordic countries, Germany, the Netherlands and the United Kingdom.

Investing in transport and communication infrastructure...

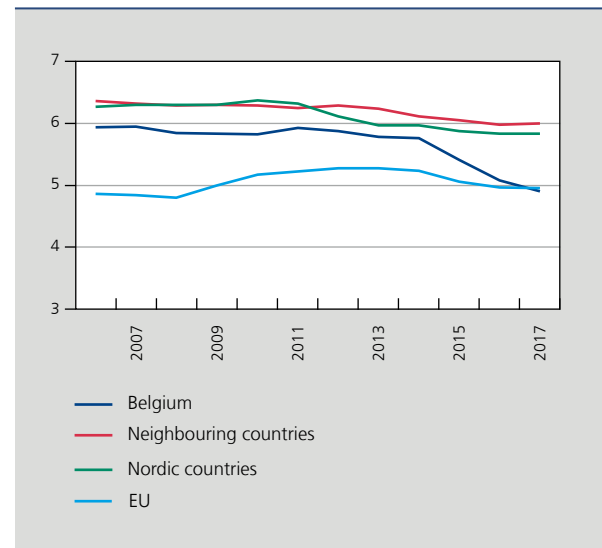
The organisation of the domestic production network also suffers from the effects of the weak reallocation of resources between firms in recent years. There is in fact a relative partitioning of trade between firms at local level, heightening their dependence on a few major local players, especially in the case of SMEs. That fragmentation of the Belgian economy increases the polarisation between expansion zones, which feature a dense economic fabric conducive to the creation of businesses, and zones in decline, where new businesses struggle to grow owing to a sparser economic fabric.

To reduce that fragmentation, it is necessary to pursue policies that facilitate internal flows of goods, services and people. Of course, that entails investment in transport infrastructure consistent with the necessary transition to a low-carbon economy, as in recent years some links in the transport networks have deteriorated. According to survey data from the World Economic Forum, the general quality of our infrastructure, on a scale of 0 to 7, declined from 5.8 in 2014 to 4.9 in 2017. These values are around the EU average, but well below the scores achieved by neighbouring countries. This deterioration, which makes Belgium less attractive for foreign direct investment, could ultimately have adverse repercussions on the spread of technological innovations in Belgium.

Other impediments to mobility and internal trade must likewise be reduced. For example, policies aimed at increasing knowledge of the second national language enable firms and workers to play an active part in the

CHART 77 INFRASTRUCTURE QUALITY HAS DETERIORATED IN RECENT YEARS

(infrastructure quality indicator, scale of 0 to 7)



Source: WEF.

labour markets or the markets in goods and services of the country's various Communities and Regions.

The digital revolution also makes it easier for firms and workers to overcome distance barriers by giving consumers or business customers dematerialised access to the products and services that the firms offer. In 2016, no less than 24 % of firms in Belgium achieved at least 1 % of their turnover on line. Although that proportion of firms is higher than the EU average (18 %), it is still important to encourage SMEs to become more committed to this process by guaranteeing easy access to good-quality digital infrastructure. The digitisation of the economy and the new forms of teleworking that it facilitates could also provide a partial solution for some of the mobility problems.

... and in the energy transition and the environmental transition to ease mobility constraints

Apart from transport infrastructure quality, access to energy at competitive prices with no risk of supplies being disrupted is another essential requirement for the smooth functioning of the economy. It also has a major influence on decisions by both national and foreign investors to locate their activity in Belgium, and more generally it represents an important element of the resource allocation process. It is therefore necessary to prevent investors thinking that the continuity of the energy supply, particularly electricity, is not adequately guaranteed in Belgium.

According to the World Economic Forum, even though the Belgian electricity system is seen as very reliable in terms of power cuts and voltage stability, with a score of 6.2 out of 7 in 2016, putting it in 23rd position out of 138 countries, that perception has steadily deteriorated in recent years (Belgium ranked 13th in 2009-2010, with a score of 6.7).

The Belgian electricity-generating system is based mainly on gas-fired and nuclear power stations, although the contribution of solar power and wind power is increasing. Whatever approach the authorities adopt on the future production mix currently under discussion, the production facilities will need to be adapted and modernised within less than ten years so as to limit the consequences in terms of CO₂ emissions and costs while still ensuring a sufficient domestic production capability.

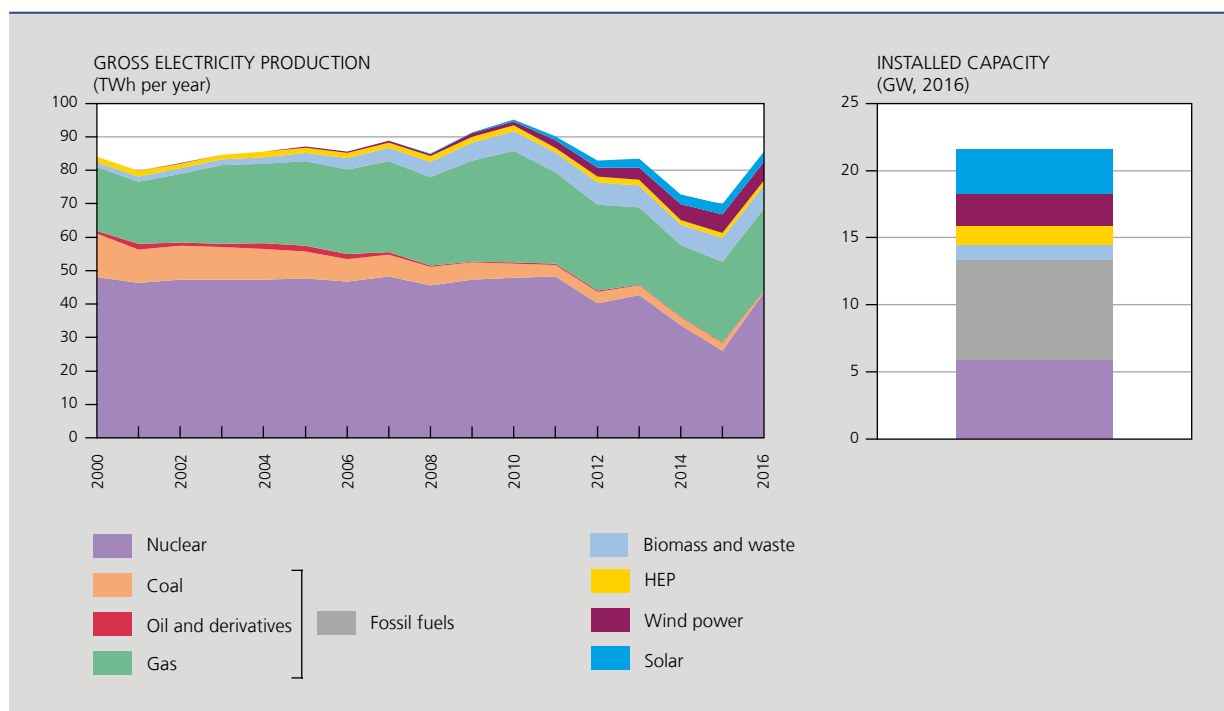
If the domestic production capacity is insufficient to meet future demand for electricity, imports of electricity will inevitably have to increase. Since 2000, net imports have accounted for around 9% of consumption, on average. That naturally requires sufficient interconnection capacity with neighbouring countries. But an excessive structural dependence on imports also carries its own risks. If the total supply were to be occasionally insufficient to meet demand, e.g. in the event of unexpected disruption of

production, or at peak consumption times, the purchase price could skyrocket in the event of a shortage on the European electricity market. Excessive dependence on foreign supplies could also weaken Belgium's security of supply, which would in practice be affected by planned production unit closures in neighbouring countries and the availability of foreign networks.

Apart from interconnections with neighbouring countries, the domestic network also needs to be adapted, as the increased production of electricity from renewable sources and the efforts to enhance efficiency on the demand side require a system which is more decentralised than the current distribution networks, to permit intelligent management of electricity supply and demand.

