Building a greener future

2.1. Responsibility with the environment

GRI 2-23, 3-3

KEY POINTS

- We are committed to minimising our environmental impact and being a decarbonised and circular company.
- All our operators have implemented externally-certified environmental management systems.
- We have verified 54% of our solutions as Eco Smart due to the efficiencies and environmental benefits they generate for our customers.

2.1.1. Vision

Companies play a key role in protecting the environment, both in terms of the impacts they can cause and the environmental risks and opportunities which affect and influence the value of companies.

Customers, investors and employees are significantly more environmentally conscious, which is reflected in their need to carry out their activities in a more sustainable way and to seek partnerships with companies that have incorporated these values into their strategy.

At Telefónica, we are striving to ensure our environmental impact is minimal and are committed to decoupling the growth of our business from our environmental footprint. Furthermore, we believe it is vital **to enhance the synergies between the digital, green and energy transition** in order to achieve a competitive, resilient and sustainable economy. This is why **digitalisation becomes a crucial tool in facing environmental challenges**: climate change, circular economy, water management and biodiversity.

This commitment is part of the Company's general strategy, for which the Board of Directors is ultimately responsible. Our performance in this area is regularly supervised by the Board's Sustainability and Quality Committee as well as by the Responsible Business Office, made up of the global areas that execute said strategy alongside the business units.

We have **global environmental and energy management policies** and take action at all levels of the organisation. The environment is a central issue throughout the Company, involving both operational and management areas as well as business and innovation areas. The emissions reduction targets are part of the variable remuneration of all the Company's employees, including the Executive Committee.

We are working towards a world where digitalisation becomes a key ally in the green transition.

2.1.2. Targets

Our major targets are to:

- Achieve net zero emissions by 2040, including our value chain. To this end, we set interim targets for 2030, such as reducing 80% of our Scope 1 and 2 CO_2 emissions compared to 2015 and reducing 56% our Scope 3 CO_2 emissions compared to 2016.
- Continue to use 100% renewable electricity in our main markets and also reach 100% globally by 2030.

- Be a zero-waste company by 2030, through eco-design, procurement with circular criteria, reuse and recycling.

2.1.3. Policies and management systems

GRI 3-3

The Environmental Management System (EMS) in accordance with **ISO 14001** is the model we have chosen to monitor the environmental impact of our activities. **All our operators have an externally-certified EMS**.

We have a series of global standards (in addition to our environmental, energy management and supply chain sustainability policies) that guide the Company in improving its environmental performance and that incorporate a life-cycle perspective. This allows us to integrate the environmental aspects of our value chain and involve our employees in environmental management.

Having in place certified EMSs allows us to ensure that we successfully control and comply with the environmental legislation applicable in each of our markets, with this **preventive model of compliance** being associated with the Company's overall compliance process. We were not subject to any significant environmental penalties in 2022.

We manage all our main environmental aspects, such as energy and waste, but also others such as noise, biodiversity and water, in order to reduce progressively our environmental impact.

We provide our employees with specific training on environmental management systems. During the last year, some 200 employees with duties related to Environmental Management Systems participated in a dedicated 4-hour training, with the aim of increasing their competence, training and awareness and contributing to the improvement of the organisation's environmental performance.

We maintain the Energy Management Systems certification (**ISO 50001**) for our operations in Spain and Germany, and in 2022 we extended it to other operations, such as Chile and Brazil (the last one with two certified operating centres, including the Eco Berrini headquarters).

2.1.4. Risks and opportunities

The Company's environmental and climate-related risks are controlled and coordinated under the Telefónica Group's global risk management model, based on the **precautionary principle.**

The main risk of our environmental aspects is related with the wide geographical spread of our infrastructure, which is controlled through environmental management based on standardised procedures, certified according to the ISO 14001 standard.

We analyse climate-related risks in accordance with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). These are specifically discussed in chapter 2.2. Energy and climate change.

For further information, see chapter 2.2. Energy and climate change.

In 2022, the Telefónica Group contracted, both locally and globally, several insurance programmes in order to mitigate the possible occurrence of any incident arising from the risks of environmental liability and/or natural disasters, so as to guarantee business continuity. We currently have fully comprehensive insurance and coverage for all risks, material damages and loss of profit, in order to cover any material losses, damage to assets and loss of income and/or customers, among other problems, as a consequence of natural events. We also have insurance to cover the environmental liabilities set out by applicable laws and regulations. Both policies consist of limits, sub-limits and hedges appropriate to the risks and exposures of Telefónica and its Group of companies.

However, **the opportunities arising from sound environmental management outweigh the risks**. By being proactive, establishing preventive measures and integrating environmental criteria in decision-making, we manage to increase the Company's sustainable financing, reduce our dependence on fossil fuels and reduce our CO_2 emissions in absolute terms, despite the increase in network traffic. We also manage to increase reuse and recycling rates, promote eco-design and purchasing based on circular criteria, and help to minimise the environmental footprint of our customers with our Eco Smart products and services.

2.1.5. Action plan and commitments

Our environmental strategy seeks to **minimise our impact on the planet** and **maximise the environmental benefits** generated by our digital products and services. The strategy is built around three levels.

Within our report we have broken down the three levels of the environmental strategy into four chapters.

- The **first level** is related to the **responsibility** we assume as a company that is committed to our environment, to ensure compliance with environmental legislation, to manage our risks and opportunities, to implement management systems, to set stringent environmental targets and to carry out proactive advocacy work on environmental issues. The first level of the strategy is detailed in chapter **2.1**. **Responsibility with the environment**.

- The **second level** concerns the Company's **decarbonisation and circularity**, thanks to the use of renewable energies, the implementation of energy efficiency projects, extending the lifespan of electronic equipment, reducing the consumption of resources and reintroducing our waste as raw materials in the value chain through recycling. The second level of the strategy is detailed in chapters **2.2.Energy and climate change** and **2.3. Circular economy**.

For further information, see chapter 2.2. Energy and climate change.

For further information, see chapter 2.3. Circular economy.

Lastly, the **third level** is linked to our *raison d'être*, the **digitalisation of our customers**, through services with a positive impact on the environment thanks to connectivity technologies such as IoT, cloud and big data. The third level is detailed in chapter **2.4. Digital solutions for the green transition.**

For further information, see chapter 2.4. Digital solutions for the green transition

