Digital Economy and Society Index (DESI) 2021

Belgium

About the DESI

The European Commission has monitored Member States' progress on digital and published annual Digital Economy and Society Index (DESI) reports since 2014. Each year, the reports include country profiles, which help Member States identify areas for priority action, and thematic chapters providing an EU-level analysis in the key digital policy areas.

In 2021, the Commission adjusted DESI to reflect the two major policy initiatives that will have an impact on digital transformation in the EU over the coming years: the Recovery and Resilience Facility and the Digital Decade Compass.

To align DESI with the four cardinal points and the targets under the Digital Compass, to improve the methodology and take account of the latest technological and policy developments, the Commission made a number of changes to the 2021 edition of the DESI. The indicators are now structured around the four main areas in the Digital Compass, replacing the previous five-dimension structure. 11 of the DESI 2021 indicators measure targets set in the Digital Compass. In future, the DESI will be aligned even more closely with the Digital Compass to ensure that all targets are discussed in the reports.
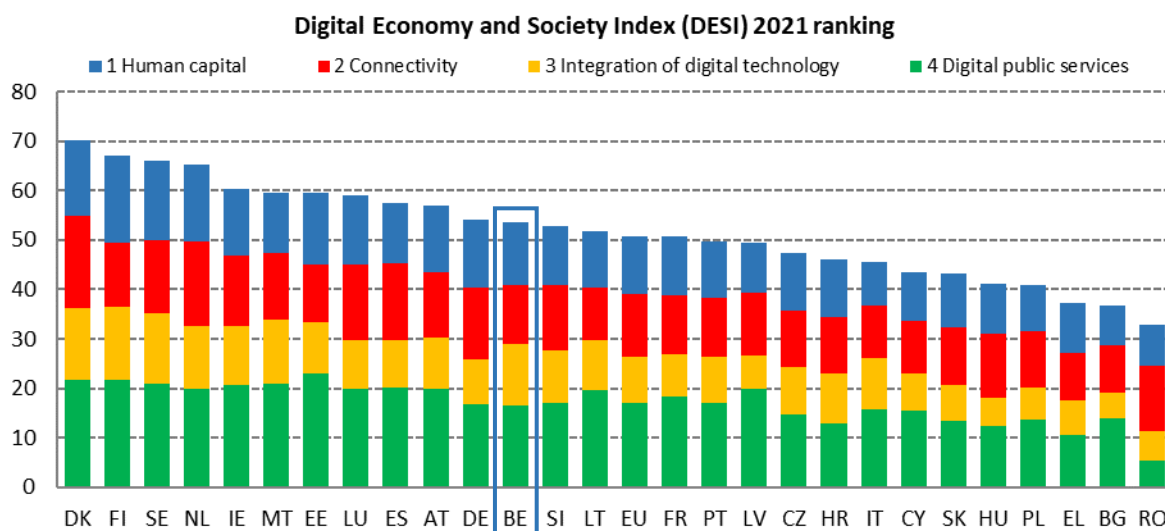
In addition, DESI now includes an indicator measuring the level of support that adopted ICT technologies provided companies in taking more environmentally-friendly measures (ICT for environmental sustainability) and the take up of gigabit services, plus the percentage of companies offering ICT training and using e-invoicing.

The DESI scores and rankings of previous years were re-calculated for all countries to reflect the changes in the choice of indicators and corrections made to the underlying data.

For further information, see the DESI website: https://digital-strategy.ec.europa.eu/en/policies/desi.

Overview

	Belgium		EU
	rank	score	score
DESI 2021	12	53.7	50.7

Digital Economy and Society Index (DESI) 2021 ranking

Belgium ranks 12th among the 27 EU Member States in the 2021 edition of the Digital Economy and Society Index (DESI).

In terms of digital skills, Belgium scores particularly well in the share of enterprises providing ICT training to their employees (2nd in the EU, with 33% compared to 20% on average in the EU). Moreover, the Belgian authorities have stepped up their efforts to address the need for better digital skills among students and to reskill and upskill the labour force. Flanders launched a new overarching digital school education strategy this year.

In terms of connectivity, Belgium displays uneven performance. The country has achieved good coverage of fixed very high capacity networks (VHCNs), thanks in part to its cable network. Fibre coverage, though still low, is also accelerating. In this regard, the recent announcement by Unifiber – a joint venture between the incumbent Proximus and Eurofiber – that it intends to connect 500,000 households and small and medium-sized enterprises (SMEs) in Wallonia with fibre by 2028 is encouraging. Belgium also displays a good level of at least 100 Mbps broadband take-up, where it ranks 6th in the EU. On the other hand, Belgium still lags behind on 5G readiness and coverage. The 5G multi-band auction scheduled for early 2022 and the revision of regional norms on exposure to electromagnetic fields could unlock the situation.

The integration of digital technology by enterprises remains one of Belgium's strong points. The country is leading in terms of the number of enterprises using internal electronic information sharing (53% against 36% on average in the EU) and scores very well on most indicators. Several initiatives at regional and federal level continue to support the digital transformation of the economy.

