

The State of Connectivity

IN EUROPE 2023





Introduction

Staying connected is a vital part of our lives. As technologies developed, our ways and means of connecting increased tenfold.

The changes to working styles brought about by the pandemic significantly increased the strain on business networks. The shift to a work-from-home/-anywhere model or adapting to online learning created additional strains on systems that had simply not been designed to support this way of working.

While these changes were abrupt, what emerged was a better understanding of the personal and consumer opportunities brought about through greater connectivity which encompassed everything from reading the latest news and communicating via video calls or virtual happy hours, to learning new skills or taking online classes.

As connectivity became more reliable and secure through the development of 5G and broadband, it's no longer just personal interactions that are being changed. It is now driving some of the most impactful technology themes. In education, trends such as remote learning and teaching, school bus Wi-Fi, and private cellular networks for campuses are ushering in new reliance on wireless broadband solutions. While in healthcare using IoT applications is revolutionising how and where care is delivered by wirelessly connecting clinics, hospitals, ambulances and screening vehicles, telemedicine, and beyond. Likewise, manufacturing is deploying IoT devices to get better insight into how machines operate, remotely manage factories, and improve overall efficiency. It also has a social and economic impact by driving applications related to: sustainability; smart cities and buildings: supply chain and logistics; and energy and utilities monitoring and consumption.

The bottom line is that better, more sophisticated connectivity has the potential to greatly enhance the economic performance of countries and create net positive improvements in almost every sector while vastly improving the quality of life for the wider population.

However, a lack of focus and investment in connectivity has been holding back crucial areas of countries' social, technological, and economic development.

While business leaders understand that better connectivity would positively impact everything, from improving their business operations and driving sustainability initiatives to democratising access to education and reducing the skills gap, many feel governments are not doing enough work to secure these benefits.

By James Bristow, senior vice president EMEA, Cradlepoint

Methodology

The following report has been developed based on the findings of Censuswide research of over 3,000 respondents across the UK, France, Germany, the Netherlands, Spain, and Italy.

Vertical sectors researched include: Building, Arts and Culture, Education, Finance, Healthcare, HR, IT and Telecoms, Legal, Manufacturing and Utilities, Retail, Catering and Leisure, Travel and Transport, Government, First Responders, Public Transportation, Automotive, Building Management, Supply Chain and Logistics, Maritime, and Agriculture.

Respondents were business owners, C-level executives, or senior managers at businesses with over 250 employees; all were technology decision-makers.

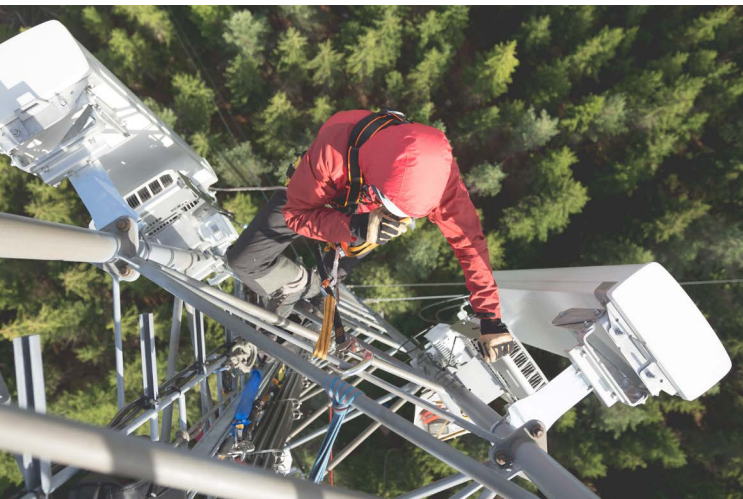
The state of connectivity in Europe

Connectivity investment in Europe has often lagged behind countries like the U.S.

On average, telecoms firms in the U.S. invest 50% more per capita in mobile networks than European operators. With the U.S. announcing a multi-billion-dollar bill to address the problem, this gap could widen.

Despite this, European countries have reacted slowly, with bills still going through the UK and EU parliaments.

Even as progress is made to improve connectivity, countries grapple with the immediate effect of a long-standing lack of investment in upgrading their outdated infrastructure.