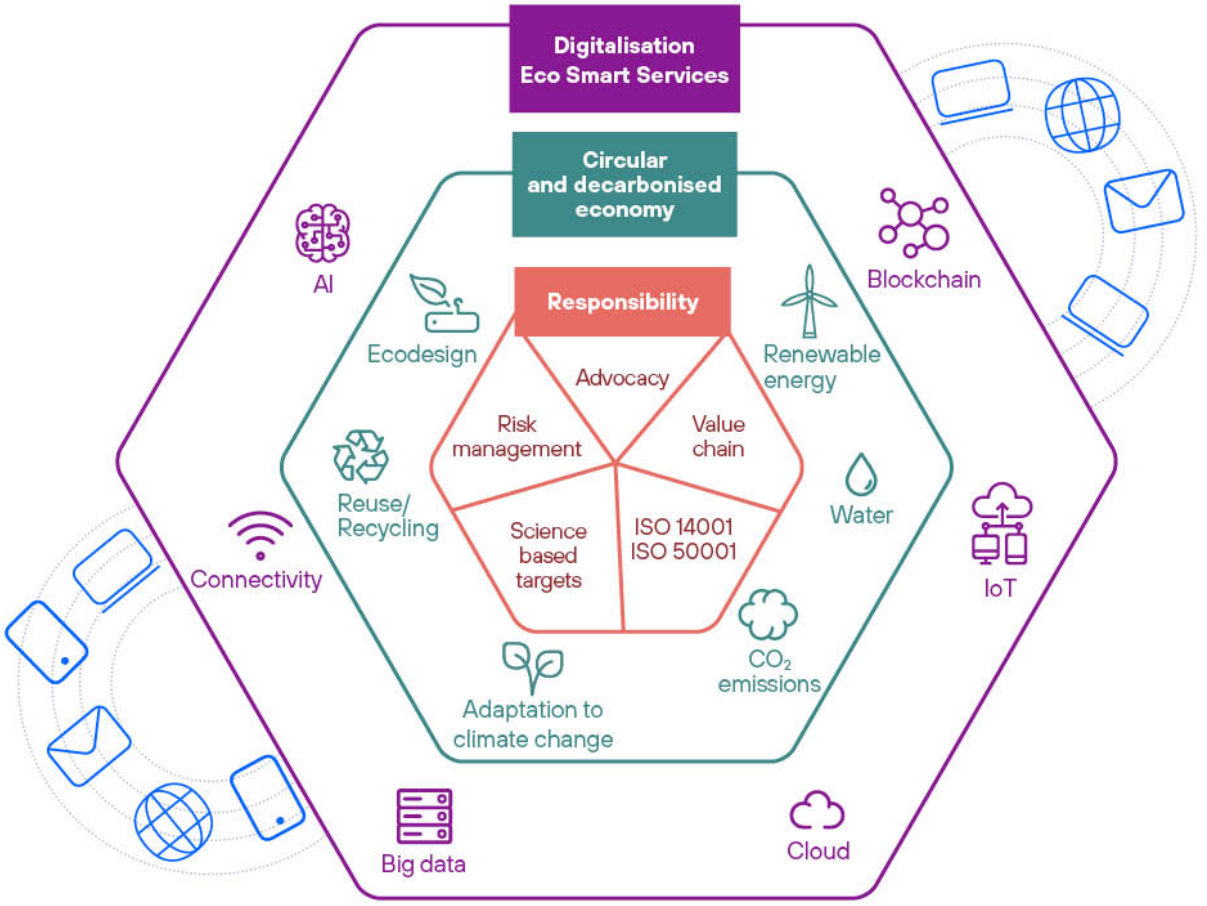
In addition, as part of the integration of the environment into the Company's strategy, **we are progressively increasing the Company's sustainable financing.**

For further information, see chapter 1.7. Sustainable finance.

Environmental Strategy

We reduce our impact and provide solutions to major environmental challenges through digitalisation.

- Risks
+ Opportunities = + Efficiency + Income = + Resilience



2.1.6. Responsible network and biodiversity

GRI 3-3

Aiming at providing top-quality service while promoting care for the environment, we successfully monitor environmental risks and impacts related to network management throughout its life cycle. In 2022, we invested around € 19 million towards this goal (similar to the investment in 2021).

We work to make our network the most eco-efficient and environmentally responsible, promoting the circular economy in all our assets. We have managed to keep electricity consumption stable, despite increased digitalisation, thanks to our energy efficiency and renewable energy plans. In addition, our circular economy strategy has enabled us to reuse 229,907 units of network equipment and to recycle 98% of our waste in 2022.

In order to minimise the impact of network deployment, we implement best practices, such as noise insulation measures when necessary and co-location of our facilities with other operators. This enables us to optimise land occupation and reduce visual impact, energy consumption and waste generation

RESPONSIBLE NETWORK LIFE CYCLE

PLANNING AND CONSTRUCTION	
Environmental licences and permits	1,199
Visual impact reduction measures	104
Base stations with renewable energy	485
OPERATION AND MAINTENANCE	
Energy efficiency and managements projects	128
Renewable electricity in own facilities (%)	82
GHG emissions (Scopes 1+2) (tCO_2e)	353,346
Energy consumption per traffic (MWh/PB)	49
DISMANTLING	
Network equipment reused (units)	229,907
Hazardous waste (t)	2,566
Total waste recycled (%)	98

Regarding **biodiversity**, the impact of our facilities is very limited. Nevertheless, we conduct environmental impact assessments and implement corrective measures when necessary, for instance in protected areas.

98% of our facilities are located in habitats with low or very low biodiversity value.

To analyse the impact of the Group's infrastructure on biodiversity in greater detail, a Geographic Information System was used to put together the area occupied by each type of infrastructure and the different layers of information about protected areas and species obtained from renowned international organisations, such as the International Union for Conservation of Nature (IUCN).

This allows us to determine the quality of habitats where any of the Company's infrastructure is located and to assess the potential impact on biodiversity. The main finding is that 98% of Telefónica's facilities are located in habitats with low or very low biodiversity value, such as urban areas, and we have no facilities located in habitats of major importance, which means that the organisation has a relatively insignificant direct impact on biodiversity.

Furthermore, aware of the importance of enhancing the urban biodiversity of our sites, the facilities of Telefónica District (headquarters in Spain) have participated in the European LIFE BooGI-BOP project, which aims to provide companies with solutions aimed at improving biodiversity in their business facilities. The analysis found the design and management of the site's green areas to be excellent and recommended some additional measures related to habitat enhancement or information for employees regarding the biodiversity improvement measures implemented.

In addition, in 2022, we joined the **World Economic Forum's 1t.org initiative**, which seeks to accelerate nature-based solutions and mobilise companies to conserve, restore and grow one trillion trees by 2030. Aligned with our target of achieving net zero emissions by 2040, as well as neutralising unabated Scope 1 and 2 emissions from our main operations by 2025, we have committed, under the 1t.org project, to grow and conserve 1.5 million trees between 2020 and 2030. This commitment will not only avoid and absorb 700,000 tonnes of CO_2 from the atmosphere in 10 years, but will also help to conserve forest ecosystems, reducing biodiversity loss.

2.1.7. Progress in 2022: Main indicators

GRI 301-3, 302-3, 303-5, 305-1, 305-2, 305-3, 305-4, 306-3, 306-4

The trend of our environmental performance is displayed in the following summary of indicators:

Telefónica's environmental performance, at a glance

	2021	2022	Trend
Management			
Certified activity according to ISO 14001 (%)	100	100	●
Energy			
Energy consumption (MWh)	6,106,625	6,106,255	▼
Renewable electricity in own facilities (%)	79.4	82.3	▲
Energy consumption per traffic (MWh/PB)	54	49	▼
Emissions			
Scope 1 GHG emissions (tCO_2e)	183,231	131,809	▼
Scope 2 GHG emissions - market based (tCO_2e)	353,506	221,537	▼
Scope 3 GHG emissions (tCO_2e)	2,072,159	1,930,051	▼
Emissions offsets (tCO_2e)	63,018	35,537	▼
Avoided emissions			
Emissions avoided by customers ($MtCO_2e$)[1]	8.7	81.7	▲
Water			
Water consumption (ML)	2,949	3,194	▲
Circular economy			
Waste generated (t)	64,059	52,906	▼
Non-hazardous waste (t)	60,791	50,340	▼
Hazardous waste (t)	3,268	2,566	▼
Waste recycled (%)	98	98	●
Equipment reused (t)	2,207	5,557	▲
Biodiversity			
Visual impact reduction measures (no.)	88	104	▲

MILESTONES

- → We reduced our total GHG emissions (Scopes 1, 2 and 3) by 45% in just seven years.
- → Thanks to eco-efficiency measures, we recycled 98% of our waste.
- → We avoided 81.7 million tonnes of CO2 for our customers thanks to our products and services.

[1] The increase in this indicator is due to the fact that in 2022 the scope of the indicator has been extended to include additional services. For further information, see chapter "2.4. Digital solutions for the green transition".