Belgium shows a mixed performance in e-government. The country is on a par with the EU average on many indicators, in particular on the use of online public services, but could offer more public services to people and improve its score on open data readiness. The formation of a new federal government in October 2020, with an ambitious agenda for digital public services, should boost e-government over the next few years.

Belgium's latest digital strategy, 'Digital Agenda Belgium', was designed for the 2015-2020 period and is now under review by the new government. For this it has teamed up with a number of industry

stakeholders ('the Digital Minds') to develop its digital strategy. Wallonia has a digital strategy for 2019-2024, 'Digital Wallonia', that encompasses several fields (ICT sector, digital economy, digital skills, digital administration and digital territory). While Flanders and the Brussels region do not have a similar unique brand for their digital strategies per se, they have a number of sectoral strategies and policies in the field of digitalisation. For Flanders, these include Industry 4.0, AI, e-government, cybersecurity, e-commerce and the media sector; for Brussels, smart city, digital innovation and the ICT sector. Close alignment of the digitalisation measures could also have a positive impact on the private sector.
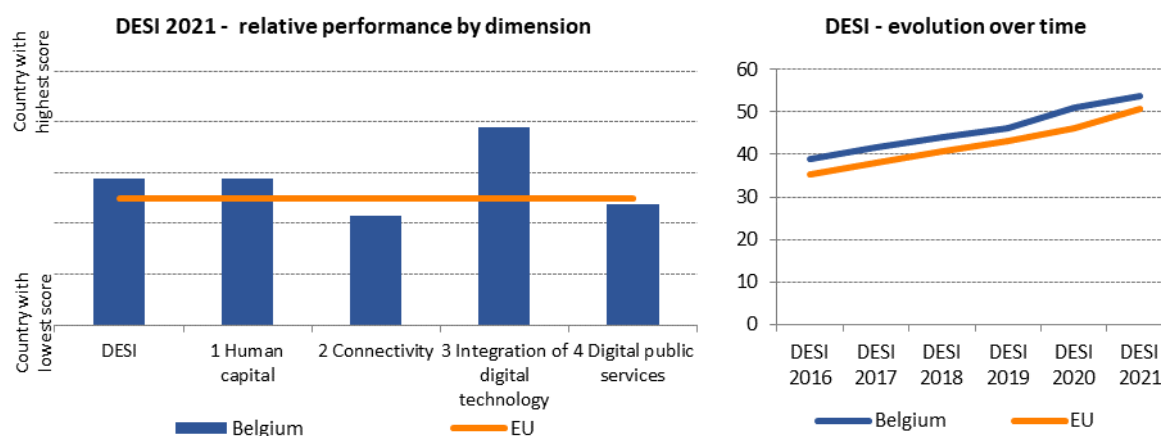
Digital in Belgium's Recovery and Resilience Plan (RRP)

The plan will be financed by a total of EUR 5.9 billion in grants, out of which around EUR 1.58 billion is devoted to the digital transition, representing 26.6% of the overall budget.

11 components out of 17 contain measures that are expected to contribute to the digital transition with a broad, cross-cutting approach.

Digital public services is the main field adressed. Most measures target the modernisation and digitalisation of public services at federal, regional and local level. Measures to digitalise federal administration services include the digitalisation of the justice system and the health system as well as implementation of the single digital gateway.

Human capital also represents an important part of the digital investments, targeting both education and training. The plan includes an overarching digital strategy for the Flemish school education system and several measures to increase the digital skills of workers, adressing skills mismatches and boosting labour market integration.

A full component of the plan is dedicated to connectivity, including key reforms for enabling 5G rollout, as well as investments in fibre rollout to white areas.

Other investments address the digitalisation of specific sectors such as tourism, transport, energy, media and culture.

The plan will also support the integration of digital technologies by companies and public administrations, in particular via investments in cybersecurity. A specific action related to the Important Project of Common European Interest (IPCEI) on microelectronics is also envisaged.

1 Human capital

1 Human capital	Belgium		EU
	rank	score	score
DESI 2021	**10**	**50.8**	**47.1**

Human capital
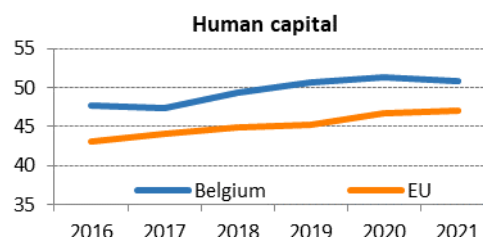
	Belgium			EU
	DESI 2019	**DESI 2020**	**DESI 2021**	**DESI 2021**
1a1 At least basic digital skills	**61%**	**61%**	**61%**	**56%**
% individuals	2017	2019	2019	2019
1a2 Above basic digital skills	**31%**	**34%**	**34%**	**31%**
% individuals	2017	2019	2019	2019
1a3 At least basic software skills	**63%**	**62%**	**62%**	**58%**
% individuals	2017	2019	2019	2019
1b1 ICT specialists	**5.2%**	**5.0%**	**5.0%**	**4.3%**
% individuals in employment aged 15-74	2018	2019	2020	2020
1b2 Female ICT specialists	**17%**	**17%**	**17%**	**19%**
% ICT specialists	2018	2019	2020	2020
1b3 Enterprises providing ICT training	**36%**	**36%**	**33%**	**20%**
% enterprises	2018	2019	2020	2020
1b4 ICT graduates	**1.9%**	**2.1%**	**2.1%**	**3.9%**
% graduates	2017	2018	2019	2019