ENTERPRISE DOWNTIME COSTS
 **€332,600** / HOUR

According to research by Statista, the estimated downtime costs of global enterprises are around €332,600 per hour. With almost 74% of respondents already reporting, at minimum, an average of up to 2 hours of connectivity downtime every week, the potential cost to EMEA economies is staggering.

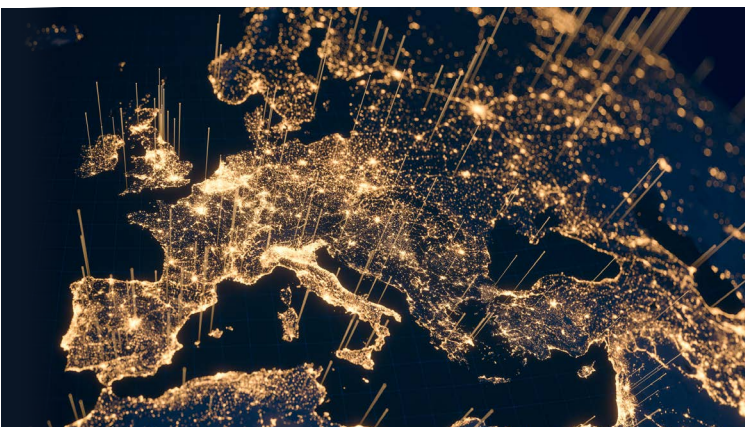
74% of respondents report
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To address this issue, Cradlepoint has surveyed the UK, the Netherlands, France, Germany, Italy, and Spain to assess their current connectivity infrastructure and identify who is doing well and who needs to catch up.

This report will also outline the benefits that improved connectivity can bring to society, and which industries stand to gain the most from upgrading their connectivity infrastructure.

Europe regional overview

There is widespread agreement that high-speed, reliable connectivity is critical to enabling Europe's digital ambitions to drive its "Digital Decade." The main goal of this initiative is for every European household to have access to high-speed internet coverage by 2025 and gigabit connectivity by 2030 — with the ultimate aim being to empower businesses and people in a human-centered, sustainable, and more prosperous digital future.



Part of the latest legislation introduced to complement this is the Gigabit Infrastructure Act Proposal to make Gigabit connectivity available to all citizens and businesses across the EU by 2030.

However, bureaucratic procedures and outdated rules are having severe negative consequences for telcos trying to secure permission to put the critical digital infrastructure in place that Europe desperately needs. The impact of these regulations is still felt with the ongoing 5G rollout.

This complexity is a huge problem for EMEA businesses, with survey respondents citing connectivity issues as having a direct impact on driving up operational costs (46%), resulting in a loss of potential business (33%) and loss of earnings (33%).

46% OF RESPONDENTS CITE CONNECTIVITY ISSUES AS DIRECTLY DRIVING UP OPERATIONAL COSTS

With such an evident need, it is curious why the European Union doesn't escalate and support connectivity as a key issue to economic advancement.

Regarding investment, European business leaders seem split when asked if they felt the government had invested enough money into connectivity initiatives, with 46.8% saying they had, while 46.6% saying they had not.

92% AGREE THAT IMPROVING CONNECTIVITY WOULD HAVE A POSITIVE MONETARY IMPACT ON THE ECONOMY

Investment aside, however, almost everyone (92%) agreed that improving connectivity would have a positive monetary impact on the economy, which directly correlated with the majority of respondents (90%) relying heavily on cellular connectivity for business. Additionally, 90% of respondents agreed that better connectivity would make businesses more resilient to future economic or political shocks or global pandemic scenarios.

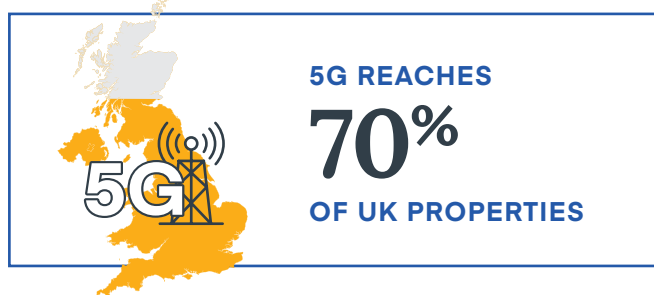
While work is still to be done, the EU has taken action in various areas to improve connectivity for end users, such as ending roaming charges and allowing mobile subscription use on travel through the EU at no extra cost. The focus now needs to be on creating a Europe with aligned rules for connectivity services, providing users with a seamless experience no matter where they are in the EU. Some steps have already been taken, such as introducing the European electronic communications code, which sets clear rules applicable across all of Europe; supporting wireless networks such as 5G through the radio spectrum policy programme; and leading global discussions on Internet development and governance. This now needs to be expanded to the enterprise.