2.2. Energy and climate change

GRI 2-3, 2-23, 3-3

KEY POINTS

- Managing climate change is part of our business strategy, and we follow the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).
- We are committed to achieving net-zero emissions by 2040 across the value chain (as validated by the SBTi's Net-Zero Standard). Our Climate Action Plan lays out the roadmap for achieving this target.
- We have reduced our Scope 1 + 2 carbon emissions by 80% and our Scope 3 emissions by 32%.

2.2.1. Vision

Intensive energy use in the current economic model is one of the main causes of climate change and most pressing challenges we are facing. In their latest report, the UN expert panel warned that **the world must cut emissions by 45% before 2030** and achieve net-zero emissions by 2050 on a global scale. Organisations like the World Economic Forum identify climate change as the major risk factor for the world's economy and the investment world is increasingly aware of the need to focus on sustainable investments.

Energy, mainly electricity, is a vital resource for the development of our business. Over 95% of it comes from providing our services through the telecommunications network. Therefore our vision is aligned with our strategy and stakeholder demands, incorporating energy management, mitigation, adaptation and the opportunities arising from climate change.

Digitalisation is a must for the green transition.

This is why we develop products and services that enable our customers and other sectors to move towards decarbonisation.

For further information, see chapter 2.4. Digital solutions for the green transition.

We are working to continue leading in this area and forming part of the CDP Climate Change A List, in which we have been included for the past nine years in a row.

For further information on the Task Force on Climate-related Financial Disclosures (TCFD), see chapter 2.21.8. Appendix.

2.2.2. Targets

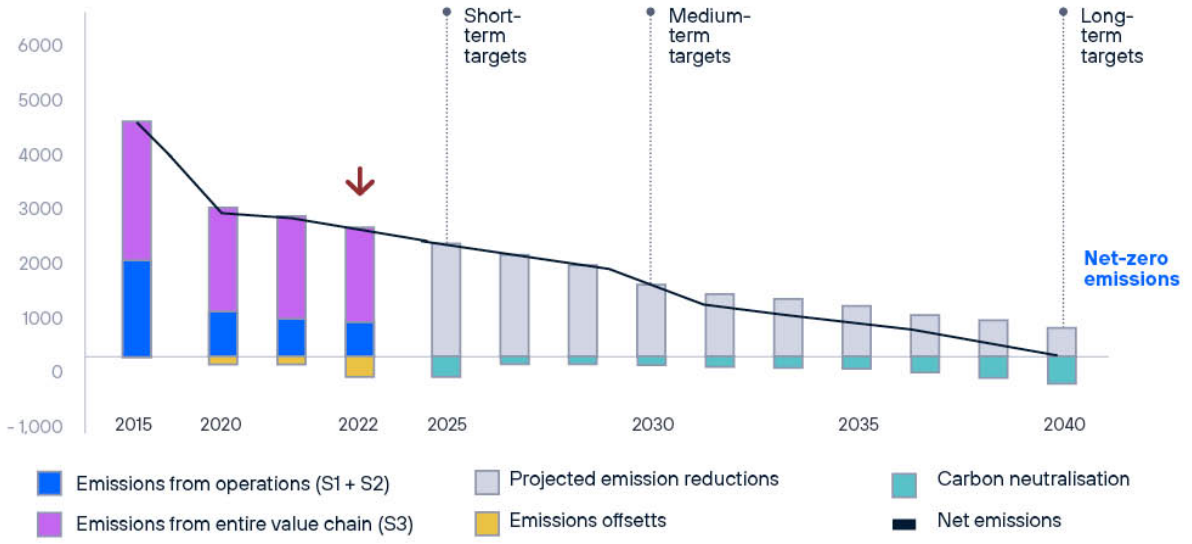
Our targets, validated by the Science Based Targets initiative (SBTi) under the new Net-Zero Standard, aim to reduce emissions consistent with the 1.5°C scenario across our entire operation, including the value chain:

- Achieving **net-zero emissions by 2040** globally, including the value chain.
- Reducing **80%** of Scope 1 and 2 CO_2 emissions globally by **2030** and **90%** in our main markets by 2025, from a 2015 base year.
- Reducing **56%** of CO_2 emissions in our **value chain** (Scope 3) by 2030, from a 2016 base year.
- Reducing **90%** of total CO_2 emissions (Scope 1, 2 and 3) by 2040, compared to the base year, and **neutralising unabated emissions** to reach net zero.

- Continuing to use 100% **renewable electricity** in Europe, Brazil, Chile and Peru, promoting its development through long-term power procurement agreements (PPAs) and more self-generation (Hispanoamerica 100% renewable in 2030).
- Improving energy consumption per unit of traffic (MWh/PB) by 90% in 2025 compared to 2015.

Telefónica's climate targets are validated by the SBTi and include Scopes 1, 2 and 3.

The road to net-zero



Energy and climate change targets

Beyond the Paris Agreement

Net-zero emissions **2040: Entire value chain** (Scopes 1, 2 and 3)

Renewable energy	Energy efficiency	Emissions reduction	Value chain	Neutralisation
100 %	-90 %	80 %	-56 %	100 %
Renewables in Europe, Brazil, Chile and Peru Globally in 2030	**MWh/PB 2025** Energy consumption per traffic unit	**2030 Scope 1 and 2** -90% in main markets by 2025	**2030 Scope 3**	**2040 Unabated emissions** Main markets by 2025 (sc1+2)
• Guarantee of origin certificates. • Long-term power purchase agreements (PPAs). • Self-generation.	• Network transformation and legacy shutdown. • Power-saving features (PSF). • Modernisation of air conditioning and power equipment. • Lighting.	• Incorporating an internal carbon pricing in our purchases. • Leakage control and new refrigerant gases. • Reduction in the use of fossil fuels.	• Supplier emissions reduction programme. • Efficiency in customer devices.	• Nature-based projects. • With social and biodiversity benefits. • Certified by recognised international standards.

2.2.3. Governance

GRI 2-12

The climate change and energy strategy is part of the Responsible Business Plan, headed by the Board of Directors. The Board of Directors' Sustainability and Quality Committee, which meets monthly, oversees the strategy implementation, reviews the risks and monitors its targets.

Our **Global Energy and Climate Change Office** has been operational since 2007. Comprising such areas as Operations, Environment and Procurement, it is responsible for implementing the strategy. Furthermore, the Global Energy Centre, created in 2015, deals with accelerating the fulfilment of the targets and, alongside local officers, promotes energy efficiency and renewable energy projects in each country.

At our Global Workshop on Energy and Climate Change, which we have been holding annually since 2010, we discuss our progress and new opportunities with over 30 suppliers.

In addition, a percentage of the variable remuneration of all our employees, including the Executive Committee, is linked to fulfilment of the annual and multi-annual CO_2 emission reduction and neutralisation targets.

For further information, see chapter 5.1. Annual Report on Remuneration.

Reducing CO_2 emissions has been part of the variable remuneration of all employees, including the Executive Committee, since 2019.

2.2.4. Policies

We have a number of internal regulations designed to align the organisation with our energy and climate change targets:

- Environmental Policy.
- Energy Management Policy.
- Supply Chain Sustainability Policy.

2.2.5. Risks and opportunities

GRI 201-2

Climate change is one of the basic risks inside the Telefónica's Risk Management Model.

For further information, see chapter 3.1. Risk management framework.

We analyse climate-related risks in accordance with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), covering both physical risks and transition-related risks in the **medium and long term.** To assess the physical risks, we use projections of climate variables for two different CO_2 concentration scenarios (RCP, Representative Concentration Pathway).

In the RCP 2.6 scenario (aligned with the Paris Agreement), the risks relate mainly to transitioning to a decarbonised economy (regulatory, technological, market and reputational risks), for example, due to tightening of measures to limit GHG emissions. This transition would also mean considerable **opportunities** associated with cost reductions due to energy efficiency and renewable energy and to business growth in digital solutions designed to help our customers decarbonise their activities.

