2.12. Responsibility in our products and services

KEY POINTS

- Telefónica has maintained an optimal level of network availability and quality against the backdrop of a 20-30% year-on-year increase in traffic.
- All our base stations comply with the limits on radio-electric emissions exposure established by the International Commission on Non-Ionizing Radiation Protection (ICNIRP).
- All the products we market comply with international standards and local legislation in every market where we operate.

2.12.1. Vision

At Telefónica, we have an enormous capacity to influence and bring added value to socio-economic development through the products and services we offer. Our technology solutions and communication networks can have a major positive impact on both society (see chapter 2.10. Digital inclusion) and on the protection of our environment (see chapter 2.4. Green digitalisation).

For further information, see chapter 2.10. Digital inclusion.

For further information, see chapter 2.4. Green digitalisation.

However, this contribution would not be complete if we did not ensure that our services **comply with all health and safety regulations and standards** while also bringing added value. This enables our customers to use solutions that go the extra mile and allows them to engage with digital services securely and with confidence.

We can highlight our lines of action in the following areas:

- **Network quality and availability:** our responsibility is to guarantee maximum access speed and information transmission capacity 24 hours a day from any device and location and in any situation.
- **Electromagnetic fields:** all our base stations comply with the restrictions on exposure to radio-electric emissions established by the International Commission on Non-Ionizing Radiation Protection (ICNIRP), a non-profit organisation acting as an official partner of the World Health Organization (WHO) and the International Labour Organization (ILO). We therefore guarantee entirely safe levels of exposure.
- **Safety in our products:** we make painstaking efforts to ensure the safety, proper functioning, accessibility and traceability of our products and services.

2.12.2. Risks and opportunities

Technology has proven to be a highly valuable tool for tackling major social and environmental problems that need to be managed and minimised.

At Telefónica, we are fully aware and work hard in this direction by dedicating management time and resources to ensuring responsible use of technology (see chapter 2.10. Digital inclusion).

For further information, see chapter 2.10. Digital inclusion.

Similarly, technology creates opportunities and innovative digital solutions can be developed on a quality network (e.g. cloud services, the Internet of Things, big data, etc.),

which also contribute to achieving the Sustainable Development Goals defined by the United Nations.

These solutions are not only used in business but also for social purposes, such as better understanding and reduction of the effects of climate change, natural disasters and pandemics, as well as analysis of migration problems.

Guaranteeing network availability and quality in the most remote areas (unconnected or with a poor connection) can also help to attract new customers and contributes to the social and economic development of these areas.

Furthermore, certain risks can be tied to poor connectivity. A telecommunications company that cannot guarantee network availability and quality will not survive in the market.

It is a risk not only for Telefónica, but also for society in general. Quality connectivity is one of the key driving forces for progress. In other words, without network availability/quality, people have no access to information, educational content, job opportunities or business development.

In terms of **electromagnetic fields,** there is a risk that fake news about 5G might potentially re-emerge via online media. This poses a disinformation risk regarding perception among the population on the safety of mobile telephony networks. Experience in this regard has taught us to more easily detect and anticipate fake news and to work together on providing a unanimous response to associations, institutions and industry from the sector.

We view the European Union's welcome of the publication of exposure limits from ICNIRP as a clear opportunity. This will foster greater regulatory alignment in terms of the roll-out of 5G and the radio-frequency exposure limits recommended by the scientific community.

We must also emphasise the value to the Company of offering reliable services that guarantee the health and safety of our customers and provide the highest standards of quality.

For Telefónica, the experience that a customer has when using our services via our devices is critical. We must therefore guarantee that our devices are safe for their health and reliable, not containing any noxious materials or dangerous substances. We even go a step further, by **making sure they comply with international standards and local regulations, and ensuring that the materials used throughout the supply chain do not come from countries affected by a context of conflict.**

The risk we face in terms of **safety in our products** is that a supplier fails to comply with our safety and quality standards. To minimise that risk, we certify our devices and optimise their response in our markets. We manage their life cycle and conduct inspections and quality controls on our products. Furthermore, we directly audit the facilities that produce the devices we develop ourselves. For all other devices, we guarantee quality during the sales activity at our stores, prioritising the most relevant features or those of most interest to customers, such as the performance or connectivity they offer and showing how sustainable they are via the Eco Rating awarded to each one.

Operators stand at the end of the supply chain, very close to the end user, and this is a huge opportunity. At Telefónica, we harness that opportunity by placing a focus on our customers and putting them at the centre of everything we do, engaging with them directly through our devices and attracting them with innovative next-gen services, using the latest technology and capabilities offered to us by the network.