In the coming years, guaranteeing secure energy supplies will therefore entail substantial investment in both production capacity and networks. In view of the time lag between the decision to invest in the energy sector and the injection of the first kWh into the network, the necessary measures must be taken to create the market conditions and regulatory framework which will ensure a non-disruptive transition phase. The government must therefore develop a coherent long-term view by defining the future production mix without delay, and at the same time, it must establish a stable and credible regulatory framework

CHART 78 THE BELGIAN POWER GENERATION PORTFOLIO NEEDS TO BE ADAPTED



Sources: Eurostat, FPS Economy.

forming a basis on which investors can promptly decide on the optimal choices.

In parallel with the adaptation of the energy sector, all firms must – like households – be encouraged to reduce their energy consumption by means of correct energy pricing that takes account of some of the associated environmental externalities, while still enabling Belgian firms to remain competitive with their principal rivals. Competitiveness and environmental constraints are often seen as contradictory in the short term, because

the ecological transition may prove expensive for firms. However, that transition is also an opportunity for economic development: firms have to adapt to the new environmental constraints by investing at an early stage in the design or adoption of innovative technologies.

In order to facilitate the financing of this energy transition, and more generally, our economy's ecological transition, the creation of green financial products could be beneficial in mobilising the savings of households and investors for the purposes of sustainable economic development.

Box 8 – Funding by means of green bonds: a fast-growing market

The substantial investment required to implement the energy transition generates demand for suitable funding, which must also be “green”⁽¹⁾. The market in this type of financial product is therefore expanding rapidly, particularly in the case of green bonds which meet the funding needs of businesses and governments, and investor demand for sustainable investment products.

This market emerged in 2007-2008, when multilateral development banks such as the European Investment Bank or the World Bank launched their first issues, in response to demand from various institutional investors concerned about environmental questions. Private sector issuers, primarily non-financial corporations and commercial banks, joined them in 2013-2014, on the basis of the existing Green Bond Principles. These principles define the reference framework for this type of instrument which, though not binding, is recognised by stakeholders in the sector. Since 2013, issues of labelled green bonds have escalated, supported by demand for this financial product which rocketed following the diversification of the portfolios of pension funds and insurers. Recently, some sovereign issuers in the euro area have also turned to green bonds. Following France at the beginning of 2017, Belgium became the second country to issue “green OLOs”, i.e. long-term green linear bonds, at the beginning of 2018.

In 2017, green bond issues worldwide came to over \$ 150 billion (or almost 15 times the 2013 level). The biggest issuers were non-financial corporations, commercial banks and development banks. Issues by local authorities and municipalities also represented a significant and growing share. These bonds mainly funded projects in renewable energy sectors, construction (low-carbon building projects), sustainable management of water resources, and low carbon-emission transport.

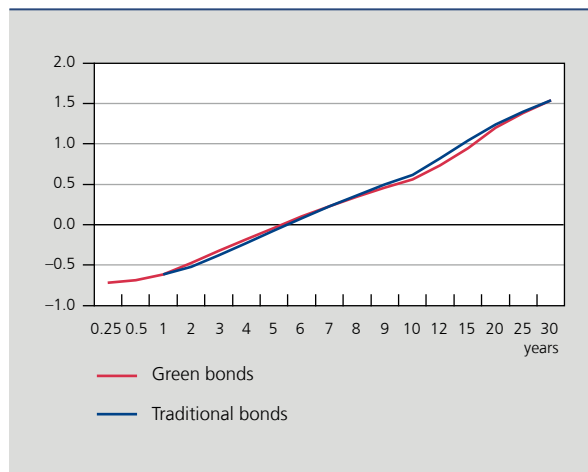
The financial characteristics of green bonds seem to be the same as those of traditional bonds in terms of credit quality, yield and issue price. The available data indicate that, for the same issuer, the credit profile of a green bond is similar to that of a traditional bond, namely a bond ultimately redeemed at par and paying a fixed rate of interest via an annual coupon.

Green bonds have some advantages over traditional securities. As they are often associated with rigorous reporting, they guarantee a direct link with identifiable projects, without any loss of yield or liquidity. Owing to the transparency imperative associated with financial instruments labelled “green”, they increase the information available on the underlying asset and on the issuer's strategy. Investors can therefore diversify their portfolios by acquiring assets which do not risk becoming stranded (i.e. assets devalued as a result of sudden, major changes in legislation, environmental constraints or technological breakthroughs). For their part, issuers can choose to prefer these funding instruments in order to diversify their investor base, and in particular to attract those wanting

(1) For more details, see Ben Hadj S., J. De Mulder and M.-D. Zachary (2017), “Sustainable green finance: exploring new markets”, NBB, *Economic Review*, September, 7-24.

YIELD CURVE OF TRADITIONAL AND GREEN BONDS ISSUED BY THE EUROPEAN INVESTMENT BANK AND THE NORDIC INVESTMENT BANK

(in %, January 2018)



Source: Thomson Reuters.

sustainable, long-term investment. In addition, green bond issues enable firms to promote their sustainable development strategy and establish their reputation in this field.

Green bonds also generate additional costs compared to traditional bond issues. For the issuer, those costs are linked to the need to label the securities, and to the reporting requirement; for the investor, they include the time devoted to analysing this type of bond. The market is also subject to specific credit risks⁽¹⁾, notably in view of the innovative character of the activities in question and the long-term nature of the investment projects funded, as well as reputation risks. The absence of any international legal standard defining what is or is not considered eligible for funding via green bonds raises the question of the reliability of the information supplied on the monitoring and evaluation of these financial instruments.

(1) See also section B.8. in the "Prudential regulation and supervision" part of this Report.

5.3 A changing labour market

The changes on the labour market are reflected in the profile of new recruits

The structural trends that increasingly determine the functioning of the economy, such as technological changes or the globalisation of production chains, also affect the labour market. The continual need to regenerate the business fabric and adapt to competition conditions leads to changes in employment conditions as regards both the skills required and potentially the forms of working. In addition to these developments, individuals have changing aspirations about the place occupied by work in their

personal life. Also, labour market participation and the pursuit of an occupation are crucial factors both for supporting the economy's growth potential, particularly in the context of population ageing, and for promoting the inclusion of people in society.

These developments are only gradually reflected in the aggregate labour market statistics. They are more visible at the margins, in the case of new recruits.

In Belgium, according to the labour force surveys, newly recruited staff – i.e. those who were either unemployed, inactive or working for a different employer one year before the survey – together represented 14% of total

employment in 2016. That is similar to the figure in France (15 %), but lower than in the Netherlands (24 %) and Germany (29 %). Going by this indicator, the Belgian labour market appears more rigid than that of neighbouring countries. Those rigidities may be due to factors inherent in the functioning of the labour market, such as a high replacement rate in the event of unemployment, substantial employment protection, especially in the case of collective redundancies, the existence of a relatively high minimum wage for the least-skilled, and a heavy burden of taxes and parafiscal charges on wages. Although those rigidities have recently been reduced to some extent by the government reforms, they could still limit the scope for efficient allocation of workers, and thus prevent higher productivity gains. It is therefore necessary to strike a good balance between worker protection and the degree of flexibility needed for the smooth functioning of the economy.

Among the new recruits, more than half were working for another employer, one in five was unemployed a year previously, another one in five had just left education, while the rest had been inactive in the previous year (at home, on work incapacity leave, retired or on early retirement).