Belgium ranks 10th among the 27 EU countries on Human capital and is therefore above the EU average. It scores slightly above the EU average on basic and advanced digital skills as well as basic software skills. The percentage of ICT specialists (5%) is above the EU average (4.3%), but has not improved compared to last year. The share of women ICT specialists also remains stable, slightly below the EU average (17% versus 19%). The number of ICT graduates is stagnating well below the EU average with 2.1% versus 3.9%. Last year, 33% of Belgium enterprises provided dedicated ICT training to their employees, which was well above the EU average of 20%.

The federal digital skills strategy is currently under review as part of 'Digital Agenda Belgium'. Regions and communities also have strategies and policies in place to improve digital skills at various levels of education. The government of the Wallonia-Brussels Federation adopted its digital school education strategy in 2018[1], in which the 'digital schools programme'[2] offered digital equipment to schools based on their involvement in educational projects. In total, 679 projects were selected in 2020. In Flanders, the 'Digital leap'[3], a comprehensive strategy to digitalise the school education system, was adopted in December 2020. It will provide measures in the fields of ICT infrastructure and equipment for schools, initial teacher training, digital learning resources and cybersecurity, for a total investment of EUR 375 million. The Brussels-Capital region launched a '2021-2024 digital appropriation plan'[4] in 2020, which

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[1] http://www.enseignement.be/index.php?page=28101

[2] Ecole numérique: https://www.ecolenumerique.be/

[3] Digisprong: https://onderwijs.vlaanderen.be/nl/digisprong

[4] Le plan d'appropriation du numérique 2021-2024 : https://smartcity.brussels/inclusion-numerique-5-le-plan-d-appropriation-du-numerique-2021-2024

aims to fight the digital divide and improve the digital skills of people living in Brussels. In addition, the National Coalition for Digital Skills and Jobs 2030 was relaunched in May 2021. It will focus on children, students, the unemployed, women in the digital sector, upskilling people over 50 years old and SMEs. The National Coalition aims to connect to the Digital Skills & Jobs Platform[5] by October 2021.

In 2020, nearly 16 000 young people took part in Code Week despite the COVID-19 pandemic. Half of the participants were female, and two thirds of the 168 activities were organised outside schools[6].

In 2020, a study[7] by Agoria (federation of Belgian enterprises) pointed to the fact that the shortage of ICT specialists, already identified as an issue for Belgium in 2018, could again increase in the coming years. In 2020, already 58.8% of enterprises that recruited or tried to recruit ICT specialists reported difficulties in filling ICT vacancies and demand for a more digitally skilled workforce is expected to be even higher than before the COVID-19 crisis. Several projects have been launched or continued in 2020-2021 to address this challenge.

At federal level, the Digital Belgium Skills Fund continued its activities in 2020, supporting 30 projects that aim to help young people in precarious situations on the labour market. This fund supports initiatives with a major impact, such as the digital campus BeCentral. In May 2020, the Walloon digital and labour agencies set up 'UpSkill Wallonia'[8], a pilot project to help companies with their digital transformation by identifying the skills needed and offering corresponding training. Based on the outcome of this pilot, the region intends to submit a larger scale project to the 2021-2027 European Social Fund + and the European Regional Development Fund calls. In Flanders, the public employment agency VDAB offers workshops on digitalisation and integrates digital skills into all training courses. Training is also organised on e-marketing, building websites, Industry 4.0 as well as IT developer courses for target groups who are further away from the labour market or vulnerable people (e.g. youth not in education, employment or training youth). In addition, VDAB has boosted its offer of online courses in digitalisation (e.g. on AI). It also offers competence check-ups to workers in vulnerable employment to help them identify their training needs. In terms of advanced digital skills, the Flemish Academy for AI was set up in 2020 to offer and develop courses for researchers and early AI adopters as well as short and medium-term courses for higher level professionals. In the Brussels-Capital Region, Digitalcity.brussels, the new training and employment centre for digital jobs, was set up in October 2020.

After signing the 'Women in Digital' declaration in 2019, in March 2021 the federal government set up a 'Women in Digital National and Intersectorial Strategy'[9] for 2020-2025. It defines five strategic goals, which include ensuring that more women graduate in digital fields (ICT/STEM) and promoting the inclusion of women in the digital workforce and/or in the digital sector. Wallonia has taken several measures and supported the Wallonia Wonder Women campaign[10], the 'Cool girls' code initiative from Coder dojo Belgium[11] and a new gender programme from BeCode[12].

A severe labour shortage in digital-related domains limits Belgian companies' capacity to innovate and capitalise on innovation. Increasing the number of ICT specialists, narrowing the gender gap and upgrading the digital skills of the labour force are essential if the country is to tap into the full potential of the digital economy.