2.12.3. Network quality and availability

It is imperative for all of us at Telefónica to comply with national and international regulations to guarantee the quality of our products.

In this context, as a telecommunications and technology company, we have an **obligation to ensure the highest quality** in both our communications networks and in the new digital products and services we develop, market and deliver to our customers.

Our responsibility is to guarantee maximum access speed and information transmission capacity 24 hours per day from any device and location and in any situation.

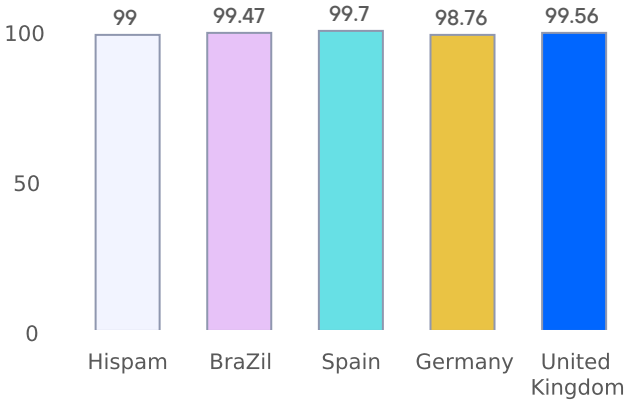
The International Telecommunication Union (ITU) defines quality-of-service as the collective effect of performance which determines the degree of satisfaction of a user of the service. Our commitment to customers is to guarantee an optimal uninterrupted service and to be constantly transparent about our network status at all times, even during the most adverse situations.

To guarantee quality and the service we offer, we are constantly **evaluating and monitoring fixed and mobile communications.** This allows us to guarantee the availability of our service and respond immediately to any incidents that may arise at any time.

Our commitment to network availability and quality was strengthened more than ever as a result of the global crisis triggered by COVID-19. The traffic our infrastructure had to support during the worst moments of the pandemic **rose by over 50%** when compared with the traffic recorded on the same dates in previous years.

Education, many working activities, healthcare and commercial activities, etc., were able to take place online via our networks, demonstrating that our commitment over many years to achieving one of the most efficient and developed broadband infrastructures in the world was worth the effort.

Network availability in 2022*

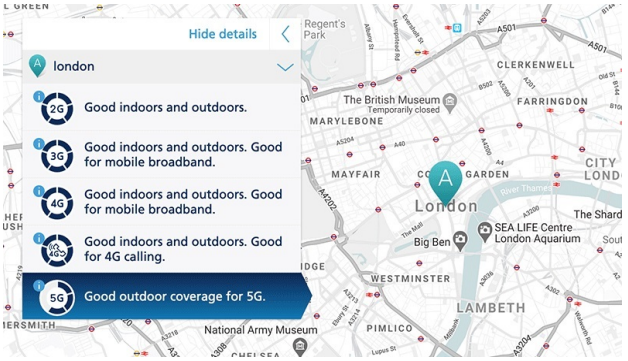


*Fixed and mobile network in Brazil and Spain. Mobile network in Germany and UK

Connectivity is the basis of our business, which is why we invest heavily in high-quality resilient infrastructures to ensure that more households every day have the opportunity to access the digital world.

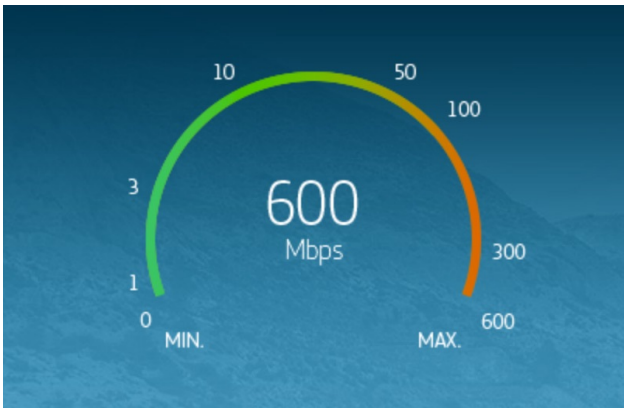
We are transparent and regularly publish information on the quality of our service. By doing so, we enable online checks of **mobile network status in real time** via our Internet portals.

Example of a real-time VMED O2 UK network status check



We also supply details about **upload and download speeds** of the Internet connection from any location (e.g. the Movistar Speed Test). This provides users with access to quality information and enables them to enjoy greater efficiency in the use of connectivity, as well as the swift identification of potential incidents.

Movistar Speed Test



By relating the various functions of an electronic communications service – contracting, maintenance, connection, billing – to the various criteria that users may apply when assessing their service quality (**speed, accuracy, availability, reliability,** etc.), a set of observable and measurable parameters can be defined to provide an objective and comparable representation of service quality to the user.