UK

The UK is forging ahead with its vision and implementation of a connected Britain.

According to the latest Ofcom investigation of connectivity across the country, full-fibre broadband is now available to more than 12 million homes, with 5G reaching 70% of properties. In addition to this, the number of households without access to decent broadband has fallen by a third.



Despite all of this effort, however, when it came to connectivity downtime in businesses, nearly 72% of respondents said they still experienced a minimum of 1-2 hours per week, leading the majority of respondents (58%) not feeling that the UK government has invested enough in connectivity projects. Additionally, only 41% feel the UK government's current infrastructure bill is fit for purpose.



Furthermore, some critics have voiced their concerns at the speed of the rollout, saying the UK's ability to roll out superfast broadband across the country is being slowed by the "tortuous" process of recruiting workers from the EU following Brexit.

In addition, Ofcom warned of the digital divide within the UK and found that nearly 80,000 homes and businesses do not have access to "decent" broadband — defined by the UK government as offering download speeds of 10 Mbps and upload speeds of 1 Mbps.

There is an increased perception of a digital divide between urban and rural areas, with the majority (79%) believing rural areas are being left behind when it comes to connectivity — leading them to focus entrepreneurial efforts to set up businesses in better-connected cities (84%).

This digital divide also has implications for students in rural areas, where they do not have access to the same levels of connectivity and online learning opportunities as those in urban areas. According to respondents, 82% agree that poor connectivity is holding rural students back in their education. This correlates to a recent report from Rural England's analysis of official statistics which showed that 42% of respondents across the UK believed youths between 16 and 18 years old in rural communities had no choice of schools or colleges. This was down to students being unable to cover the cost of travelling to educational institutions. Meanwhile, students based in London had, on average, a choice of 12 post-GCSE institutions. By not offering more ways of connecting students to further education, organisations in the UK are missing out on talent.

Shortly after our research was conducted, the UK government announced its Wireless Infrastructure Strategy: a new policy framework to drive deployment and adoption of 5G and advanced wireless connectivity, and the government's 6G strategy for the UK. Highlights include: a landmark ambition for all populated areas of the UK to be covered by 'standalone' 5G by 2030; £8m funding boost for connecting the remotest parts of the UK with satellite broadband; £40m of funding for '5G Innovation Regions' across the UK; and a 6G Vision for the UK, backed by £100m to create a long-term Telecoms Mission.



However, speaking on the announcement, James Bristow, SVP EMEA, Cradlepoint commented, "It is reassuring that the UK government has finally released their strategy for improving wireless infrastructure nationwide. Providing clarity and, crucially, funding for 5G and 4G planning is always a welcomed step. However, the proof will be in the execution, and these guidelines must be followed up with strong action to ensure the goals are met. While this plan is a step in the right direction, the deadline of 2030 is still several years away, and the objectives leave lots of room for improvement. For example, only getting 5G to populated areas means rural areas will continue to be left behind, often the places that need the most attention. Meaning existing digital and productivity gaps will persist in the future as well. If the government is truly determined to establish the UK as a leading nation in the world of wireless infrastructure, and unlock the benefits this can bring to businesses, much more support is needed."

Netherlands

According to DHL's Global Connectedness Index, the Netherlands is one of the world's most connected countries. It is a leader in digital infrastructure, which is why it's known as the digital gateway to Europe and the world.

According to research by the Organisation for Economic Co-operation and Development (OECD), the Netherlands is ranked with Switzerland as having the most broadband subscriptions per 100 inhabitants, with no bandwidth caps. It has the most homes in Europe with connection speeds of 50 Mbps and higher.