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[5] https://digital-skills-jobs.europa.eu/en
[6] https://digital-strategy.ec.europa.eu/en/news/eu-code-week-organisers-register-over-72000-activities-second-year-row
[7] Agoria: Be the change: https://bethechange.agoria.be/en/
[8] UpSkills Wallonia. Répondre à la pénurie de profils qualifiés : https://www.digitalwallonia.be/fr/publications/upskills-wallonia
[9] Plan interfédéral et intersectoriel 'Women in Digital' | News.belgium: https://news.belgium.be/fr/plan-interfederal-et-intersectoriel-women-digital
[10] Wallonia Wonder Women: https://www.digitalwallonia.be/women
[11] Cool Girls Code: http://coderdojo4divas.be/fr/
[12] Hackeuses club: https://becode.org/fr/apprendre/hackeuses-club/

Human capital in Belgium's Recovery and Resilience Plan

The plan includes several measures to develop the digital skills of people, including:

- Digitalisation of schools and higher education institutions in Wallonia and Brussels (EUR 37.2 million); in the German-speaking community (EUR 5.5 million) and a new digital education strategy in Flanders (including EUR 32.3 million for human capital and EUR 282.6 million in ICT equipments, tagged as investments in digital capacities).

- E-inclusion projects (EUR 92.4 million) targeted at vulnerable populations, in particular people lacking basic digital skills or inmates.

- Upskilling and reskilling of the labour force (EUR 98 million): this includes measures to digitalise and improve services and training offered by public employment agencies, as well as to help develop workers' digital skills.

2 Connectivity

2 Connectivity	Belgium		EU
	rank	score	score
DESI 2021	16	48.4	50.2

Connectivity
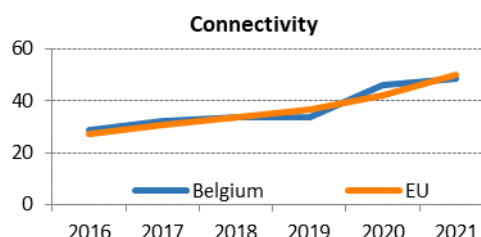
	Belgium			EU
	DESI 2019	DESI 2020	DESI 2021	DESI 2021
2a1 Overall fixed broadband take-up	NA	79%	85%	77%
% households	2018	2019	2020	2020
2a2 At least 100 Mbps fixed broadband take-up	40%	45%	54%	34%
% households	2018	2019	2020	2020
2a3 At least 1 Gbps take-up	NA	<0.01%	<0.01%	1.3%
% households		2019	2020	2020
2b1 Fast broadband (NGA) coverage	99%	99%	99%	87%
% households	2018	2019	2020	2020
2b2 Fixed Very High Capacity Network (VHCN) coverage	1%	66%	68%	59%
% households	2018	2019	2020	2020
2c1 4G coverage	>99.9%	>99.9%	>99.9%	99.7%
% populated areas	2018	2019	2020	2020
2c2 5G readiness	0%	3%	3%	51%
Assigned spectrum as a % of total harmonised 5G spectrum	2019	2020	2021	2021
2c3 5G coverage	NA	NA	4%	14%
% populated areas			2020	2020
2c4 Mobile broadband take-up	69%	77%	77%	71%
% individuals	2018	2019	2019	2019
2d1 Broadband price index	NA	52	51	69
Score (0-100)		2019	2020	2020

Belgium ranks 16th in connectivity. At 68%, the country has very good VHCN coverage , largely due to a significant part of the cable networks having been upgraded to DOCSIS 3.1 (Data Over Cable Service Interface Specification) in 2019. The 2 percentage point increase in VHCN coverage since 2019 is mainly due to FTTP (Fibre to the Premises) deployment, with coverage in 2020 reaching 6.5% of households (up from 3.6% in 2019); DOCSIS 3.1 coverage remained stable. VHCN coverage is expected to increase significantly in the next few years as all cable networks are expected to be upgraded and very high-speed digital subscriber line (VDSL) networks (currently covering 96.8% of households) will be partially replaced by FTTP[13]. Thanks to good VHCN coverage, take-up of 100 Mbps speeds is 20 pps higher than the EU average and has increased almost 10 pps in a year. The low FTTP coverage is reflected in the very small 1 Gbps take-up. Overall, fixed broadband take-up increased by 6 pps in 2020. While Belgium has nearly ubiquitous 4G coverage, it lags behind in 5G on both readiness (3% compared to an EU average of 51%) and coverage (4% against 14% at EU level). Broadband prices remain higher than the EU average.

Private investment in fixed VHCNs is increasing as Proximus, benefiting from a EUR 400 million loan from the European Investment Bank, announced the acceleration of its fibre rollout plan. It now aims

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[13] The incumbent Proximus plans to cover 70% of households by 2028; other initiatives are also ongoing.

to cover 50% of households and businesses by 2025 and 70% by 2028, thanks to partnerships with two fibre companies – Eurofibre in Wallonia and EQT Infrastructure in Flanders. Telenet continued talks with the utility grid operator Fluvius on a potential partnership to roll out a point-to-point fibre network in Flanders. The Federal Council of Ministers approved the launch of a fixed and mobile broadband plan in April 2021, which aims to tackle the areas expected to remain underserved. The plan is expected to include measures to identify white areas, stimulate investment in these areas, provide better information to the public on fibre and 5G and create a national broadband competence office. The Atlas project run by Belgium's communications regulator BIPT should help identify white areas.