New recruits included not only a larger proportion of highly-educated people than in neighbouring countries, but also – except for the Netherlands – a larger proportion of people with a low level of education. In Belgium, the middle-educated are therefore relatively less represented among the new recruits. In the case of highly-educated people, this phenomenon has become more marked over time, since the figure increased from 34 % to 38 % of new recruits between 2006 and 2016. Conversely, the new job inflows include fewer people with a low level of education than in the past. It can also be said that they still represent a higher proportion of new recruitment

TABLE 20 INTERNATIONAL COMPARATIVE ANALYSIS OF EMPLOYMENT
(in % of the corresponding total, population aged between 15 and 64 years)

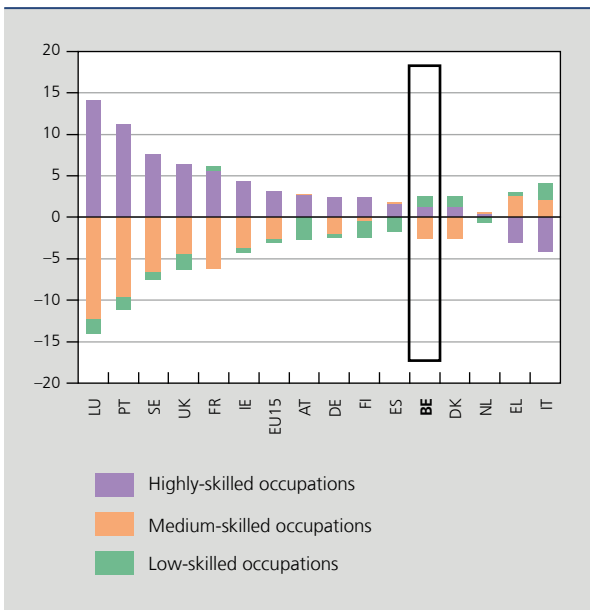
	Total employment		New recruits ⁽¹⁾				
	BE		BE	DE	FR	NL	
	2016	2016	2011	2006	2016		
Situation in the previous year							
Another employer		53	54	54			
Unemployed		17	17	17			
In education		18	18	18			
Other form of inactivity		12	12	12			
Employment contract							
Permanent	91	59	62	65	71	42	38
Fixed-term	9	41	38	35	29	58	62
of which: Less than 1 month	26	29	29	25	0	18	1
Level of education							
High	44	38	34	34	26	37	27
Middle	40	42	42	40	55	47	42
Low	16	20	24	26	18	16	30
Age							
15-24 years	7	27	29	30	20	29	50
25-54 years	79	68	68	67	68	67	46
55-64 years	14	5	4	3	13	4	4
Total		14	14	14	29	15	24

Source: EC.

(1) People in employment during the year who were either unemployed or inactive one year before the survey, or who were working for another employer one year before the survey and changed their employer during the year of the survey.

CHART 79 POLARISATION OF EMPLOYMENT

(employment according to the skill level required for the occupation⁽¹⁾, change in percentage points between 2006 and 2016)



Source: Eurostat.

(1) Low-skilled occupations (domestic help, labourers, etc.), medium-skilled occupations (administrative staff, skilled industrial trades, etc.) and highly-skilled occupations (directors, management, intellectual and scientific occupations, etc.), on the basis of the International Standard Classification of Occupations (ISCO).

than of total employment, which reflects a higher rotation rate within this group.

In terms of age, Belgium has proportionately fewer workers over the age of 55 years in total employment. On the other hand, in regard to new recruits, Belgium is very slightly ahead of France and the Netherlands, and their number – though still moderate – is rising.

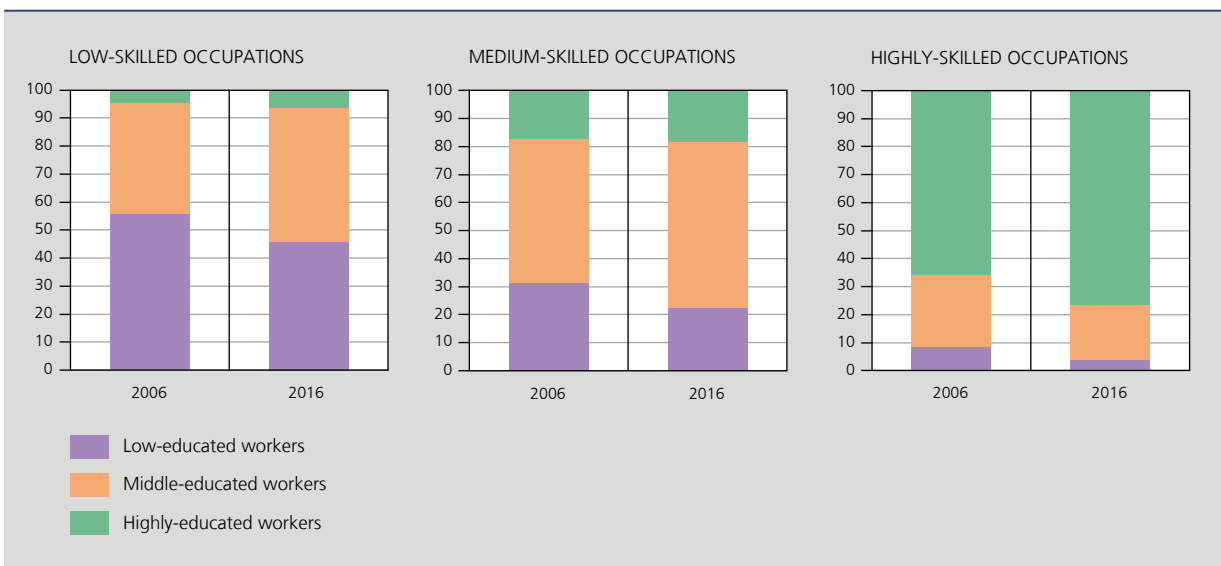
The Belgian labour market also features a small number of workers on fixed-term contracts, compared to other countries. That factor contributes to the relatively lower proportion of new recruits in Belgium. However, the share of fixed-term contracts among new recruits is rising (41 % in 2016, against 35 % in 2006). The commonest form is the very short-term contract (less than one month) which is specific to Belgium.

The labour market is becoming polarised

The major technological upheavals which stimulate demand for highly-skilled labour have gradually contributed to the polarisation of the labour market. The structure of employment by skill level required has thus changed considerably. In Belgium, the proportion of highly-skilled jobs has risen, as has the proportion of low-skilled jobs, while the share of medium-skilled jobs has fallen. In comparison

CHART 80 THE WORKERS' LEVEL OF EDUCATION IS RISING, REGARDLESS OF THE TYPE OF OCCUPATION

(breakdown of employment according to the occupation's skill level⁽¹⁾ and the workers' level of education⁽²⁾, as a percentage of total employment per skill level for the occupation pursued)



Source: Eurostat.

(1) Skill level defined on the basis of the International Standard Classification of Occupations (ISCO): low-skilled jobs correspond to elementary occupations such as domestic help, labourers, etc., medium-skilled occupations correspond to administrative staff, skilled industrial trades, etc., and highly-skilled occupations comprise directors, management, intellectual and scientific occupations, etc.

(2) Level of education defined on the basis of the International Standard Classification for Education (ISCED): low educated corresponds to lower secondary education or less, middle educated corresponds to higher secondary education or less, and highly educated corresponds to tertiary education.

with other European countries, the scale of this phenomenon is still limited, and jobs requiring moderate skills still account for over 40 % of total employment. In many other EU15 countries, the share of low-skilled jobs has declined. Their increase in Belgium is due in particular to the success of the service voucher system. Since its establishment in 2004, no fewer than 130 000 jobs have been created under this system.

The polarisation of the labour market concerns employment analysed according to the level of skills required for a given job. Employment can also be broken down according to the level of education of the workers filling those posts. While polarisation leads to greater pressure on medium-skilled jobs, the biggest decline during the decade concerned the proportion of total employment represented by workers with a low level of education. Jobs requiring low or medium skills are increasingly being performed by middle-educated workers. In the case of highly-skilled jobs, the proportion of highly-educated people has shown a very marked increase over ten years, to the detriment of middle-educated workers, and to a lesser extent those with a low level of education, who used to gain readier access to such jobs in the past thanks to the experience that they had acquired during their career.