For further information, see chapter 2.4. Digital solutions for the green transition.

In contrast, in the RCP8.5 scenario ("business as usual"), the major risks are physical risks associated with changes to specific climate variables, whether these be temporary (increase in extreme weather events) or chronic (increase in temperature, variation in rainfall). The risk associated with the **increase in temperature** would entail a great financial impact, as it could increase electricity consumption for cooling our network equipment. In addition, this could be aggravated by a possible increase in the cost of electricity, mainly in countries which are highly reliant on hydropower, in the event of episodes of drought.

Furthermore, transition scenarios, which provide necessary parameters to test the impact of transition to a low-carbon economy, also provide key information to help us understand how the future might unfold given a temperature increase limited to 1.5 °C. For this assessment, we use the International Energy Agency's **NZE 2050** scenario, which describes the efforts needed to reduce GHGs and reach net-zero emissions globally by 2050.

In order to ensure the resilience of our assets, we have drawn up an **Adaptation Plan**, the main pillars of which are business continuity, energy efficiency and renewable energy plans, which help us to reduce exposure to physical risks and adapt to the consequences of climate change.

Climate change risks

Transition				Physical	
Regulatory	**Technological**	**Market**	**Reputational**	**Chronic**	**Acute**
Price increases for certain products and services due to direct or indirect CO_2 taxes or charges (energy, transport, etc.).	Need for early decommissioning of HVAC assets or energy assets due to transition to low-emission energy.	Increased energy OpEx, e.g. in countries with high reliance on hydro generation or due to higher CO_2 prices.	Greater demands in this area from key stakeholders (investors, analysts, customers, etc.). Rising carbon offset costs.	Increased electricity consumption for cooling associated with rising global temperatures. Possible increase in electricity prices during periods of drought.	A higher occurrence of extreme weather events (mainly floods) would increase the business continuity risk and the cost of replacing damaged assets.

Climate change opportunities

Resource efficiency	Eco Smart products and services	Energy source	Resilience	New financing sources
We optimise the costs of our networks and operations through our Energy Efficiency Plan.	Our connectivity and digitalisation solutions are key to decarbonising other sectors and will allow us to access new business opportunities.	Our Renewable Energy Plan allows us to reduce carbon emissions and lower the cost of energy for our network, thanks to self-generation and long-term power purchase agreements (PPAs).	Our adaptive strategy allows us to incorporate risks and opportunities into the Company's strategy, influencing our investment, modernisation and network deployment decisions.	Access to new sustainable financing sources, which are more competitive than traditional financing.

Assessing climate scenarios has allowed us to identify the most material risks and opportunities for our business in terms of impact, which we outline below.

Financial impact of climate change risks

Category	Nature	Risk	Description	Financial impact	Risk management and mitigation
Physical	Chronic	Temperature increase	Rising average temperatures could increase Telefónica's operating costs, mainly due to increased cooling requirements for network equipment.	Increase in operational costs. *Long term* *Low impact*	To manage this risk, we have several lines of action to reduce the electricity consumption related to cooling. We support a variety of energy efficiency projects, both to reduce air conditioning consumption (e.g. free cooling, liquid cooling, modernisation of equipment, etc.) and regarding the network equipment itself, including technical specifications for the network equipment so that it can operate at higher temperatures.
Physical	Acute	Extreme weather events	Increased severity and frequency of extreme weather events, such as heavy precipitation (rain, hail, snow/ice), forest fires and floods.	Increased operational costs due to the replacement of damaged assets. Decrease in revenues due to service unavailability *Long term* *Low impact*	To manage this risk, we have the Global Business Continuity System included in our Adaptation Plan to manage risks proactively, ensuring the utmost resilience of our operations in the event of any possible interruption. These include: a) Business Continuity Plans in each country that set out how to restore essential functions that have been interrupted. b) A global Crisis Management System to manage high-impact threats. There is also a Global Crisis Committee, which includes specialists for each type of incident. In addition, the Company's insurance model takes into account the possible impact on assets due to the occurrence of extreme weather events.
Transition	Market	Electricity price increases	The telecommunications sector is not fossil-fuel intensive, but is highly dependent on electricity consumption for its networks. For this reason, an increase in electricity prices due to a new regulation in the electricity generation sector or a shortage of hydro generation due to a drought may impact our energy OpEx.	Increase in operational costs. *Medium term* *Medium impact*	To manage this risk and reduce our exposure to rising energy prices, we have implemented two main plans: a) An Energy Efficiency Plan, which allows us to consume less electricity; and b) A Renewable Energy Plan, which reduces our operating costs and makes us less dependent on fluctuations in electricity prices through long-term power purchase agreements (PPAs).

Financial impact of climate change opportunities

Type	Opportunity description	Financial impact	Opportunity management
Products and Services	Telefónica has identified opportunities in a low-carbon economy to grow the business by selling products that reduce the carbon emissions of our customers and other sectors. In this regard, digitalisation will be essential in tackling the transition to a low-carbon economy.	Increased revenues as a result of higher demand for products and services that contribute to the decarbonisation of the economy. *Medium term* *High impact*	We see the future potential of technology as an opportunity, with digitalisation being essential to tackle environmental challenges, which is why we are a founding member of the European Green Digital Coalition. Telefónica is developing new digital services based on broadband connectivity, Internet of Things (IoT), the cloud and big data, which have the potential to optimise our customers' resource consumption and reduce their impact on the environment. The Telefónica Tech business unit drives the growth of digital services involving IoT/big data and the cloud to achieve a larger scale and integrate leading digital solutions that help our B2B customers move towards a more digital and sustainable world.
Resource efficiency	Since the electricity consumption of our network is high, Telefónica sees a major opportunity associated with cost reductions arising from an appropriate energy management. By being more efficient in the use of this resource, the operating costs of our networks will be reduced.	Reduction in operational costs. *Medium term* *High impact*	Through the Energy Efficiency Plan, we aim to decouple the growth of our business from energy consumption, which is why it is integrated into our overall climate change strategy. This plan gives us an important competitive advantage in our sector, as it increases the efficiency and resilience of our networks. Since 2010, we have implemented over 1,500 energy efficiency projects that have enabled us to achieve considerable energy savings and therefore cost reductions. We have managed to keep our energy consumption stable since 2015, despite the exponential growth in traffic passing through our networks.
Transition to renewable energy (PPAs)	Telefónica has identified a major opportunity associated with the use of renewable energy sources. This opportunity provides us with an important competitive advantage, as it reduces our exposure to energy price volatility and delivers significant energy OpEx savings.	Reduction in operational costs. *Medium term* *Medium impact*	One of our strategic targets in terms of climate change is to commit to renewable energies as a sustainable source for our business, ensuring that 100% of our electricity consumption comes from renewable sources by 2030. The Renewable Energy Plan includes all types of solutions: self-generation, purchase of renewable energy with guarantees of origin, distributed generation and long-term PPAs. The plan allows us not only to reduce our exposure to market variations, but has enabled us to achieve considerable savings in electricity costs as a result of long-term PPAs and distributed generation.

Type	Opportunity description	Financial impact	Opportunity management
Sources of sustainable finance	Access to new and more competitive sources of sustainable finance, such as green bonds, which offer interest rate savings compared to traditional financing.	Reduction of financing costs. Broadening the investor base and investor type. *Medium term* *Medium impact*	Telefónica uses green bonds and green and sustainable hybrid instruments to finance projects with a positive environmental impact as defined in its sustainable financing framework, for example improving energy efficiency by transforming the copper network to fibre optics (85% more efficient). Telefónica is one of the largest issuers of sustainable bonds in its sector, both in terms of volume, number and range of issuances (senior green bonds and hybrid green or sustainable instruments). In addition, Telefónica uses other sustainable bank financing instruments, such as loans and credit facilities linked to sustainability targets, which allow it to make progress towards achieving corporate targets linked to emissions reductions.