Belgium is experiencing delays in the deployment of 5G networks, mainly due to the delay in assigning 5G pioneer bands. The multiband auction for the 700 MHz, 900 MHz, 1400 MHz, 1800 MHz, 2100 MHz, 2600MHz and 3.6 GHz bands initially scheduled for 2021 has now been moved to early 2022. While there is still no agreement between the federal government and the regions on the distribution of the auction's proceeds, an agreement has been reached on its design. In the meantime, the 700 MHz band has been freed from broadcasting and the 3.6 GHz band has been repurposed to ensure 390 MHz of contiguous spectrum. Belgium is not yet planning to assign rights of use in the 26 GHz band.

Other obstacles to 5G deployment, as reported in previous years, persist. Radiation limits are different in each of the three regions and, in particular in Brussels, do not allow economically viable 5G deployment. Changes to the radiation limits in Flanders and the Brussels region are currently planned in order to ease the introduction of 5G. The deadlines for granting environmental permits to deploy antennas (a regional responsibility) and the fees charged by municipalities for pylons, particularly in Brussels, which can go to up to EUR 10,000 per year per antenna, are also impediments to efficient deployment.

Nevertheless, Proximus launched commercial 5G mobile services in April 2020 using existing spectrum holdings and infrastructure in order to provide coverage in more than 30 municipalities across the country. In July 2020, BIPT granted temporary user rights in the 3.6-3.8 GHz band to the three mobile network operators and 2 other operators (Cegeka and Entropia), and in October 2020 distributed Entropia's spectrum to the other operators.

Moreover, BIPT granted rights of use of radio spectrum in the 2.6 GHz band (FDD) to Citymesh.

Main market & regulatory developments

While the fixed market is still dominated by the territorial duopolies of Proximus/Telenet on the one hand and Proximus/VOO on the other, Orange Belgium managed to increase its market share. The sale of VOO (scheduled for 2022) is still pending, with both Telenet and Orange among the potential buyers. Two of the mobile network operators, Proximus (No. 1) and Orange (No. 3), reached an agreement to share investments in towers and base stations and the costs of transmission, maintenance and repair covering all technologies, including the future roll-out of 5G (multi-operator radio access network (MORAN) sharing agreement). The agreement is pending approval by the competition authority.

The market is characterised by the high take-up of bundles (up 2.6% in a year), which are mainly triple-play and quadruple-play. Established operators increasingly include OTT TV apps in these bundles. In parallel, VOO and Orange started commercialising more affordable unlimited standalone broadband products. The COVID-19 pandemic has had a significant impact on fixed data volume use, which went up 40% on a typical pre-crisis working day. Major internet service

providers took the initiative to increase the volume of data in tariff plans with a data cap or to suspend data limits. Fixed voice consumption also increased. Netflix and YouTube temporarily lowered their picture quality, which helped reduce the strain on the fixed networks. At the same time, mobile broadband consumption also continued to grow significantly.

Belgian providers are also trying to compete in the content market. A streaming platform was launched in Flanders in September 2020, as a result of the cooperation between network operators and content providers.

On 4 February 2021, the Commission addressed a letter of formal notice to Belgium for failure to notify it of transposition measures for the European Electronic Communications Code. Subsequently, Belgium notified the Commission of partial transposition of several Articles.

In April 2020, the Conference of Regulators of the electronic communications sector (CRC) notified the Commission of a bottom-up long run incremental cost plus (LRIC+) cost model based on current replacement costs, economic depreciation and monthly rental prices for wholesale access to the cable networks. This draft decision followed up on the previous 2018 decision, which had set common interim prices as an interim solution until a cost model was developed. The new prices differ between the three networks. In its comments, the Commission pointed to a potential risk of overcompensation, which could disproportionally increase wholesale access prices, in particular for high-speed products. The CRC adopted the final decision on 26 May 2020.

In June 2020, BIPT revised the 'one-time fees' for access to the local loop and bitstream access on Proximus' xDSL network.

In March 2021, BIPT adopted new fibre to the home (FTTH) rental fees.

In its roadmap to implement the Connectivity Toolbox[14], Belgium announced plans to assess the need for permit exemptions, identify opportunities to digitalise permit application procedures, provide guidance to local entities that do not apply cost-based fees for pylons and antennas, improve the digital availability of information and strengthen synergies between different sources, and encourage access to the physical infrastructure of public bodies.

In 2020, there was a 10% decrease in the number of complaints involving mediation. In around 95% of the mediation complaints, an amicable settlement was reached. The complaints were mainly about invoicing, contractual matters, and failures and malfunctions. There has been a significant increase in the number of complaints about malicious calls via over-the-top (OTT) services.