In general, the sometimes divergent trends in the level of skills needed to perform a job and the level of education of the workforce influence the mismatches between supply and demand. While the dynamic job creation in 2016

and 2017 tended to heighten the labour market tensions, the matching difficulties are due more to a structural mismatch problem between the level of education of the spare labour, particularly the unemployed, and the skills that employers want.

In 2016, 11% of employment corresponded to low-skilled jobs while the proportion of low-educated job-seekers stood at 36%. Conversely, highly-skilled jobs amounted to 46% of employment, while the proportion of job-seekers with tertiary education qualifications was 23%. These discrepancies probably also reflect the fact that employers demand skill levels which exceed what they really need.

Apart from the mismatch concerning skills and, to some extent, requirements, the matching problems are exacerbated by a lack of occupational and geographical mobility among workers. That is reflected in the disparities in unemployment rates between neighbouring geographical areas. For workers, particularly the low-skilled, the distance between home and the workplace represents a significant cost; also, the language barrier seems to seriously hamper flows of Walloon and Brussels workers to Flanders. Furthermore, as was evident on the basis of new recruitments, occupational mobility – either the transition from unemployment or inactivity to employment, or from one job to another – is less developed than in neighbouring countries.

Such mismatches are an economic problem, since they lower the economy's growth potential and impede the optimum reallocation of resources, but they also give rise to a social problem, owing to the resulting unemployment or inactivity.

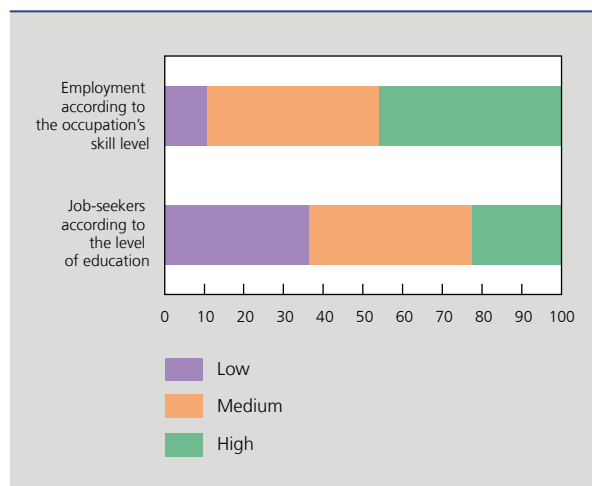
Mixed record on education

To improve the allocation of resources and labour productivity, people must be able to secure adequate training throughout their life. For young people without the benefit of work experience, education is crucial: in Belgium, the employment rate of the low-skilled aged between 15 and 34 years who have been out of education for three years is 35%, compared to 85% for the highly-educated. Lifelong training is also increasingly essential for adults to ensure their employability throughout their working life.

In regard to initial and continuing education, Belgium has a mixed record. The school drop-out rate, i.e. the proportion of young people aged between 18 and 24 years who leave the education system without having obtained any qualifications, is still considerable, at

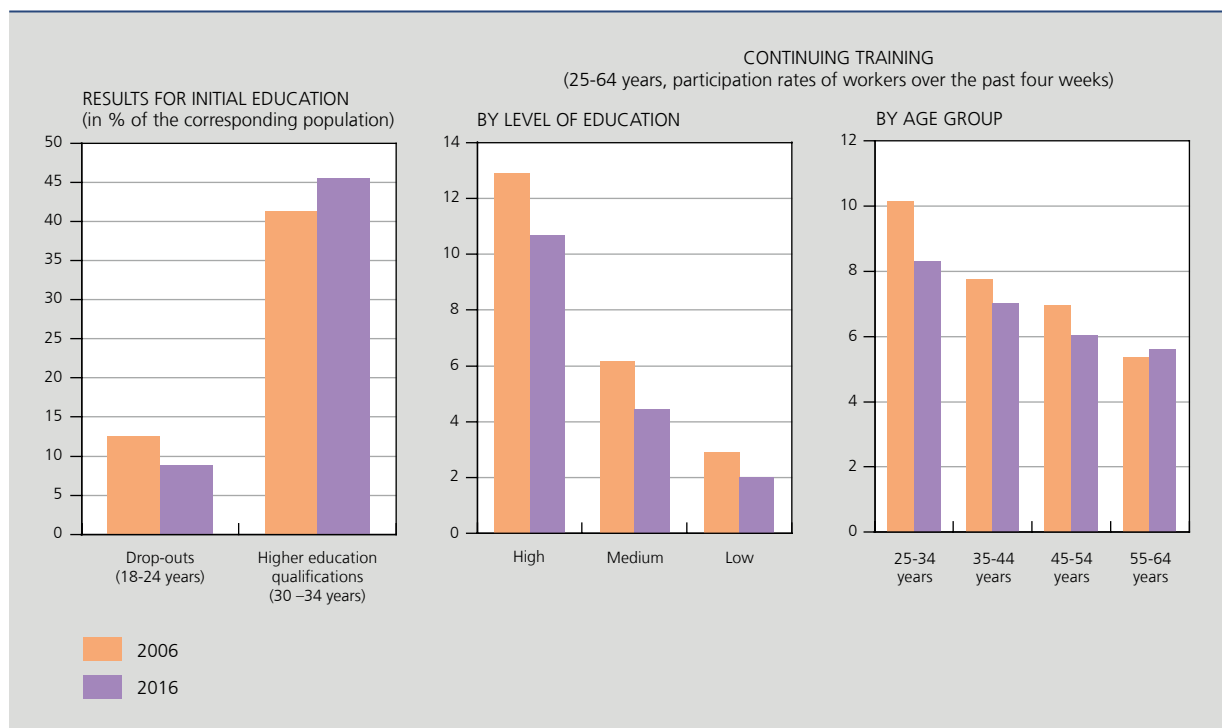
CHART 81 DIFFICULTIES IN MATCHING SUPPLY TO DEMAND FOR LABOUR

(breakdown of employment by skill level and unemployment by level of education, in % of the population aged between 15 and 64 years, 2016)



Source: Eurostat.

CHART 82 MIXED PERFORMANCE IN INITIAL AND CONTINUING EDUCATION



Sources: DGS, Eurostat.

almost 9 % in 2016 (10.7 % in the EU15). However, it has fallen sharply in the past ten years. While the proportion with tertiary education qualifications (30-34 years) is higher in Belgium (45.6 %) than in the EU15 (39.1 %), it has risen less than in other countries, reducing Belgium's comparative advantage. In addition, too few young people opt to study science, technology and mathematics (STEM). Yet those are the subjects that offer the highest employment rates.

The data for the whole country mask major disparities between Regions and Communities. As regards the drop-out rate, at 6.8 % Flanders performs better than Wallonia (10.3 %) and especially Brussels (14.8 %). In the OECD PISA tests, Flemish pupils also perform much better than young people in the French Community. Since numerous studies have shown that educational performance is closely correlated with the family socio-economic level, there is a serious risk that the precarious social situation of young French speakers linked to their difficulties of insertion into the labour market will be perpetuated. The French and Flemish Communities have embarked on major reforms to improve the effectiveness and – above all – the fairness of the education system. In view of the cohort effects in the school population, it will be some years before the benefits of

these reforms will be visible; moreover, they are only being implemented gradually.

Learning does not cease on leaving school; it is a lifelong process. That is essential to maintain employability, develop new skills and facilitate switching to other occupations or jobs. In Belgium, however, the rate of worker participation in continuing training is still considerably lower than in the EU15 (at 6.8 % and 13.4 % respectively in 2016). That is even more true for certain groups of workers, such as those over the age of 55 (5.6 %), and the low-educated (2 %, or five times less than for highly-educated workers). Yet in both cases, these are groups that could benefit significantly. In order to rectify the low rate of participation in further training for all workers, the Law on Feasible and Manageable Work introduced an obligation to provide training averaging five days a year per full-time equivalent in the private sector. In parallel with this statutory requirement, the regional authorities offer numerous tools (training vouchers, paid educational leave, training/integration plan, etc.) in order to support continuing training.