Of course, we are aware that **natural phenomena,** external factors, power cuts, etc., can cause occasional and localised service interruptions. To minimise the duration of any incident as far as possible, we work continuously on building greater resilience.

Progress

In accordance with the international standard on telecommunication services from the SASB (Sustainability Accounting Standards Board), we assess a series of indicators relating to the quality and transparency of our services. Due to the particular features of each technology, these calculations can only be performed on each technology separately and the results depend on the geography of the regions where the service is operating.

We continued to report on all services (voice, data and television) in 2022, for both the fixed and mobile networks of Telefónica Spain.

Analysis of the average interruption frequency and duration indicators (TC-TL-550a.1) supports the conclusion that **service availability was above 99.9% -** despite a significant year-on-year traffic increase of more than 20-30%.

The **critical situations** that arose during the course of last year and which impacted our service are listed below:

Critical situations by country

GERMANY (LOCAL) June 2022	
Crisis	**Interruption to the mobile data, Internet connection and roaming service throughout the country**
Type of crisis	Mobile data service failure.
Impact	Users were unable to access 4G and 5G services for 35 minutes. As a result, 2G services became overloaded, preventing correct provision of service. Fixed network customers were also unable to make calls.
Actions	Service was re-established following an increase in Home Subscriber Server (HSS) capacity.

GERMANY (LOCAL) November 2022	
Crisis	**Interruption to the mobile data service throughout the country**
Type of crisis	System overload following an IP routing power cut caused by an incorrect power cabling.
Impact	Users were unable to make calls via the 4G network, VoWiFi or the fixed network. The 2G services became overloaded as a result, preventing correct provision of service. This incident lasted for three hours on the fixed network and six hours on the mobile network.
Actions	A software-based overload control mechanism was implemented in the mobile telephony switchboards.

BRAZIL (LOCAL) July 2022	
Crisis	**Interruption to the mobile data service in the state or Roraima**
Type of crisis	Mobile data service failure.
Impact	Complete outage of 2G, 3G and 4G data traffic for three hours and five minutes in the state of Roraima due to the simultaneous lack of availability of the two networks that serve the state.
Actions	Service was re-established following recovery of the fibre optic cable on one of the networks (section between Boa Vista and Manaus).

CHILE (LOCAL) March 2022	
Crisis	**Interruption to the mobile data service throughout the country**
Type of crisis	Mobile data service failure.
Impact	Interruption to the 3G mobile service due to a network overload, causing circuit blockages that affected mobile switching centres (MSCs).
Actions	A software-based overload control mechanism was implemented in the mobile telephony switchboards.

SPAIN (LOCAL) February 2022	
Crisis	**Call sending and receiving problems for corporate customers throughout the country**
Type of crisis	Software failure.
Impact	Poor quality and timings when sending and receiving calls for corporate customers for three hours.
Actions	Service was recovered after restarting one of the balancers. The opportunity was taken to clean connections by removing TNI traffic to avoid saturation.

In addition to these network service incidents, due to the seriousness of the circumstances, situations have arisen that are managed directly by Telefónica's global crisis committee.

For further information, see chapter 2.19. Privacy and security

SASB indicators

		2022
TC-TL-520a.2 (*)	FIXED LINE NETWORK: average actual sustained download speed in megabits per second (Mbps) of owned and commercially associated content.	-FTTH600: 615,925Mbps -FTTH1000: 911,302Mbps -There is no differential assessment between associated and non-associated content
	MOBILE NETWORK: average actual sustained download speed in megabits per second (Mbps) of owned and commercially associated content.	-4G: 45,93Mbps -There is no differential assessment between associated and non-associated content
	FIXED LINE NETWORK: average actual sustained download speed in megabits per second (Mbps) of non-associated content.	- FTTH 600: 615,925 Mbps - FTTH 1000: 911,302 Mbps -There is no differential assessment between associated and non-associated content
	MOBILE NETWORK: average actual sustained download speed in megabits per second (Mbps) of non-partnered content.	-4G: 45,93Mbps -There is no differential assessment between associated and non-associated content
TC-TL-550a.1[1]	FIXED LINE NETWORK: system average interruption frequency (interruptions per customer).	1.90
	MOBILE NETWORK: system average interruption frequency (interruptions per customer).	25.25
	FIXED LINE NETWORK: customer average interruption duration (hours per customer).	3.38
	MOBILE NETWORK: customer average interruption duration (hours per customer).	0.03

For more information, see chapter 2.21. Appendix: SASB compliance table

2.12.4. Electromagnetic fields

In all countries where we operate, we comply with the **exposure limits** for electromagnetic emissions established by independent scientific organisations, such as the International Commission on Non-Ionizing Radiation Protection (ICNIRP), based on scientific evidence.