2.2.6. Action plan and commitments

GRI 305-5

The energy and climate change strategy is integrated into the Company's management and focuses on building a greener future. We are committed to reducing our own carbon footprint in order to have a network with net-zero emissions through which we deliver Eco Smart solutions to reduce our customers' emissions.

Our journey to **net zero** means reducing our own emissions (Scope 1 and 2) and those of our value chain (Scope 3), in addition to neutralising unabated emissions. We have developed a **Climate Action Plan** with specific actions aligned with the most ambitious scientific climate recommendations to achieve our targets.

> Reducing our own emissions

At Telefónica, **keeping our energy consumption stable** is a priority, despite the considerable rise in digitalisation of society and therefore the data traffic circulating through our networks. Therefore, our **Energy Efficiency Plan** encompasses initiatives such as modernising our network by replacing copper with fibre optics (85% more efficient); the renovation of power plants and HVAC equipment; free cooling for lowering the air temperature by using naturally cool air instead of mechanical refrigeration; immersion liquid cooling; shutdown of HVAC equipment; shutdown of legacy networks; the implementation of Power Saving Features (PSFs) and AI/ML platforms at off-peak hours without affecting the performance of the access network. Also fuel consumption is reduced through hybrid stations with solar photovoltaic energy and delaying the ignition of generators using deep-cycle lithium batteries.

To achieve the decarbonisation of the Company, not only do we need maximum efficiency in energy usage, but we also need the energy to come from renewable sources.

Our **Renewable Energy Plan** includes all types of solutions - self-generation, the purchase of renewable energy with a guarantee of origin and long-term Power Purchase Agreements (PPAs) - and prioritises non-conventional renewable energy sources. Our goal is to go further than just having 100% of renewable energy in our main markets. We want to contribute to increasing the renewable energy mix through self-generation or by facilitating the construction of new parks through our medium and long-term consumption commitments (under PPA models).

In addition, introducing an **internal carbon pricing** helps us make better investment and equipment procurement decisions. When procuring energy-consumption-intensive equipment, we take into account the Total Cost of Ownership (TCO). This enables us to bear in mind not just the purchase price, but also the price of the energy consumed and the emissions generated during its useful life, and thereby to select more efficient equipment.

The Climate Action Plan, available on our website, is our roadmap to reach net-zero emissions by 2040.

> Reducing emissions in the value chain

The emissions of our value chain (Scope 3) are the largest in our entire carbon footprint.

Of the total Scope 3 emissions, more than two thirds come from our **supply chain** (categories of "purchased goods and services" and "capital goods" as defined in the Corporate Value Chain Accounting & Reporting Standard of GHG Protocol), and from the **use of sold products** by our customers.

In order to reduce our value chain emissions, cooperating with our main suppliers and the rest of the sector is paramount, as we share the same challenges.

Regarding this, we have been running a **programme with our most intensive suppliers** in terms of emissions for several years. We analyse their climate maturity and support them in their decarbonisation process, through training sessions and by asking them to make specific commitments.

In addition, we work closely with other operators in working groups of JAC (Joint Audit Cooperation) and the GSMA on methodological issues and specific actions to encourage emission reductions in our common value chain. We also participate in multi-sectoral initiatives such as 1.5°C Supply Chain Leaders and the SME Climate Hub to also reach out to small and medium-sized enterprises.

The other major Scope 3 category that is important for our emissions is the one related to the **use of sold products**. Promoting eco-design and reuse of routers or mobile phones, for example, helps us to reduce the emissions from such electronic devices during their lifetime. We also offer to our costumers sustainable purchasing criteria, like the Eco Rating label, which rates the **sustainability of mobile phones,** thereby encouraging manufacturers to improve them.

For further information, see chapter 2.3. Circular economy.

We collaborate in sectoral initiatives to reduce our supply chain emissions.

> Neutralising the remaining emissions

We will neutralise our unabated emissions (10% in 2040), by permanently removing or **sequestering an equivalent amount of CO_2** from the atmosphere, through the purchase of carbon credits or by developing our own projects, which must meet the following criteria:

- **Carbon sequestration** initiatives, preferably **nature-based**, such as reforestation, afforestation or ecosystem restoration, using native plant species.
- Demonstration of **additionality** and **long-term impact**.
- Projects with environmental and social co-benefits, contributing as much as possible to the achievement of the SDGs.
- Projects certified to nationally/internationally-recognised standards and verified by an accredited third party.
- Preferably located in areas where Telefónica is present.

In addition, in the **near and medium term**, and always on a temporary basis (before 2025 for Scope 1 and 2 emissions from main markets and before 2040 for Scope 3 emissions and those from Hispanoamerica), we will also invest in carbon credits to reduce emissions from deforestation and degradation, with the aim of contributing to halt deforestation in certain regions where Telefónica has operations.

In countries with high deforestation rates, projects that yield high-quality emission-reduction credits support the conservation of existing carbon stocks and provide incentives to support indigenous peoples and local communities.

In major markets, we will neutralise 100% of our own emissions (Scopes 1+2) by 2025.

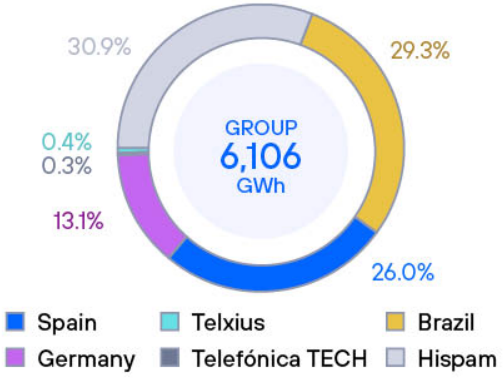
2.2.7. Progress in 2022

GRI 302-1, 302-2, 302-3, 302-4, 305-1, 305-2, 305-3, 305-4, 305-5

> Energy consumption performance

In 2022, we implemented 128 energy efficiency and management initiatives in our networks and offices, achieving savings of 408 GWh. Our total energy consumption was 6,106 GWh (21,982,519 GJ), 95% of which was electricity, while 5% was fuel. Our energy consumption per traffic unit rate improved by 87% compared to 2015 and we saved €176 million through the implementation of energy efficiency and management projects.

Total energy consumption



Thanks to the implementation of energy efficiency projects, we have managed to reduce power consumption by 7.2% since 2015, even though data traffic through our networks has increased 7.4 times over.

During 2022, we launched the Sustainable Platform Design project, part of the company's Autonomous Network Journey programme, to develop the network for the coming years. It will be a Telco Cloud network, with edge computing and sustainable by design, i.e. energy efficient and low carbon, so as to address traffic growth while respecting the environment. We prioritised the roll out of more efficient fibre and 5G and the shutdown of legacy elements to foster the circular economy.

As part of our energy efficiency projects, we promoted network transformation initiatives, which are responsible for 78% of our energy savings. We also continue to **shut down** legacy infrastructure, such as 2G and 3G networks, as well as copper networks. In Spain, in line with the 2024 copper closure plan, 788 plants were closed in 2022 (2,236 since 2014) and in Hispanoamerica progress was made with multi-layer and 2G shutdowns.

We improved the **design** of mobile sites thanks to the Smart Site model, which includes equipment modernisation, use of free cooling, more efficient rectifiers, bluetooth locking and renewable energy, among other best practices. Germany is a good example of this, where we continued to work on the NSD (New Site Design) project. Moreover, in 2022, we installed rectifiers with 98% efficiency, thanks to the TCO assessment (compared to 96% rectifiers), which represents a saving of 2% per year and an ROI in under three years.