Development of new forms of work

Apart from the increased requirements in terms of education and skills, the changes in the economy also influence

employment conditions. Despite the increase among new recruits, the proportion of temporary contracts has risen only very slightly in Belgium over the past ten years. More than nine in ten employees still work on the basis of a permanent contract.

However, some groups are over-represented in temporary contracts. For anyone under the age of 25, they are increasingly becoming the only route to their first job experience, since in 2016, 39% of that group had been taken on under a temporary contract – an increase of 9 percentage points in ten years – compared to 7% for the 25-54 age group and 3% for the 55-64 age group. Low-skilled workers who have less bargaining power than the better educated are also more likely to have a temporary contract. Finally, the proportion of non-European nationals on temporary contracts is three times the figure for Belgian nationals.

Various recent provisions are intended to make the organisation of labour more flexible. Apart from the Law on Feasible and Manageable Work, which in particular relaxes the rules on calculating working time, there is the introduction of flexi-jobs in the hotel and catering sector, followed by the extension of that scheme to include trade and pensioners, the reform of student jobs, the extension of temp agency work to the entire private sector, and the

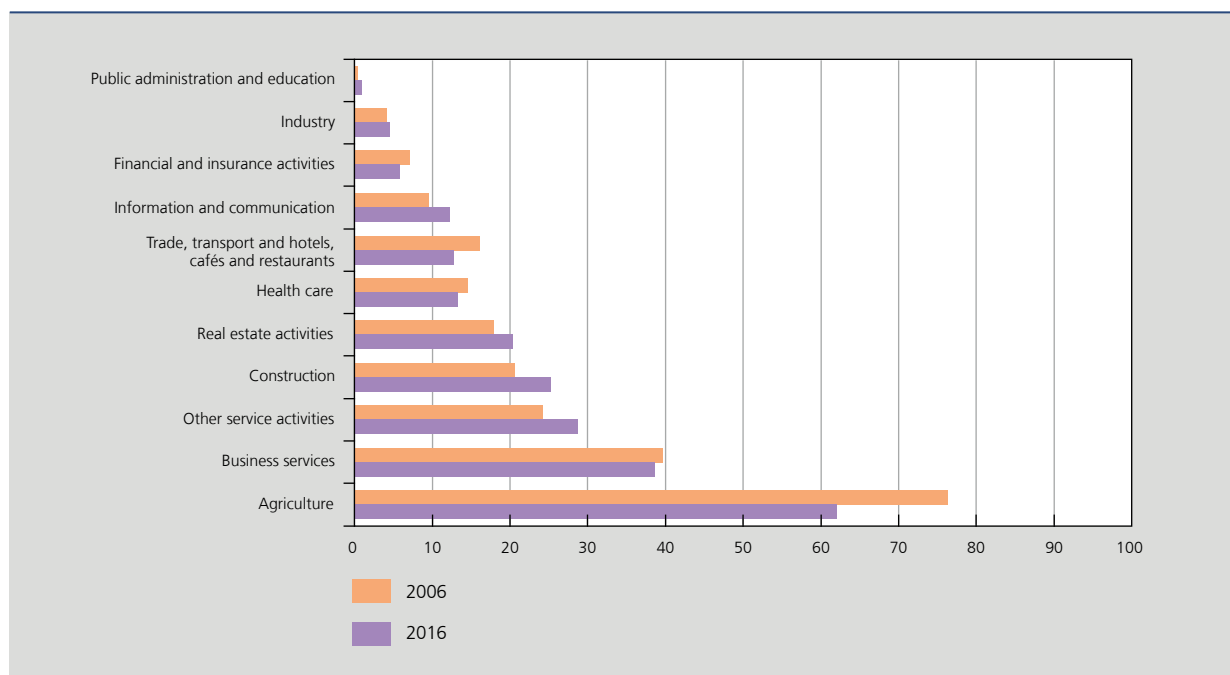
adoption of a more progressive method of calculating the period of notice.

Ever more workers are opting for self-employed status, which is characterised by greater flexibility and autonomy but also implies increased job and income insecurity. The most striking changes are evident in the construction and other service activities branches; to a lesser degree, the share of self-employment is also rising in the information and communication sector and in real estate activities. Though the average level of education of self-employed workers has risen, self-employed status is still a means of gaining access to the labour market for low-skilled, older and foreign people who have difficulty in finding paid employment. Apart from the measures already taken to enhance the social status of these workers, the government intends to stimulate entrepreneurship by granting, with effect from 2018, a reduction in social charges for self-employed workers during their first two years of activity.

The status of self-employed in a secondary activity has been very successful. It enables people in paid employment as their main occupation to continue enjoying job security and all the social advantages connected with that status (time credit, parental leave, maternity leave, etc.)

CHART 83 THE PROPORTION OF SELF-EMPLOYED WORKERS IS RISING, ESPECIALLY IN CONSTRUCTION AND OTHER SERVICE ACTIVITIES

(in % of the corresponding employment)



Source: NAI.

together with an additional income. That choice implies lower risks compared to switching to entrepreneurship as the main activity.

Furthermore, the proportion of part-time workers which is higher in Belgium than in the EU15 (24.7 % compared to 22.9 % of total employment) has risen by around 3 percentage points over ten years, owing to the increase in men working part-time. These contracts still concern proportionately 4 times as many women as men (in 2006, that ratio was 5 to 1). Belgium has an increasing proportion of part-time workers (+4.4 percentage points in 10 years) in the 55-64 age group (30.8 % compared to an average of 23.2 % in the EU15). The existence of various schemes (time credit, career breaks, and thematic leave) enabling workers to reduce their working time has certainly contributed to the success of part-time working. Those schemes have been enthusiastically welcomed, particularly among people reaching the end of their working life who can thus scale down their working time gradually up to retirement. Part-time working is also increasingly widespread among young people, since it concerned 29 % of workers under the age of 25 in 2016, whereas ten years previously the figure was 21 %. Another notable point is that involuntary part-time working is much less common in Belgium, where it concerns only 8.8 % of part-time workers compared to 27.3 % in the EU15. Furthermore, that proportion is declining in Belgium, whereas it is rising in the EU15. For young workers in particular, it has halved, dropping from 38 % in 2006 to 19 % in 2016.

The labour market's overall performance is satisfactory, but there is still room for improvement

Quantitative aspects are not enough to assess the labour market's performance; job quality, respect for diversity, and measures to combat poverty are equally important. The FPB's "beyond-GDP" indicators contribute towards this more qualitative approach. On that basis, it is evident that the Nordic countries, Germany and the Netherlands produce good scores for most of the indicators simultaneously, demonstrating that there does not have to be a trade-off between quantity, quality and fairness on the labour market.

At the level of the quantitative indicators, Belgium performs less well than the Nordic countries and neighbouring countries in terms of employment and inactivity rates.