THE NETHERLANDS HAS THE MOST HOMES IN EUROPE WITH CONNECTION SPEEDS OF

50+ MBPS



As a result of its progress, the current government focus areas on the digital front centre in five key areas. These are to accelerate the digitalisation of SMEs; stimulate digital innovation and skills; create the right conditions for properly working digital markets and services; maintain and reinforce digital infrastructure — ensuring 100% access to broadband, including in rural areas and the auction of 5G bands in 2023; and cyber security.

However, while the Netherlands is further along in its connectivity journey than its European partners, 69% of respondents still felt that the Dutch government had not invested enough into its infrastructure. Furthermore, 72% of respondents said they experienced a minimum of 2 hours of weekly downtime over the last 12 months. 44% say that connectivity issues had led to higher operational costs for their business, 40% cite it as a main reason for loss of potential business and 39% for causing a loss of earnings.

66%

OF RESPONDENTS STATED CELLULAR CONNECTIVITY WAS A MORE SUSTAINABLE OPTION OVER FIBRE IN THE LONG TERM

When it came to closing the rich and poor divide, 68% also believed that better connectivity would play a role; 80% agreed poor connectivity is holding students back from developing the skills they need to succeed in a modern economy. Further, 66% said they felt rural areas were being left behind altogether from a connectivity standpoint. Finally, while the rollout of fibre broadband is impressive, 66% of respondents stated cellular connectivity was a more sustainable option over fibre in the long term.



France

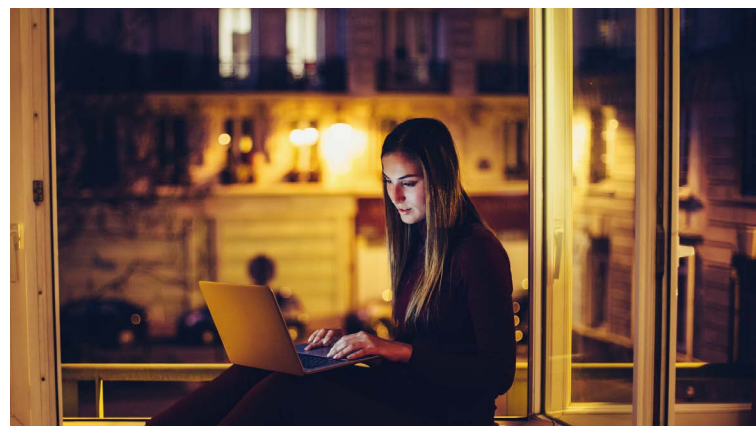
In the summer of 2020, French President Emmanuel Macron unveiled France Relance — the French recovery plan designed to offset the effects of the Covid-19 crisis and launch new projects in a number of strategic areas: competitiveness, ecology, and cohesion, to build the “France of tomorrow.”

Part of this initiative tackled France’s ambitious objective to become Europe’s first major decarbonised economy by achieving carbon neutrality by 2050.

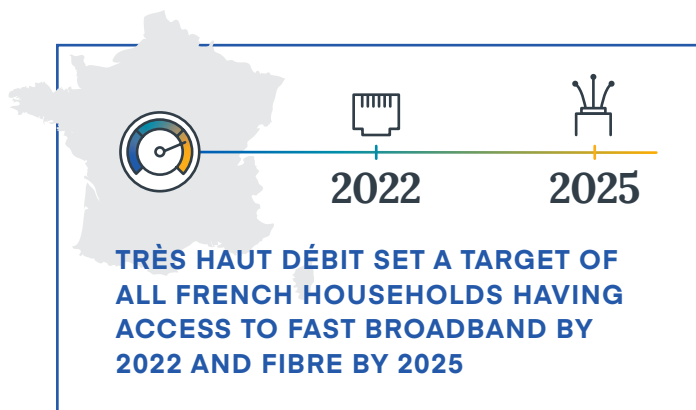
To reduce the impact of France’s economic activity on the environment, the plan for recovery aims to significantly speed up the ecological transition through the provision of €54 billion. Some of these funds would be dedicated to helping France accelerate its industrial 5G program, which had lagged due to the pandemic, and invest in innovative technologies to aid in this transition.



As part of the approach, the project identified key obstacles it needed to overcome, including access to suitable radio frequencies; lack of suitable equipment and services; lack of accessibility; health, environmental, and societal concerns; and the lack of visibility and maturity of the French and European industrial 5G ecosystems.