In Spain, we awarded contracts to modernise 40 power plants under the Energy Savings as a Service (ESaaS) model, which will allow us to improve the infrastructure of these buildings and at the same time save energy, all with investment from a third party.

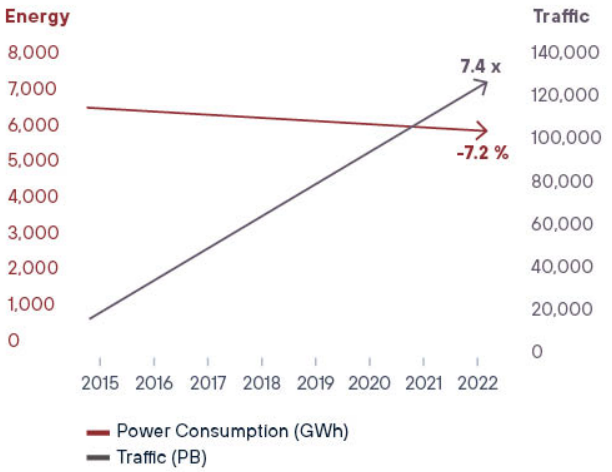
With regard to efficient management of network capacity, we increased the use of power saving features (PSFs) during periods of low traffic and we used artificial intelligence (AI) tools, machine learning and **automatic traffic prediction**. In 2022, we implemented 17 new PSF functionalities in our 4G and 5G networks, enabling us to reduce energy consumption in off-peak hours by up to 30%, without compromising on quality.

We also completed the **immersion liquid cooling** project at the Bellas Vistas power plant in Madrid (Spain). This pilot delivered savings of up to 75% in non-IT energy consumption and eliminated refrigerant gas use while maintaining traditional (Tier III) reliability levels. This type of solution uses an electrically non-conductive, non-toxic and biodegradable liquid. This technology, which enables high-capacity servers to be cooled by immersion (much more efficiently than by air), will help us support the growing demand for data in edge computing and 5G.

Lastly, we continued to improve the methodologies for obtaining fuel consumption data from operations and recharging of refrigerant gases. In Brazil, we digitalised the management process, increasing the reliability of data through continuous monitoring, which enabled us to reduce refrigerant gas recharges by 53%. This also makes it possible to implement new projects to reduce Scope 1 emissions.

With the aim of reducing emissions derived from the use of fossil fuels, we have implemented various solutions in the field of heating. These encompass, among other things, the replacement of diesel by natural gas or propane in boilers; the implementation of solar or hybrid solutions in sites with no connection to the electricity grid; and the implementation of logic to delay the running of emergency generators at sites with frequent interruptions to the electricity supply. This is achieved by using high cycle batteries (lithium), thereby reducing the need to run generators and saving fuel.

Progress in energy and traffic 2015-2022



> Renewable energy

In 2022, 82% of our total electricity consumption in our own facilities came from renewable sources.

We continued the ambitious **distributed generation** (DG) project in Brazil, which allowed for the installation of 48 new renewable energy plants in 2022, out of a total of 85 planned. These plants will generate over 700 GWh per year for our operations, thereby reducing dependence on renewable energy certificates or iRECs.

In addition, we increased the procurement of renewable energy through new long-term renewable power purchase agreements (PPAs). In Germany we signed two PPA agreements. The first one for the period of 2025-2035, which will cover 54% of the total consumption of our operations, equivalent to 350 GWh per year, and a second one for the period of 2025-2040, which will cover around 33% of the consumption, equivalent to 200 GWh per year.

In Spain, the four **long-term renewable power purchase agreements (PPAs)** signed for the period 2022-2031 came into operation in 2022. They account for 30% of total consumption, equivalent to 482 GWh per year for 10 years. In addition to these new agreements we have to consider also the one signed in 2020, enabling us to achieve a total of 582 GWh of renewable electricity coming from PPAs in our operations in Spain, covering 50% of the consumption of technical buildings.

In addition, thanks to the extension of **guarantee of origin programmes**, countries such as Argentina and Ecuador certified 7% and 30%, respectively, of their electricity consumption in their own facilities as renewable for the first time, while Colombia managed to increase it to 87%. We should mention that in 2022 Chile achieved 100% of renewable electricity, joining Europe, Brazil and Peru, operations where electricity consumption at our own facilities is 100% renewable.

Regarding the electricity we use at non-Company facilities, our operations in Germany, Spain, Brazil, Peru and Chile also certified 100% of electricity consumption at third-party sites as being renewable, enabling us to reach a figure of 61% globally.

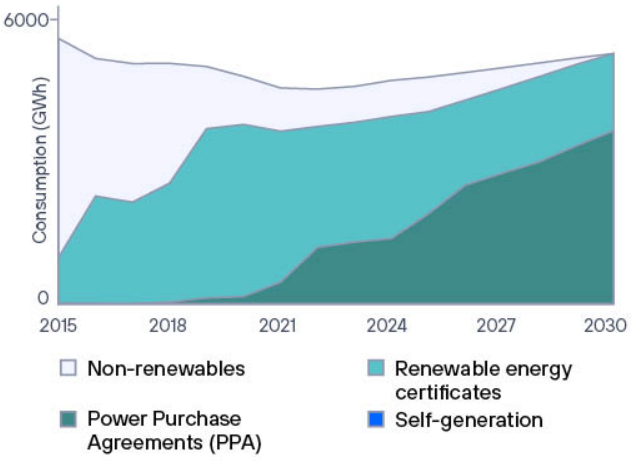
In Europe, Brazil, Peru and Chile, 100% of the electricity we consume at our own facilities comes from renewable sources (82% at global level). Our goal, as part of the RE100 initiative, is for the electricity we consume in all our operations to come entirely from renewable sources by 2030.

With regard to **self-generation of electricity**, we have 485 systems installed (both in fixed network buildings and in mobile network base stations) that allow us, firstly, to improve renewable electricity consumption and, secondly, to avoid the use of fossil fuel generators in isolated (off-grid) base stations, reducing consumption by between 70% and 100%. A good example of this is the installation of 23 hybrid self-generation systems in Chile, which is estimated to save around 60,000 litres of fuel per year.

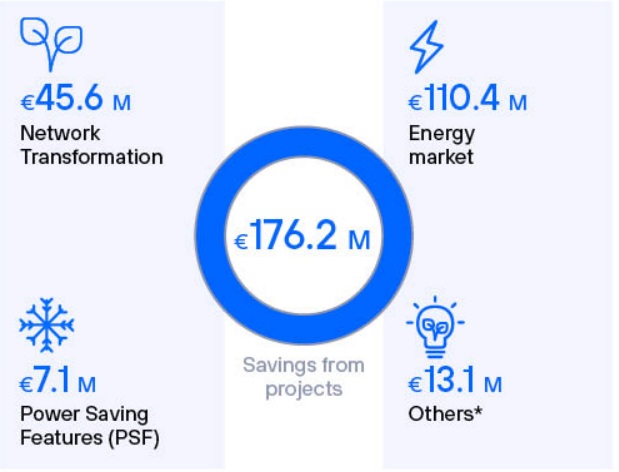
In addition, in order to accelerate the implementation of renewable self-generation systems, we have signed several agreements in which we provide roof space for the installation of solar panels by a third party, so that the electricity generated is self-consumed on-site at a lower price than the commercial tariff (on-site PPA). We signed these agreements both in Spain for four major buildings and in Colombia, where 12 of these systems will generate approximately 1.4 GWh per year under this scheme.

Thus, our **Renewable Energy Plan** is focused on continuing to sign long-term Power Purchase Agreements (PPAs) and on increasing self-generation, in order to progressively reduce the purchase of renewable certificates and increase savings in electricity OpEx.