Compliance with these recently revised and updated standards ensures that we deploy a secure network, including 5G, as these guidelines are endorsed by the World Health Organization (WHO) and the International Telecommunication Union (UIT).

We monitor compliance with these limits in all operations and verify that all terminals and equipment offering our service meet international safety standards including SAR (Specific Absorption Rate) values.

We also have a Manual of Good Practices that acts as a guide for our teams and lists all initiatives taken within the Group in the different countries in which we operate. All these practices have a common interest in establishing a proper relationship with those communities we intend to serve. In this context, we work in coordination with institutions and operators in order to have a communication and dialogue strategy that helps the general public to detect fake news about 5G technology.

> The 5G standard

The electromagnetic frequencies used for 5G are part of the radio frequency spectrum that has been researched extensively in terms of health impacts over decades, i.e. over 50 years of scientific research has been conducted on the possible health effects of radio signals used for mobile phones, base stations and other wireless services, including planned frequencies for 5G exposures.

The results of these studies have been analysed by many expert review groups. They all conclude that there is no evidence linking exposure below the guidelines set by the International Commission on Non-Ionizing Radiation Protection to known health risks for adults or children.

> Commitment to research

The scientific research in this field is a priority area for the World Health Organization. Similarly, the research programme of the European Union includes different projects in this area with the aim of addressing possible health effects of the electromagnetic fields.

[1] Data corresponding to Telefónica Spain.

Telefónica closely follows these projects and supports research by the German Federal Agency for Radiation Protection (BfS) on the development of leukaemia in predisposed animal models exposed to magnetic fields. In particular, we support the group of Spanish scientific researchers from the Salamanca Cancer Centre (CSIC) working on this study. The study will take three years to complete and results will be delivered in 2023.

Progress
In 2022, we conducted 46,861 measurements at our base stations.

These have always been below ICNIRP levels in every country where we operate, even those without their own regulation.

2.12.5. Health and safety in our products

GRI 416-1, 416-2

At Telefónica, we do a thorough job of ensuring the security, smooth operation, accessibility and traceability of our products.

That is why we apply all the necessary protocols to ensure that 100% of the devices we market**,** which represent the most significant risk to the health and safety of our customers, comply with both international standards and local legislation everywhere we operate.

In one way or another, these certificates affect customers' safety, quality and experience as users and, in many cases, go beyond legal requirements. Non-compliance in these areas was not detected in any region in 2021.

In particular, at Telefónica, we also require the **RoHS certificate** (Restriction of Hazardous Substances, version 3) from all suppliers of terminals, not only for European markets but for all markets in which we operate, which restricts the use of certain hazardous substances (lead, mercury, cadmium, chrome VI, PBB and PBDE, etc.) in electrical and electronic equipment and the **SAR** (Specific Absorption Rate) of mobile phones, ensuring that none of them represent a health hazard for our customers. We also require that devices we sell have the **GCF** (Global Certification Forum) certificate. This guarantees that the connection with the mobile network works correctly, including emergency calls.

As for the rest of the equipment deployed in a residential setting and associated with access to the fixed network (routers-HGUs, WiFi amplifiers–repeaters, Movistar Home, etc.), we comply with all the common international standards that also apply to these types of devices, such as **CE marking** and **RoHS**, as well as local legislation required in each of the markets where we are present.

But we also go a step further in our commitment to the security of our products by conducting inspections and audits directly on our manufacturers' premises as part of the entire development process. In this way, we guarantee the quality of the installations, their quality control processes, the use of non-hazardous materials, safety regulations at the facilities, etc. For this purpose, we carry out what is known as Pre-Shipment Inspection which includes:

- BoM check.
- Validation of firmware version used.
- Verification of labels, manuals, cables and PSU.
- Verification of PCBA version used.
- Verification of housing used.

It should be noted that the verification of the implemented firmware versions, packaging and housing of the equipment is also carried out in the logistics areas of each of our countries.

Progress
No non-compliance in these areas was detected in any region in 2022.

MILESTONES

- → **Network availability was above 99.9% throughout the year.**
- → **We worked with the Emerge-5G research project to develop electromagnetic field exposure assessment methods in new 5G use cases.**
- → **We complied with the emissions levels established by the ICNIRP, even in countries without their own regulation.**
- → **100% of the devices we market meet international standards and local legislation in the markets where we operate.**