In addition to France Relance, France has a national broadband programme, Très Haut Débit — it translates to “very high-speed internet access” — which set a target of fast broadband access for all households by the end of 2022 and fibre for all by 2025.



Based on the survey, these initiatives are in tune with public sentiment, as 93% of respondents agree that better connectivity will make businesses more resilient during economic, political, or pandemic-related uncertainty. However, when asked if the French government had invested enough in France’s digital infrastructure, despite the high price tag of France Relance, just over half (53%) responded that it had, with 42% saying that it could have invested more. Overall, 80% of all respondents agreed that investment would have a positive monetary impact on the economy.

93%

OF RESPONDENTS AGREE THAT BETTER CONNECTIVITY MAKES BUSINESSES MORE RESILIENT DURING UNCERTAINTY

Germany

Germany stands out as a connectivity anomaly. Although it has one of the strongest economies in Europe, it is also renowned for slow internet speeds and poor connectivity, with 30% of businesses facing up to 3 hours a week of downtime. The impact of this is hitting companies' bottom line, with 26% of companies reporting they have lost potential business due to poor connectivity and 38% stating it was a cause for loss of earnings for the company.

ONLY 2% OF NETWORK CONNECTIONS IN GERMANY ACTUALLY GO THROUGH FIBRE OPTICS

Only last year, the country's Federal Ministry for Digital Affairs and Transport announced that its Gigabit Strategy 2030 received approval from the Federal Cabinet for €36.1 billion. To date, only about a quarter of German households can access fibre. Still, only about 2% of network connections in Germany actually go through fibre optics. It is no wonder that 90% believe improving connectivity will make businesses more resilient to future economic and social shocks.

GERMANY IS RANKED

25th WORLDWIDE

FOR AVERAGE INTERNET SPEED, BELOW 13 OTHER EU COUNTRIES



Looking at the numbers, Germany is 25th worldwide for average internet speed (2017), below 13 other EU countries, and for the average highest internet speed, it's only in 45th place, again behind 17 EU countries. Regarding fibre optics, only four countries rank lower, and its mobile 4G network is also one of the worst in Europe, both in terms of average speed and availability. The impact on business is shown by the fact 51% had faced higher operational costs due to connectivity issues in the last 12 months.



However, significantly more funds will be budgeted for the nationwide broadband expansion in the coming year. The Federal Ministry for Digital Affairs and Transport is due to increase it to €732 million, which will also support the rollout of 5G. Furthermore, an additional one billion euros will be made available from the "Digital Infrastructure" special fund to support the expansion of gigabit networks over the coming financial years. While this will help boost the economy, with a quarter of businesses believing it could add up to 20 million euros to the economy, it will also help boost sustainability initiatives, as 62% report poor connectivity has held back projects within companies.

It's clear from this that there is a concerted effort in Germany to start turning the tanker and improving connectivity infrastructure, but there is still some way to go. When respondents were asked if they felt the government had invested enough into Germany's connectivity infrastructure, 45% felt it had, while the majority (49%) thought it wasn't enough.

87%

OF RESPONDENTS LEANED HEAVILY ON CELLULAR CONNECTIVITY TO SUPPORT THEIR BUSINESS

Unsurprisingly, 87% of respondents leaned heavily on cellular connectivity to support their business.

Italy

Like many of its European partners, Italy is also putting plans in place to further the country's digitisation under the National Plan for Recovery and Resilience (NPRR) umbrella, encompassing digital connectivity and 5G.

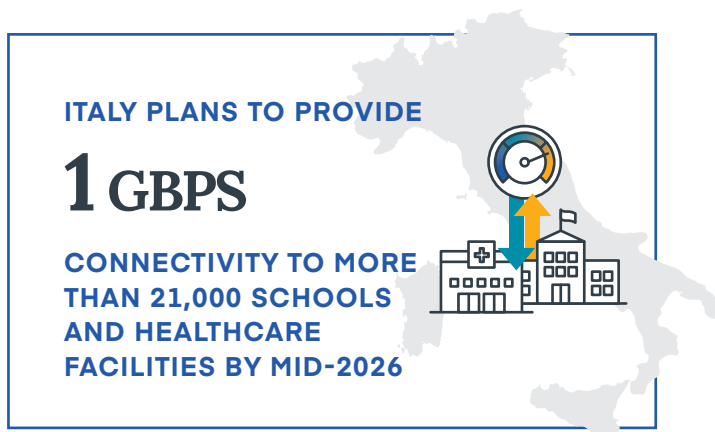
The reforms and investments in the plan are aimed at helping Italy become more sustainable, resilient, and better prepared for the challenges and opportunities of the green and digital transitions it needs to undergo. They will be supported by €68.9 billion in grants and €122.6 billion in loans; 37.5% of the plan will support climate objectives, and 25.1% of the plan will support the digital transition.