Renewable energy roadmap



Savings from energy efficiency projects



*Other: includes projects such as lighting, correcting the output factor, renewable self-generation, reduction in fuel use, cooling, power, and tax exemptions and benefits.

	Unit	2015	2020	2021	2022	2015/2022 Performance
Total energy consumption	MWh	6,577,766	6,269,962	6,106,625	6,106,255	-7.2%
Electricity consumption + self-generation[1]	MWh	6,186,885	5,966,242	5,815,665	5,824,828	-5.9%
Fuel and district heating[2]	MWh	390,882	303,720	290,961	281,427	-28.0%
Electricity from renewable sources in own facilities	Percentage	17	79	79	82	382.4%
Total annual traffic managed	Petabyte	17,054	86,591	113,547	125,790	637.6%

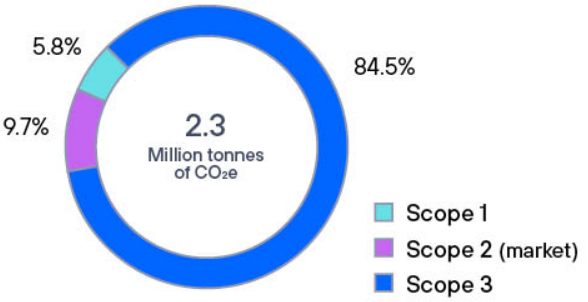
> Progress in emissions

We calculate and verify through an external party our carbon footprint based on the international **GHG Protocol** Corporate Accounting and Reporting Standard, developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD).

In 2022, our **Scope 1** emissions fell by 54% compared to 2015, resulting in 154 $ktCO_2e$ fewer in seven years. In **Scope 2** emissions, the reduction was 85% versus 2015, which is 1,303 $ktCO_2e$ fewer over the same period. Combined, our Scope 1 and 2 emissions fell by 80%, which is a reduction in emissions to the atmosphere of 1,458 $ktCO_2e$. We have thus reached the 2030 target 8 years ahead of schedule.

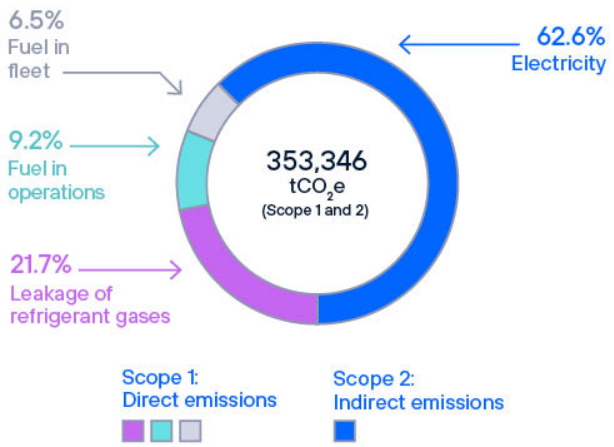
Furthermore, our energy efficiency and renewable electricity purchase initiatives saved us 118 and 845 $ktCO_2e$, respectively.

GHG emissions by scope



[1] Includes total electricity consumption from renewable sources, which in 2022 amounted to 4,534,310 MWh, of which 3,800,334 MWh are used in our own facilities.
[2] Includes biofuel consumption, which in 2022 amounted to 56,639 MWh.

Scope 1 and 2 emissions



In 2022, without our Renewable Energy Plan, Telefónica's emissions would have been 3.4 times greater.

GHG emissions

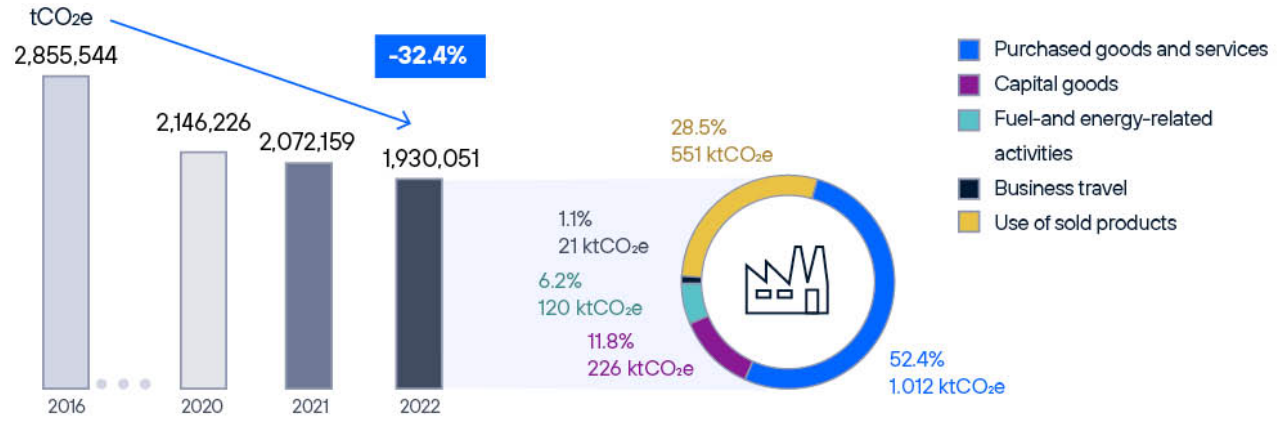
	Unit	2015	2016	2020	2021	2022	Performance, base year/2022
Scope 1[3]	tCO_2e	286,201	281,517	207,872	183,231	131,809	-54%
Scope 2 (market-based method)	tCO_2e	1,524,954	1,047,751	467,587	353,506	221,537	-85%
Scope 2 (location-based method)	tCO_2e	1,869,500	1,712,202	1,261,306	1,212,173	1,002,189	-46%
Scope 1 + 2 (market)	tCO_2e	1,811,155	1,329,268	675,459	536,737	353,346	-80%
Emissions offset[4]	tCO_2e			78,101	63,018	35,537	N/A
Scope 3[5]	tCO_2e		2,855,544	2,146,226	2,072,159	1,930,051	-32%
Biogenic emissions	tCO_2e			9,695	9,020	13,873	N/A
Emissions avoided due to renewable energy consumption	tCO_2e	392,489	752,264	782,868	902,019	845,456	115%
Emission intensity (Scope 1 + 2/revenue €M)	tCO2e / €M	33	29.4	18.6	14.6	8.8	-73%

Emissions by company

EMISSIONS (tCO_2e)	T. GERMANY	T. BRAZIL	T. SPAIN	T. ARGENTINA	T. CHILE	T. COLOMBIA	T. ECUADOR	T. MEXICO	T. PERU	T. URUGUAY	T. VENEZUELA	Telxius	Other companies[6]
Scope 1 + 2 (market)	5,781	32,190	20,679	148,842	9,736	17,886	7,202	53,335	3,621	2,870	38,097	5,211	7,896
Scope 1	5,520	32,190	20,679	26,995	9,736	11,040	1,134	5,408	3,621	408	10,817	1,289	2,972
Scope 2 (market)	261	0	0	121,847	0	6,846	6,069	47,927	0	2,462	27,281	3,922	4,922

[3] Scope 1 emissions by gas type: CO_2: 54,494tCO_2e; CH_4: 230 tCO_2e; N_2O: 248 tCO_2e; HCFCs: 76,837 tCO_2e.
[4] Emissions offset by purchase of carbon credits in certified projects.
[5] Scope 3 emissions include the emissions from relevant categories: Cat. 1 (1,012,294 tCO_2e), Cat. 2 (225,991 tCO_2e), Cat. 3 (120,194 tCO_2e), Cat. 6 (21,149 tCO_2e) and Cat. 11 (550,423 tCO_2e).
[6] Other companies consolidates emissions for the following companies: Telefónica GIES, ACENS, Media Networks Latin America Perú, Telefónica Tech UK

Scope 3 Emissions



Scope 3 emissions are 85% of the total emissions generated by Telefónica. Of these emissions, 52% come from the purchases to our supply chain. ("Category 1. Purchased goods and services") and 29% from the use of products we sell to our customers ("Category 11. Use of sold products").