Conversely, as regards the qualitative aspects, Belgium's performance is generally good, comparable to that of

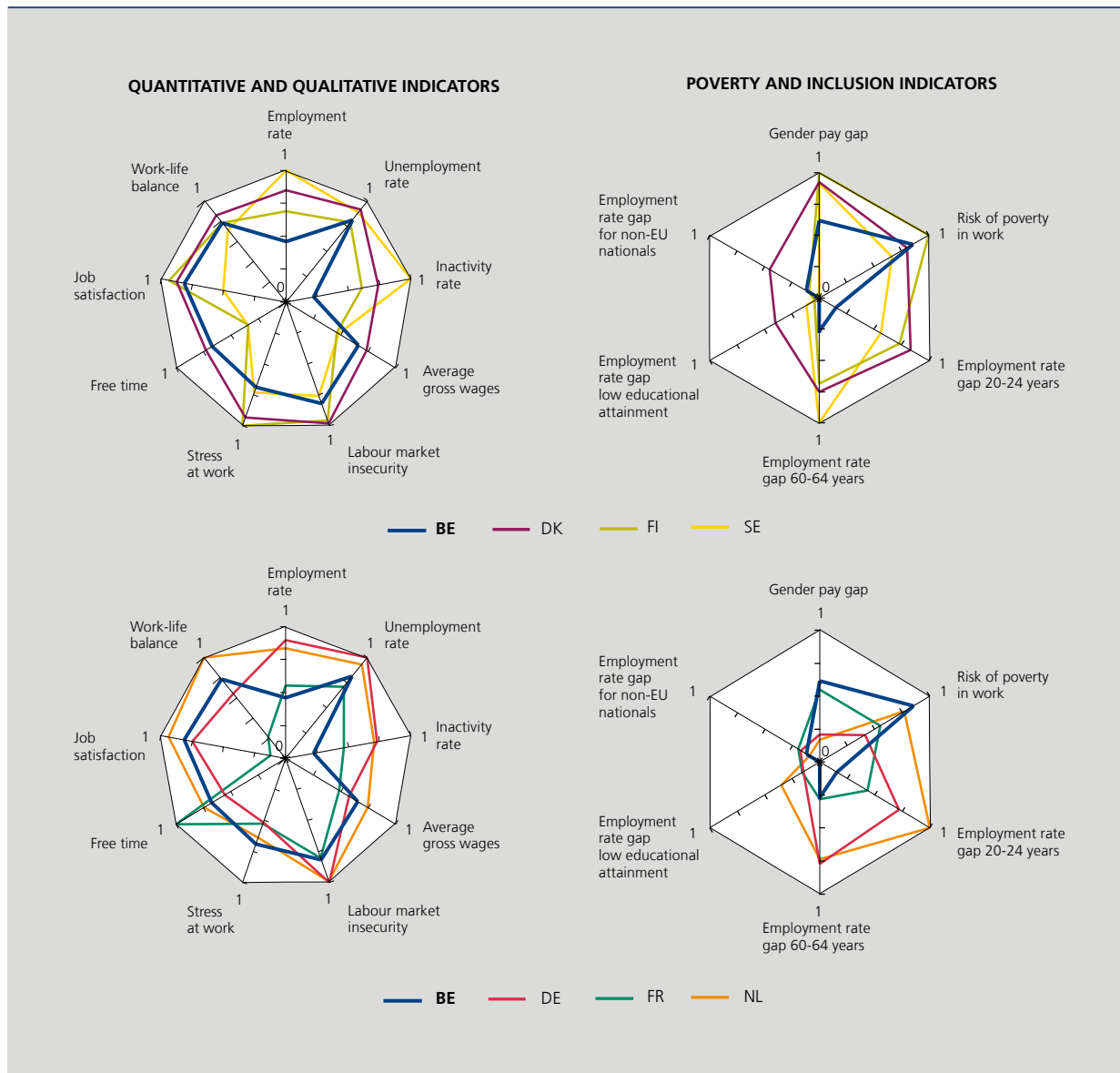
Denmark or Germany, particularly as regards remuneration, labour market insecurity, job satisfaction and the work-life balance. Poverty in work and the gender pay gap are less marked than in neighbouring countries, and they have diminished to a greater extent in Belgium over the past ten years.

However, in regard to inclusion, the gap between the overall employment rate and that of certain population groups is greater in Belgium than in most European countries. Moreover, developments here over the past ten years have been less favourable than in the comparison countries (less improvement in the employment rate of the 60-64 age group, sharper deterioration in the employment rate of young people, etc.). For these groups, it must be said that the Nordic countries, the Netherlands and Germany perform very well. On the other hand, the employment rate gap for low-educated workers and non-European nationals is considerable in all the comparison countries. In addition, the employment rate of the low-educated is down in all countries, while the picture for non-European nationals is more mixed, with a significant improvement in Belgium.

Employment policies therefore need to pay special attention to these groups. Their employment and unemployment rates are set out in the statistical annex. At regional level, targeted aid is specifically aimed at the young, the low-educated, the over-55s and the long-term unemployed. Under the sixth State reform, these schemes and these target groups can now vary from one Region to another. Several of the measures announced by the federal government in the summer of 2017 are also aimed at these groups. For example, "starter jobs" are intended to encourage the recruitment of young people in the 18-21 age group by reducing the labour cost without affecting take-home pay. Workers over the age of 55 will qualify for financial compensation if their working time is reduced (from full-time to four-fifths) when switching from shift work to lighter or more suitable duties. Employers who make use of the "pre-pension 2.0" scheme, discharging older workers while still paying them part of their wages, will be subject to a responsibility contribution, deemed to dissuade them from using that scheme. The range of tools to combat discrimination will be widened by allowing the government to conduct anonymous checks (mystery calls). Finally, low-paid workers with family responsibilities will qualify for a double tax deduction for child care costs. For this category of workers, the employment traps in Belgium are still greater than in the other EU15 countries, despite the reforms already carried out to attenuate them, such as the tax shift.

CHART 84 STILL INSUFFICIENT INCLUSION ON THE LABOUR MARKET

(2016, population in work aged from 20 to 64 years for the quantitative indicators and those concerning inclusion; 2015, total employment for quality and poverty indicators)



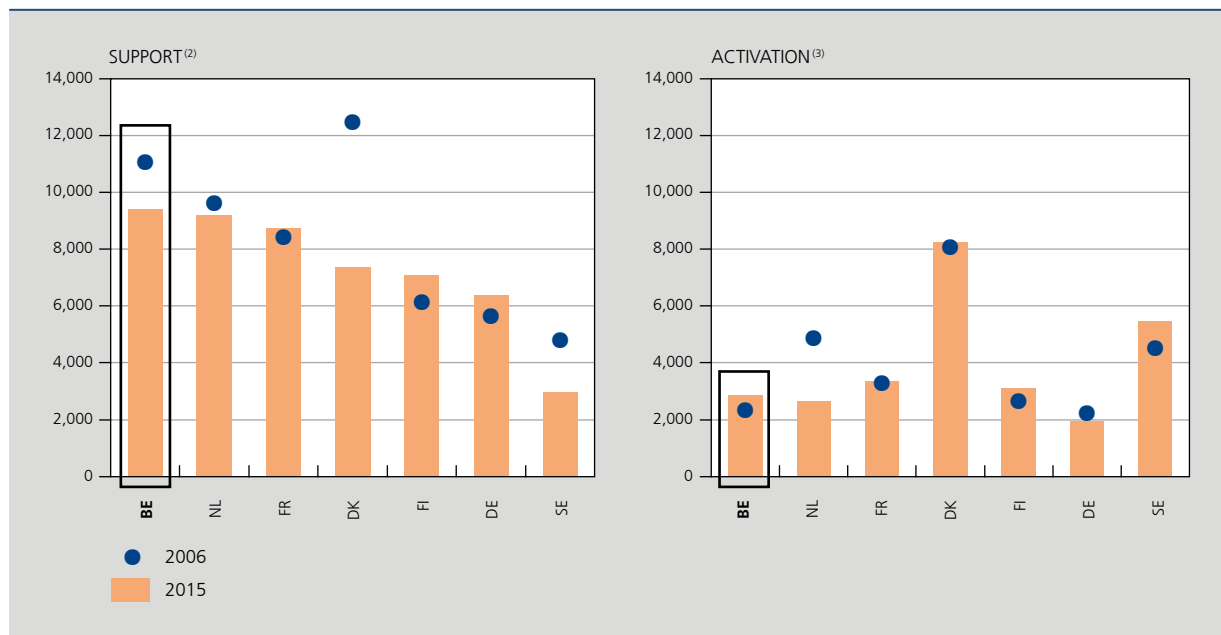
Sources: Eurofound, Eurostat, OECD.

NB: Best performance among EU15 countries equal to 1, poorest equal to 0 (for the unemployment rate, inactivity rate, insecurity, stress, poverty risk, pay gap and employment rate gap, the best performance corresponds to the lowest rate). The indicators for the employment rate gap for specific groups are calculated in relation to the national employment rate.