Digital challenges for Italy include improving the digital skills of the population and workforce, increasing the digitalisation of businesses and fostering the offer of digital public services, and accelerating the implementation of key e-government projects.

Enhanced connectivity is one of the core tenets at the centre of the digital transition. It will be a big focus for the program, including the widespread deployment of very high-capacity networks such as 5G and fibre.

The investments in connectivity in the plan are expected to foster gigabit connectivity across the country and bring 5G connectivity to populated areas along 2,600 km of 5G corridors and 10,000 km of extra-urban roads. They also aim to provide school buildings and healthcare facilities with gigabit connectivity. By mid-2026, it is envisaged that at least an additional 9,000 schools and 12,279 healthcare facilities will be provided with 1 Gbps connectivity.



AGREE THAT POOR CONNECTIVITY HOLDS STUDENTS BACK FROM DEVELOPING THE SKILLS THEY NEED FOR A MODERN ECONOMY

Italy's digital divide currently means that almost one-third of students don't have access to online lessons. Of those surveyed, 83% agreed that poor connectivity is holding students back from developing the skills they need to succeed in a modern economy. A further 45% also said that improving free connectivity would help eliminate the digital divide between poorer and wealthier students.

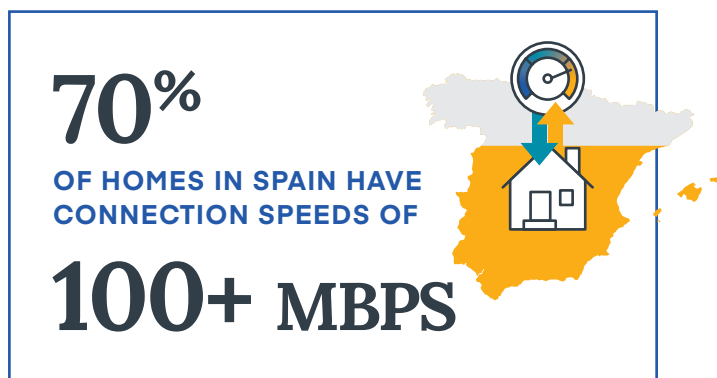
Not only was education a key factor, but 88% also agreed that improving connectivity would have a direct and positive monetary impact on the economy. Of those surveyed, 40% said that connectivity issues had resulted in higher operational costs for their business, 33% cited loss of potential business, and another 31% said they had experienced a loss of earnings due to poor connectivity.



When asked about what key benefits they expected for Italian private enterprises and the public sector from the NPRR's investments in connectivity, the majority (57%) said enabling emerging technologies such as IoT and robotics to contribute to the country's competitiveness. 41% said meeting the need for mobile connectivity throughout the country and offering innovative and high-performance mobile services (40%). When asked if the Italian government had invested enough in the country's connectivity projects, only 42% agreed it had, while the majority (47%) said it had not.

Spain

Spain is already considered a leader in connectivity. According to the Digital Economy and Society Index, which measures the degree to which the societies and economies of world powers have been digitalised, Spain ranks third in Europe in terms of data connectivity.



70% of homes in Spain already have a 100 Mbps Internet connection or better, which puts the country in first place compared to its European counterparts, and 96% of Spanish households have a permanent network connection, making Spain the European leader of the pack.



While Spain is already in a strong position from a connectivity point of view, it is forging ahead with its digital evolution through the Spain Digital 2025 Agenda. The Agenda supports EU connectivity objectives and aims to extend ultrafast network coverage to the entire population and prepare for 5G by 2025.