Since the beginning of 2020, end users can check their data usage directly and automatically with their provider, while providers must send bill shock warnings when mobile users reach their monthly plan limits on voice, data or text usage or the monthly plan limits plus EUR 50.

On open internet access, there has been significant take-up of zero-rated products. During the reporting year, BIPT intervened in several cases where commercial agreements or practices of mobile network operators were found to have a negative impact on end user choice.

Belgium has still not implemented the centralised public safety answering point (PSAP) architecture which was scheduled to be implemented by the end of 2020.

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[14] https://digital-strategy.ec.europa.eu/en/policies/connectivity-toolbox

While Belgium made only marginal progress in the deployment of fixed VHCN networks in 2020, the situation is expected to improve significantly in the future thanks to the acceleration of private investments both in fibre and co-axial networks. 5G deployment remains a thorny issue, with solutions on spectrum assignment and deployment expected only in 2022. This will inevitably lead to significant delays in Belgium compared to most EU countries.


Connectivity in Belgium's Recovery and Resilience Plan

The plan includes some investments and key reforms related to connectivity. At federal level, Belgium is preparing a national plan for fixed and mobile broadband. It will include a mapping of connectivity, allowing the country to identify potential white areas and to boost investments in these areas. It will create a national broadband competence office and will provide more information to citizens on fibre and 5G, including by holding public meetings. At regional level, all regions will consider modifying their electromagnetic fields (EMF) emission norms, which are currently an obstacle to 5G rollout, especially in Wallonia and in the Brussels region. Consultations are already ongoing on this.

When it comes to investments, EUR 19.5 million will be dedicated to supporting the deployment of FTTH in the German-speaking community. Wallonia will also invest in connecting business parks and schools (EUR 70.3 million).

3 Integration of digital technology

3 Integration of digital technology	Belgium		EU
	rank	score	score
DESI 2021	**6**	**49.8**	**37.6**

Integration of digital technology
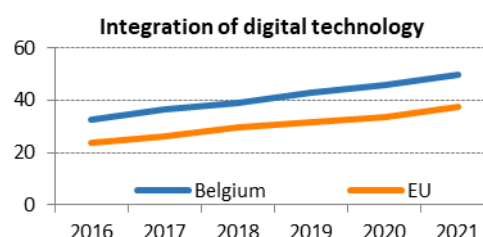
	Belgium			EU
	DESI 2019	**DESI 2020**	**DESI 2021**	**DESI 2021**
3a1 SMEs with at least a basic level of digital intensity	**NA**	**NA**	**75%**	**60%**
% SMEs			2020	2020
3b1 Electronic information sharing	**54%**	**53%**	**53%**	**36%**
% enterprises	2017	2019	2019	2019
3b2 Social media	**24%**	**34%**	**34%**	**23%**
% enterprises	2017	2019	2019	2019
3b3 Big data	**20%**	**20%**	**23%**	**14%**
% enterprises	2018	2018	2020	2020
3b4 Cloud	**31%**	**31%**	**43%**	**26%**
% enterprises	2018	2018	2020	2020
3b5 AI	**NA**	**NA**	**24%**	**25%**
% enterprises			2020	2020
3b6 ICT for environmental sustainability	**NA**	**NA**	**56%**	**66%**
% enterprises having medium/high intensity of green action through ICT			2021	2021
3b7 e-Invoices	**21%**	**21%**	**25%**	**32%**
% enterprises	2018	2018	2020	2020
3c1 SMEs selling online	**28%**	**29%**	**24%**	**17%**
% SMEs	2018	2019	2020	2020
3c2 e-Commerce turnover	**13%**	**14%**	**NA**	**12%**
% SME turnover	2018	2019	2020	2020
3c3 Selling online cross-border	**12%**	**15%**	**15%**	**8%**
% SMEs	2017	2019	2019	2019

Belgium ranks 6th among the 27 EU countries on the integration of digital technology, and is therefore well above the EU average. In 2020, 75% of Belgian SMEs had at least a basic level of digital intensity, which places Belgium 5th among the EU countries (the average being 60%). SMEs have also taken advantage of the opportunities presented by e-commerce, with 24% of them selling online, which is above the EU average (17%). On the integration of digital technologies, 43% of all Belgian enterprises use cloud services, placing Belgium 6th in the EU (EU average 26%), representing a significant increase over 2019 (31%), and 23% of them use Big Data solutions in their operations, which is also well above the EU average of 14%. 34% of enterprises use social media (against 23% on average in the EU). Belgium performs slightly below the EU average on the use of AI solutions by enterprises (24% versus 25%) and in the use of e-invoices (25% versus 32%)[15]. Furthermore, on the amount of green measures taken by enterprises using ICT, Belgium scores 56% below the EU average (66%).