To boost the labour supply, the government intends to increase employment incentives and reinforce the activation policies. Comparatively speaking, Belgium devotes the bulk of its resources to passive support measures for those without a job, and is notable more particularly for the share of expenditure devoted to early retirement. However, that expenditure is tending to diminish following the reforms implemented since the beginning of the century to curb

early withdrawal from the labour market, such as the tighter conditions for access to the scheme concerning unemployment with an employer top-up, and that trend should continue in the coming years. At the same time, the proportion of active measures (employment incentives, training, protected jobs, etc.) has increased, as closer monitoring of job-seekers has been introduced, notably for those farthest away from the labour market.

CHART 85 A SMALL PROPORTION OF PUBLIC EXPENDITURE ON LABOUR MARKET PROGRAMMES IS DEVOTED TO ACTIVATION
(purchasing power standard per person wishing to work⁽¹⁾)



Source: Eurostat.

(1) PPS: an artificial currency unit enabling the same quantity of goods and services to be purchased in all countries. People wishing to work correspond to job-seekers registered with the public employment services, inactives who wish to work, and workers in a precarious job position.

(2) Support measures correspond to the financial assistance granted in the event of loss of wages during a period of unemployment and in early retirement.

(3) Activation measures cover the activities of the public employment services, the provision of information and advice for job-seekers, and aid in drafting a CV or in preparation for job interviews, but also expenditure on training and expenditure encouraging employers to create new jobs and take on people from target groups. They likewise include measures to encourage active job-seeking for both unemployed and inactive persons.

Box 9 – Beyond GDP: supplementary indicators for Belgium

In accordance with the Law of 14 March 2014 supplementing the Law of 21 December 1994 containing social and miscellaneous provisions, the National Accounts Institute (NAI) and the Federal Planning Bureau (FPB) publish a report each year on the beyond-GDP indicators. In accordance with the Law, the report is summarised here.

As in previous years, the FPB reviews 63 selected indicators in order to measure “quality of life, human development, social progress and the sustainability of our economy”, grouped crosswise around three dimensions (“Here and now”, “Later” and “Elsewhere”). As well as updating the indicators, this third report explains a number of changes made to some of them in order to take account of comments formulated in consultations with the government and with civil society, or for methodological reasons (unavailability, change of definition, more relevant way of measuring targets). It also presents the results of work on two indicators to be developed which were discussed in the Chamber: the carbon footprint and a measure of road congestion. In regard to the latter, the report does not publish any indicator on the subject owing to the lack of recent data for Belgium as a whole.

Carbon footprint

The creation of a carbon footprint indicator is intended to extend the national stocktaking of greenhouse gas (GHG) emissions by including those emissions outside national territory. More particularly, this concerns taking account of the volume of domestic and foreign GHG emissions represented (directly or indirectly) by products

destined for final consumption by residents of a country, i.e. by taking account of the emissions resulting from the production of imported goods (charged to the producer country) and conversely, by excluding emissions resulting from the production of exports (which contribute to the increase in emissions on national territory). That approach requires, in particular, the availability of robust data on import and export flows of all countries in the world, so as to reflect as accurately as possible the development of production chains which are often located in many countries. A first – simplified – method consists in the domestic technology assumption whereby all countries use the same technology as Belgium. A more complete approach involves collecting the necessary data on imports, exports and the technologies used in all countries of the world (arranged in multiregional input-output tables for the entire world). Research on the subject in 2017⁽¹⁾ reveals that while territorial emissions – relating to production – remained stable between 1995 and 2007 at around 120 million tonnes of CO₂ equivalent (Mt CO₂ eq) per annum, the carbon footprint that takes account of detailed production chains and country-specific technologies was systematically higher. Belgium was thus a net importer of GHG emissions over the whole of the period considered. In 2007, the gap was particularly large: the carbon footprint calculated on the basis of the multiregional input-output tables was 145 Mt CO₂ eq per annum, compared to 110 Mt CO₂ eq per annum for territorial emissions (and 103 Mt CO₂ eq per annum for the carbon footprint calculated on the basis of domestic technology)⁽²⁾. Research on the subject will continue, with the aim of extending the calculation to the most recent years in order to include this indicator in the list of beyond-GDP indicators.

Composite indicator of well-being “Here and now”

In order to conform more closely to the principle stipulated in the Law of arranging the supplementary indicators in a minimum number of categories, the FPB geared its research towards devising a composite “Here and now” indicator of well-being⁽³⁾ to enable the Chamber to adopt a position on the subject. Taking account of the multidimensional nature of well-being, a composite indicator was chosen; this made it necessary to select indicators and define their weighting in order to arrive at an appropriate yardstick. This composite indicator was designed to provide the best explanation of changes in well-being as measured by the *ad-hoc* question in the EU-SILC 2013 survey on “Overall life satisfaction”. On the basis of linear regressions, a set of statistically significant explanatory variables was adopted, covering five topics. On that basis, six indicators were selected to form the composite indicator. It appears that the principal determinant of well-being is health (weighting of 0.4). As regards determinants of standard of living and poverty, the lack of sufficient income to achieve a standard of living considered normal has the greatest – negative – impact on well-being (0.19). The impact is also negative if people are unemployed (0.04), unfit for work (0.13) or lacking any qualifications (0.09). Conversely, the possibility of receiving assistance or sympathetic attention from someone close to them has a favourable influence on individuals’ well-being (0.15).

The increased well-being between 2005 and 2008 is due mainly to an improvement in the situation of people suffering from severe material privation. Improvements in the state of health, unemployment and dropping out of education also played a role, albeit to a lesser degree. The abrupt turnaround in the indicator from 2008 is attributable mainly to the change in the state of health. From 2012 to 2015, well-being gradually deteriorated, reflecting the combined effects of the worsening of the state of health, social support and unfit for work. In 2016, there was a rebound due to an improvement in both social support and – albeit to a lesser extent – the indicators of material privation and dropping out of education.

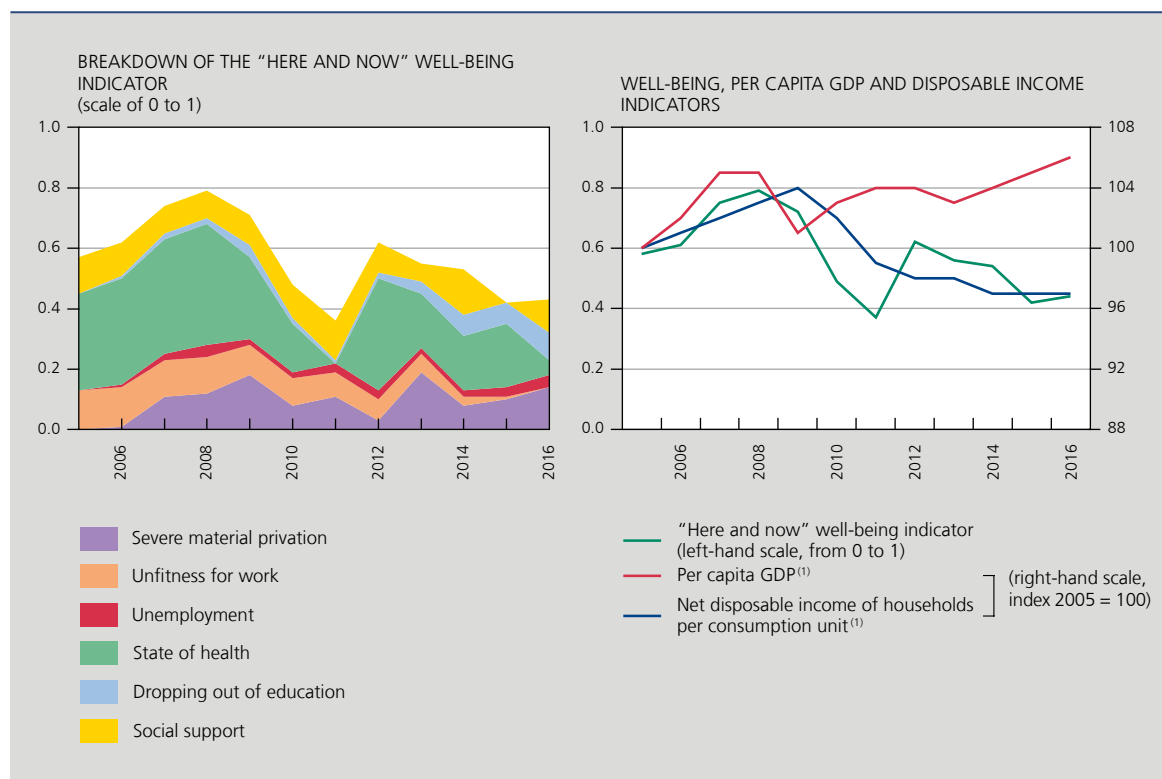
In general, the trend in this indicator is relatively similar to that of the net disposable income of households, but deviates from the trend in per capita GDP. From 2005 to 2008, the composite well-being indicator and per capita GDP both increased; subsequently, they followed divergent trends since, after having declined in 2009, per capita