Digital Spain 2025 includes a set of measures, reforms, and investments articulated in a 10-point plan aligned with the digital policies set by the European Commission. The Agenda's actions aim to promote more sustainable and inclusive growth, ensure digital connectivity for 100% of the population, and promote the disappearance of the digital divide between rural and urban areas.

Also, a key focus of the Agenda is to strengthen the digital skills of workers and citizens. It will ensure they are ready to take advantage of the opportunities the digital economy presents. It will also help accelerate the digitisation of companies by providing them with a skilled talent pool.

However, despite its leadership in the connectivity space, according to the survey, only 34% of respondents feel the Spanish government has invested enough in connectivity projects, highlighting a disconnect among their constituents. In comparison, 59% felt that the government had not invested enough.



Connectivity is high on the Agenda in terms of importance, with 93% agreeing that improved connectivity will have a positive monetary impact on the economy. Also interesting is that despite the high rollout of fibre, respondents rely heavily on cellular networks for business (94%). Furthermore, 90% of respondents also agreed that better connectivity would make their business more resilient to future economic, political, or pandemic-related shocks.



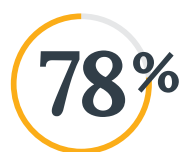
Additionally, 82% of respondents said better connectivity would go a long way to eliminate the digital divide between rich and poor students. The majority (81%) agreed that poor connectivity is holding back students from developing the skills they need to succeed in a modern economy.

Key vertical themes

The economic impact on businesses

At a time when governments are trying to encourage growth within economies, many business leaders feel not enough is being done to support them. According to the survey findings, a third of businesses (33%) have lost work due to poor connectivity, despite impressive rollouts of fibre networks. Furthermore, nearly half (46%) of all respondents had higher operational costs due to poor connectivity. As a result, businesses continue to face connectivity issues impacting their bottom line and the economy's overall performance.

While 90% of business leaders believe better connectivity will make them more resilient to economic shocks, nearly half (46%) feel their government has not invested enough in their connectivity infrastructure. A quarter of respondents believe improving connectivity will add £10-£20 million to the economy. Furthermore, the impact also unfairly affects rural areas, with three-quarters (74%) feeling like these areas are left behind due to poor connectivity.



OF BUSINESSES PLAN TO USE IOT DEVICES TO MAKE BUILDINGS MORE ENERGY EFFICIENT

Technology investments will play a crucial role in decoupling energy consumption from floor area growth — and connectivity and smart buildings with installations and systems that maximise overall efficiency and sustainability — will play a key part. While over three-quarters (78%) of businesses plan to use IoT devices to make offices more efficient, sustainability efforts remain strained due to poor connectivity.

The current energy crisis in Europe is compounding this issue, making it felt even more keenly. As a result of the energy crisis, more than 85% of European respondents agree that there is an increased need for smart buildings.



OF RESPONDENTS AGREE THAT THERE IS AN INCREASED NEED FOR SMART BUILDINGS

Smart buildings, sustainability, and the energy crisis

Buildings are responsible for about 40% of global energy usage; up to half of this is wasted. In Europe, they account for roughly 40% of energy consumption and are responsible for 36% of greenhouse gas emissions, representing a considerable portion of the continent's energy use. The majority (75%) are also highly energy inefficient.

With construction continuing apace and projections estimating building floor space is set to double by 2060, this represents a huge energy and sustainability issue.

Most sustainability projects at businesses (64%) have been held back due to poor connectivity. As a result, poor connectivity continues to prevent businesses from progressing in their sustainability initiatives, with a quarter (25%) of businesses having faced more than 2 hours of downtime a week.

The digital and educational divide

The gap between demographics with access to communications and information technology and those without continues to grow. This digital divide concept is not only concerned with those with insufficient access to technology but also those who lack the general knowledge of how to use it.