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[15] Use of e-invoices has further increased since the Eurostat data collection in 2020, see
https://efacture.belgium.be/fr/news/la-vague-de-numerisation-la-suite-du-coronavirus-touche-aussi-la-facturation-electronique

Belgium is strongly committed to advancing new digital technologies and investing strategically in digital technologies through EU-coordinated initiatives and programmes. It is a signatory of joint declarations on 'Building the next generation cloud for business and public sector in Europe'[16] (15 October 2020) and on microelectronics[17] (7 December 2020), and has expressed interest in participating in the next IPCEI on microelectronics. Belgium also actively participates in the joint undertaking on Electronic Components and Systems for European Leadership (ECSEL) and its upcoming successor, the Key Digital Technologies (KDT) joint undertaking.

Belgian regions have launched several action plans with a link to digital transformation in recent years. Flanders' master plan Industry 4.0[18] aims to digitalise production in key industries, while Wallonia strengthened its 2019-2024 digital strategy in 2020 with an additional EUR 3.65 million. This extra funding will be focused in particular on measures for the industry of the future[19]. In June 2020, the Walloon government also decided to invest EUR 10 million in a new Tier-1 supercomputer to be hosted by Cenaero, a research centre in aeronautics.

Belgian regions continued to deploy their AI strategies and related activities in 2020. Flanders is committed to investing EUR 32 million each year in this field[20], of which EUR 15 million is dedicated to AI technology transfer and industrial applications. The Brussels region has created FARI, an 'AI institute for the common good' to provide advice and training on the development and deployment of AI products and services for the well-being of society. Wallonia has launched its second call for 'Start AI', aimed at helping 19 Walloon companies adopt AI through personalised coaching, and has launched 'Tremplin IA' to help five individual projects and five collective projects set up AI demonstrators.

Flanders is currently drafting a new strategy on digital entrepreneurship and innovation and continues to implement its cybersecurity action plan, with a budget of EUR 20 million per year. Wallonia has continued to support SMEs with vouchers for digital transformation and cybersecurity: between March 2017 and November 2020, EUR 6.3 million was co-funded by Wallonia and EUR 2.5 million by more than 500 participating companies. Wallonia has also launched a second phase of its digital innovation programme for 2021-2022 in order to map, structure and animate digital ecosystems as well as support them in their internationalisation. Furthermore, in 2020, Belgium shortlisted 12 candidates for the European Digital Innovation Hubs, with topics including for example Industry 4.0, AI or the construction sector.

Despite performing well and making considerable efforts, one major issue that companies still face in their digital transformation is the skills mismatches that currently prevent them from fully benefiting from the adoption of digital technologies.

Highlight 2020-2021: TRAIL (Wallonia)

TRAIL[21] (Trusted AI Labs) was officially launched in September 2020 in Wallonia. It aims to make available to enterprises and public administrations the expertise and tools developed in the field of AI by the five French-speaking universities and the four approved research centres active in AI, in partnership with the Digital National Agency and AI4Belgium. TRAIL focuses on three pillars: supporting the training and work of researchers in AI (TRAIL Institute), making available the results of this research (TRAIL Factory), and providing services to companies (TRAIL4Ventures).

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[16] https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=70089
[17] https://ec.europa.eu/newsroom/dae/redirection/document/73940
[18] Industry 4.0 in Flanders: https://www.industrie40vlaanderen.be/industry-40-flanders
[19] Renfort de la stratégie numérique wallonne: https://www.wallonie.be/fr/actualites/renfort-de-la-strategie-numerique-wallonne
[20] www.ewi-vlaanderen.be/ai
[21] Trusted AI Labs: https://trail.ac/

Integration of digital technology in Belgium's Recovery and Resilience Plan

Investments in the integration of digital technologies amount for EUR 427 million in Belgium's recovery and resilience plan.

A crucial measure is addressed at strengthening the country's cyber resilience (EUR 52.3 million). The measure is expected to lead to increased cyber risk awareness and management capabilities for SMEs and the self-employed, higher resilience against phishing, and greater trust among citizens and businesses in online services thanks to a registry of validated websites. This project will also strengthen the capacity of the Belgian government to handle cyberattacks on IT infrastructure and government service systems, on private businesses and citizens, as well as attribution capabilities of such cyberattacks.

The plan also includes a Flemish project to strengthen R&D, which will support companies taking part in the IPCEI on microelectronics (EUR 20 million).

4 Digital public services

4 Digital public services	Belgium		EU
	rank	score	score
DESI 2021	**17**	**65.8**	**68.1**

Digital public services
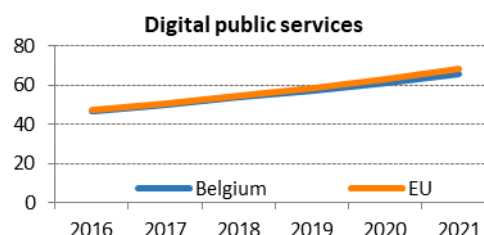
	Belgium			EU
	DESI 2019	DESI 2020	DESI 2021	DESI 2021
4a1 e-Government users	**63%**	**64%**	**66%**	**64%**
% internet users	2018	2019	2020	2020
4a2 Pre-filled forms	**NA**	**NA**	**70**	**63**
Score (0 to 100)			2020	2020
4a3 Digital public services for citizens	**NA**	**NA**	**71**	**75**
Score (0 to 100)			2020	2020
4a4 Digital public services for businesses	**NA**	**NA**	**85**	**84**
Score (0 to 100)			2020	2020
4a5 Open data	**NA**	**NA**	**62%**	**78%**
% maximum score			2020	2020