(1) See Hambje C. H, B. Hertveldt and B. K. Michel. (2017), *Belgium’s Carbon Footprint – Calculations based on a national accounts consistent global multi-regional input-output table*, Federal Planning Bureau, Working Paper 10-17, September.

(2) This only concerns emissions relating to production. Household emissions (around 30 Mt CO₂ eq per annum) are the same whichever approach is used and are disregarded in the comparison.

(3) See Joskin A. (2017), *What matters to Belgians? Analysis of the determinants of individual well-being in Belgium*, Federal Planning Bureau, Working Paper 4-17, June.

BREAKDOWN OF THE "HERE AND NOW" WELL-BEING INDICATOR IN BELGIUM AND COMPARISON WITH THE PICTURE FOR PER CAPITA GDP AND NET DISPOSABLE INCOME OF HOUSEHOLDS



Sources: FPP, NBB.

(1) Per capita GDP and net disposable income per consumption unit are adjusted for price changes; the series on which the indices are calculated are expressed in chained euros, 2010 being the reference year.

GDP resumed its generally upward tendency and actually peaked in 2016, while the well-being indicator tended to fall and in 2016 was still well below the level prevailing before the economic and financial crisis.

Evaluation of the supplementary indicators and international comparison

For detailed information on the methodologies used to select the topics and indicators, and to produce the breakdowns, interested readers should consult the report published by the NAI and the FPB in February 2016⁽¹⁾.

The "Here and now" dimension comprises 37 indicators providing answers to questions on Belgian residents' well-being and how that has changed since 1990. They do not reveal any systematic tendencies:

- Subjective well-being, assessed on the basis of a survey, remained stable between 2002 and 2014; it must not be confused with the "Here and now" composite well-being indicator presented above.
- Most of the indicators concerning the topics "Health" and "Education and training" are maintaining a favourable trend. The only one deteriorating is the indicator on postponement or cancellation of health care for financial reasons.
- There is no clear trend in the indicators concerning "Standard of living and poverty".

(1) See <http://www.plan.be/publications/publication-1541-en-indicateurs+complementaires+au+piib>.

- Most of the indicators concerning “Work and free time” and “Social life” have moved closer to their targets since 1990.
- Of the last five indicators for the “Here and now” dimension, three (exposure to particulates, NO_x emissions and road deaths) are moving towards their targets, while the ones concerning energy dependence are moving away. No significant conclusion can be drawn for the indicator concerning victims of natural disasters.

If the “Here and now” indicators are compared with the same indicators for the EU or, failing that, for the three neighbouring countries, the results are generally favourable to Belgium: of the 23 indicators that can be compared, 16 show a more favourable situation in Belgium.

The “Later” dimension comprises 32 indicators on the ability of Belgian people and society to maintain or even enhance their well-being in the future. Most of the indicators for this dimension (mainly concerning environmental and economic subjects) have moved closer to their targets over the whole period and over the past five years. The most notable exceptions are as follows:

- Stress at work was higher in 2010 than in 2005; however, more recent data are not available.
- The indicator concerning wild bird populations (on the subject of “Land and ecosystems”), one of the few biological diversity indicators available over a long period, is diverging from its target.
- On the subject of “Economic capital”, the public debt indicator has moved further away from its target since 2007. The same applies to the stock of fixed capital (in relation to GDP) since 1990.
- On the subject of “Mobility and transport” concerning passenger transport, the proportion of cars – which had been falling from 1990 – has been rising again since 2007.

International comparison of the “Later” dimension shows that Belgium scores badly in the case of the environmental indicators. It is mainly the comparisons of social indicators that are favourable to Belgium.

The “Elsewhere” dimension comprises five indicators that answer the question “How does the development of society in Belgium influence other countries’ ability to develop and the well-being of their population?”.

- The indicators on the subject of “Natural resources”, “Climate” and “Energy” relate to global environmental capital, such as the climate system and commodity resources. These indicators are moving towards their targets.
- Government development aid as a percentage of GDP was higher on average in the years 2000-2010 than in the 1990s. However, it has declined since 2011.

Among the five indicators illustrating the dimension “Elsewhere”, only the domestic consumption of materials indicator is more favourable in Belgium than in Europe.

Analysis of the trends was approached from two angles: first, from the point of view of the change over time in the Belgian indicators compared to the politically defined targets, and next from the point of view of the findings for the 51 indicators in Belgium compared to their level in Europe (or failing that, in the three neighbouring countries). Analysis of the change in the indicators compared to the targets generally reveals more favourable results for the indicators concerning environmental subjects than for those on social topics. Conversely, when Belgian levels are compared with the European averages, the comparison is generally favourable for the social indicators and unfavourable for the environmental indicators.

The movement in the indicators in Belgium compared to their targets was affected by the 2008 economic and financial crisis: the crisis had an adverse impact on numerous social indicators, such as the risk of poverty or social exclusion, while the economic slowdown led to a reduction in some environmental pressures. In regard to the results of the European comparison, the social indicators are influenced by the presence of a more developed social protection system in Belgium than in many other European countries, while the environmental indicators reflect



severe environmental pressure in Belgium owing to the high population density and the presence of an industrial sector centred on intermediate activities generating above-average pollution.

Breakdown of the indicators

Of the 63 indicators selected, 28 also supply values according to various population categories, such as gender, income level, level of education and age. They show that:

- Differences according to gender are diminishing, although some large gaps persist in terms of the time devoted to work or leisure, depression (to the detriment of women), higher education graduates, and premature death due to chronic ailments (to the detriment of men).
- Differences according to level of education persist, or are even getting worse, particularly as regards the unemployment rate.
- The trend in the situation of older people is more favourable than for young people, notably as regards the risk of poverty or social exclusion, or the employment rate.
- In general, the most affluent categories are in a more favourable position. This applies to the indicators of standard of living and poverty, which are highly unfavourable in the lowest income quintile, and to four indicators concerning health (smoking, obesity, depression and health care cancellation) and confidence indicators relating to social life, which improve with the level of income. However, on some subjects, the picture is less clear-cut. In particular, as already stated, income has a limited impact on the subjective perception of well-being, as that depends to a greater extent on health, or the ability to work.

Topics for future research

The beyond-GDP indicators will continue to be updated annually; they may vary according to new insights and social debates. In future years, the FPB will refine its analyses, e.g. in regard to the composite indicators (for the “Later” and “Elsewhere” dimensions) and the creation of new indicators to complete the set, notably concerning the carbon footprint. It would also be useful to have national data on road congestion. More generally, the aim of selecting and devising indicators is to improve their convergence with the sustainable development indicators, notably in the context of the monitoring of the UN’s sustainable development targets.