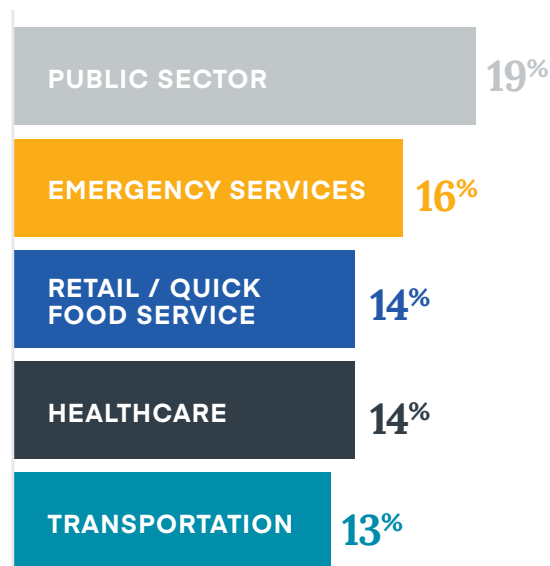
Despite the global shift towards digital and online learning, there remains a significant impact on the access to and delivery of education. According to our research, over 81% of respondents agree that poor connectivity is holding back students from developing the skills they need to succeed in a modern economy. Furthermore, more than 42% believe that improving free connectivity will eliminate the digital divide between poorer and richer students. Yet, 53% of UK respondents feel the government is not doing enough to support poorer students' access to digital learning resources. Likewise, 83% of respondents in Italy felt that poor connectivity is holding back students from developing the skills they need to succeed in a modern economy. And, 43% of decision makers in Spain believe improving free connectivity would help eliminate the divide between richer and poorer students. The digital divide affects education in several ways, impacting performance levels and stifling the ability to consume content and learn at the same rate as those with access to technology, thus inhibiting their long-term success.

Despite education systems needing to adapt during covid, more clearly needs to be done to support the next generation of talent. The first step to solving the skills gap starts with fixing connectivity. If not addressed, the disparity between the number of people with access to the digital resources needed to develop the skills required to succeed in the emerging digital landscape will only continue to grow. And those lacking the required knowledge and experience will be disadvantaged when competing for future jobs.

Which industry is going to lead the way with connectivity?

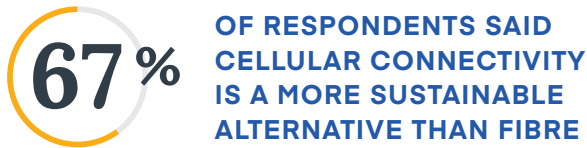
According to our research, respondents believe that the sectors that will benefit the most from improved connectivity include the public sector (19%), emergency services (16%), retail/quick food servicing (14%), healthcare (14%), and transportation (13%). However, the reality is that there is no limit to the industries in which enhanced connectivity can make a difference. The possibilities are endless, from driving supply chain efficiencies to empowering rural businesses and communities.

Which industry will benefit most from improved connectivity?



While it's clear that European countries are re-invigorating investment efforts in their digital infrastructures, there is still a lot of ground to make up and a long way to go. Timelines targeting 2030 sound immediate, but the reality is that seven years is a long time to wait, during which the development of digital skills will be hampered, and digital poverty will continue to grow. Action needs to be taken to bridge this widening gap now.

However, while laying fibre infrastructure is critical to extending EMEAs digital backbone and strengthening the digital economy — the rollout of 5G cellular capabilities provides a more sustainable and cost-effective way to extend connectivity to the masses faster.



According to the survey, 67% of respondents said cellular connectivity is a more sustainable alternative than fibre. Coupled with 5G capabilities, cellular isn't just more sustainable. Still, for the first time, it is also the more effective option, making cellular a feasible alternative to the historically time-, labour- and cost-intensive process of laying fibre cable.

Just as some countries are further along than their European partners, certain verticals have made greater headway. Although the government-sponsored infrastructure investment throughout EMEA is essential, businesses need to take it upon themselves to make the necessary investments that will allow them to capitalise on this digital infrastructure overhaul being witnessed. Historically this was defined by their ability to access fibre. However, new 5G technologies and cellular capabilities mean that businesses have more control over their connected futures for the first time ever.



Connectivity has been identified as a mission-critical differentiator at the highest levels of government and business, providing adopters with greater flexibility and resilience to deal with future shocks. It is also vital to tackling key issues ranging from increasing operational efficiency to environmental sustainability and energy issues. The governments, organisations, and businesses who truly understand this, and invest in a range of connectivity solutions, will be better positioned to succeed in the increasingly connected, competitive, and innovative emerging markets.

Learn more at [cradlepoint.com](https://www.cradlepoint.com)