Belgium ranks 17th among the 27 EU countries on digital public services and is therefore below the EU average. It performs slightly above the EU average on e-government users (66% versus 64%) and on digital public services for businesses (scoring 85 points out of 100, against the EU average of 84). Belgium also performs well on pre-filled forms (70 points out of 100, versus 63 for the EU). Nevertheless, in the area of digital public services for citizens, Belgium scores lower compared with the EU average (71 against 75). On open data readiness, Belgium ranks 23rd in the Open data indicator with a score of 62% (EU average 78%).

After the new government was formed in October 2020, the State Secretary for Digitalisation outlined his main policies, which will be reflected in the updated federal digital strategy. The main objectives for the digital public services revolve around full implementation of the Single Digital Gateway, the creation of a single app to enable users to access all online public services and available data, greater use of the official digital mailbox already available to citizens and companies, and greater increase of e-ID, which is already available to all residents in Belgium.

Concerning specific regions, the Walloon government has set up a 'CIO team' (Chief Information Officer) to define an overall strategy for the digitalisation of the Walloon administration and produce an action plan, including the recruitment of a CIO, expected in 2021. In March 2020, it launched the project 'Digital Wallonia 4 Good' to give more visibility to initiatives that use digital technology to address health or society issues and that offer services that are complementary to the traditional channels or are alternatives. In addition, following the 2019 open data decree by Wallonia and the Wallonia-Brussels Federation, Wallonia launched the 'GeoChallenge' call in February 2020. It supports projects that aim to exploit public data in order to provide new services to citizens, companies and civil servants. The successful projects are still ongoing and after the success of this new call, a second edition might be launched in 2021.

The 'Flanders Radically Digital' investment programme, which focused on digitalising the Flemish government, was succeeded by a new investment programme 'Flanders Radically Digital 2', with a budget of EUR 30 million for 2021-2023. The Flemish digital platform for entrepreneurs (e-loketondernemers.be) was used to provide digital access to temporary financial support measures launched to help companies survive the COVID-19 crisis. New services are being added to the platform

to comply with the obligations of the Single Digital Gateway Regulation. Furthermore, the Brussels-Capital region has developed a new 2022 strategy for the Brussels Regional Informatics Centre, the ICT operator of public administrations.

The regions continued measures to support smart cities in 2020. The city of Bruges and the IMEC research centre signed a partnership in September 2020 to start developing an urban digital twin by the end of 2021. This digital 3D replica of the city will allow the city council to simulate the impact of policy measures, for example in the field of air quality and traffic flows. In Brussels, a call for projects in the field of smart cities was launched in early 2021 to support a sustainable recovery.

The Open Data federal taskforce has approved efforts to better centralise open data sets and to promote the use of the federal data portal[22], which will be revamped in 2021-2022. New data sets on social sciences[23] and transport[24] have been included, with others in the pipeline (for instance on land registries or on election results).

Some efforts have been made to ensure synergies between the different levels of government. For instance, a coordination and governance structure has been set up between the federal, regional and local governments to successfully deal with the organisational and technical challenges of obligations on information and transactions introduced by the Single Digital Gateway Regulation. In addition to this, the Inter-Community Committee for e-government ensures top-level coordination between the federal level and federated entities in the domain of e-government. However, the Belgian authorities need to continue their efforts– both at federal and regional level – in order to provide even more digital public services to citizens and to make more use of open data.

Digital public services in Belgium's Recovery and Resilience Plan

Investments in digital public services represent a total of EUR 796 million in Belgium's recovery and resilience plan. They include:

- Measures to digitalise services offered by the social security institutions, as well as interactions between users and the administration.

- A package of 12 investment measures to digitalise several federal public administrations (EUR 217.7 million), among which the justice system, but also the Federal Employment Agency, the Ministry of Foreign Affairs, the Federal Agency for the Safety of the Food Chain, asylum and immigration processes, as well as crisis management. There will also be a cross-cutting project to improve the use of public data and one project to implement the Single Digital Gateway.

- Measures on e-health (EUR 40 million) that will give healthcare providers new digital tools(for instance in the fields of video consultations and home hospitalisation) and will support the effective adoption of these tools. They also aim to increase the secure use of health data for public policies and for research and innovation.

- Several measures to digitalise regional and local public services in Wallonia, Brussels or Flanders. Some of these investments are targeted at specific institutions or procedures, for instance the digitalisation of services offered by the Office of Birth and Childhood of the Wallonia-Brussels Federation, or of urban and environmental permit procedures in the Brussels region and in Wallonia.

- Four investment projects in the field of energy (EUR 100 million of digital budget), in particular an offshore energy island to improve the integration of renewable energies in the grid.

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[22] Data.gov.be | The Belgian Open Data Initiative: https://data.gov.be/en
[23] https://www.sodha.be/
[24] https://transportdata.be/