Other relevant categories include "Category 2. Capital goods" and "Category 3. Fuel- and energy-related activities", which account for over 18% of total value chain emissions. In addition, we calculate and report other emissions that we consider strategic to our business such as "Category 15. Investments", which in 2022 resulted in the emission of 43,982 tCO_2e). This category includes emissions from Virgin Media O2, the joint venture created in the UK in 2021.

In 2022, our Scope 3 emissions fell by 32% compared to 2016 (base year), which represents 925 $ktCO_2$ fewer in seven years.

Emissions in the supply chain

To accelerate the decarbonisation process of our **supply chain**, in 2022 we added a new climate change requirement in the procurement process, requiring our key suppliers (which account for 90% of our supply chain emissions) to establish in the short term a decarbonisation plan for their activity, aligned with the Science-Based Targets (SBTi) initiative.

We continued our **Supplier Engagement Programme** and invited our most emissions-significant suppliers to join the **CDP Supply Chain programme**. In 2022, a total of 218 suppliers were involved, accounting for 97% of our supply chain emissions. The information reported enables us to understand their degree of maturity in handling their carbon footprints and identify potential areas for collaboration.

On the other hand, we continue to support initiatives such as the **1.5°C Supply Chain Leaders**, which advocates for the reduction of emissions by small and medium-sized enterprises (SME), and the **SME Climate Hub**, which promotes decarbonisation amongst SMEs, and invites them to sign the 'SME Climate Commitment' as well as supporting them with specialised tools, knowledge and best practice for implementing a robust climate strategy. In 2022, these two initiatives launched a pilot programme focused on SMEs where eleven of our suppliers were invited. Furthermore, we are also partnering with the **We Mean Business** association at the local level to implement the Hub in Spain.

We are also part of the **GSMA** working group which, in collaboration with the **GeSI** (Global Enabling Sustainability Initiative) and the **ITU** (International Telecommunication Union), is helping to draft a specific Scope 3 guidance for telecom operators. The Guide is intended to help telecommunications operators to harmonize the methods for calculating Scope 3 emissions, to increase reporting coverage and to encourage greater transparency in the reporting of these emissions.

We are working with other companies in the sector to address the challenge of decarbonising our supply chain.

In 2022, we continued to lead the climate change working group within the **Joint Alliance for CSR (JAC)** initiative to boost the decarbonisation of the sector. Over the course of the year, the climate supplier management of all JAC members was assessed to define and implement common emission reduction actions in the sector's supply chain (members account for over 60% of the industry's revenues).

For more information, see chapter 2.20. Responsible supply chain management

We also worked on reducing **emissions associated with the use of customer premises equipment**, mainly linked to electricity consumption by routers and set-top boxes, thanks to **increasingly energy-efficient** equipment.

In 2022, we updated the corporate instruction on low carbon procurement, which considers the **internal carbon pricing** to guide purchasing decisions towards energy-efficient equipment with a lower carbon footprint. To reinforce internal awareness, five training sessions were held for over 500 employees from operations, procurement and sustainability.

We are part of the A List of the CDP Climate Change Index for the ninth year in a row.

CDP DISCLOSURE INSIGHT ACTION A LIST 2022 CLIMATE

We have been offsetting the impact of our emissions for several years through nature-based projects that generate high quality carbon credits. In 2022 we closed a global purchase agreement of carbon credits to ensure its availability until 2026 for Spain, Brazil and Germany.

In Spain, we continued the **Telefónica Forest** project, which is helping to restore an abandoned area for forestry use, thereby boosting the local economy, involving rural communities and fostering employment for young people and disadvantaged people. Furthermore, in 2022, under the global carbon credit agreement our Spanish operation acquired carbon credits from a project that protects forests in one of the regions with the highest deforestation rates in the Amazon biome. Thanks to these two projects, it offset 5% of its operational emissions (Scope 1 + 2).

Meanwhile, in Brazil **we continued to offset 100%** of Scope 1 + 2 emissions through the purchase of carbon credits. The projects that generate these credits are backed by recognised certificates and support local projects both for conserving ecosystems that contribute to halt deforestation and for reforesting the Amazon rainforest with native species.

Lastly, in **Germany, we neutralised 40%** of our operational emissions, as well as those from business travel, through a reforestation project in Colombia that promotes the sustainable management of forest resources to encourage natural regeneration.

> Neutralising the unabated emissions

2022 Performance - Global

KPI	Unit	Target	Base year value	2022 value	Performance
Energy consumption per traffic unit	MWh per Pb	-90% (by 2025)	386	49	-87%
GHG emissions. Scope 1 + 2 (market)	tCO_2e	-80% (by 2025)	1,811,155	353,346	-80%
GHG emissions. Scope 3	tCO_2e	-39% (by 2025)	2,855,544	1,930,051	-32%
Renewable electricity consumption in own facilities	Percentage	100% (by 2030)	17%	82%	

2022 Performance - Main markets (Germany, Brazil, Spain)

KPI	Unit	2025 Target	Base year value	2022 value	Performance
Energy consumption per traffic unit	MWh per Pb	-90%	336	49	-85%
GHG emissions. Scope 1 + 2 (market)	tCO_2e	-90%	1,022,365	58,650	-94%
GHG emissions. Scope 3	tCO_2e	-39%	1,453,453	1,081,095	-26%
Renewable electricity consumption in own facilities	Percentage		25%	100%	

VMED O2 UK

The main indicator data for VMED O2 UK regarding energy and emissions for 2022 are:

	Unit	VMED O2 (fixed and mobile operations)
Total energy consumption	MWh	1,171,285
Scope 1 + 2 emissions (market)	tCO_2e	71,393

MILESTONES

- → We have reduced our total emissions (Scope 1, 2 and 3) by 45% in just seven years.
- → We are part of the A List of the CDP for the ninth year in a row.
- → We have increased the supply of renewable energy on a long-term basis (PPAs) and at a stable price. Globally, the electricity we use in our facilities is 82% renewable energy.
- → We achieved 100% renewable electricity including in third-party facilities in Germany, Spain, Brazil, Peru and Chile.
- → We completed the 'immersion liquid cooling' project, a technology that is up to 75% more efficient than air conditioning.

2.3. Circular economy

GRI 2-3, 2-23, 3-3

KEY POINTS

- We currently recycle 98% of our waste and we are committed to be a Zero Waste company.
- We promote the circular economy in the use of electronic devices through ecodesign, recycling and reuse of equipment.
- We reuse 4.4 million of electronic equipment from operations, offices and customers.

2.3.1. Vision

Overexploitation of the planet is one of the main causes of environmental degradation and climate change. According to the World Resources Institute, each year more than 100 billion tonnes of mineral, biological, metal or fuel resources are used. This amount exceeds what the planet can regenerate in a year and only 8.6% of these resources are recycled or have a second life.

Circular economy is part of the solution to this problem, as it could reduce resource use by 28% and global greenhouse gas emissions by 39%. In the EU alone, it could create around **700,000 jobs** and increase GDP by 0.5% by 2030. All this is based on principles such as reducing impacts from design, extending the useful life of products, recovery of raw materials and the dematerialisation of the economy thanks to digitalisation.

At Telefónica, we integrate this philosophy into our processes aiming at optimising resource consumption and promoting ecodesign, reuse and recycling, with the goal of minimising our impact and encouraging keeping materials in circulation.

2.3.2. Targets

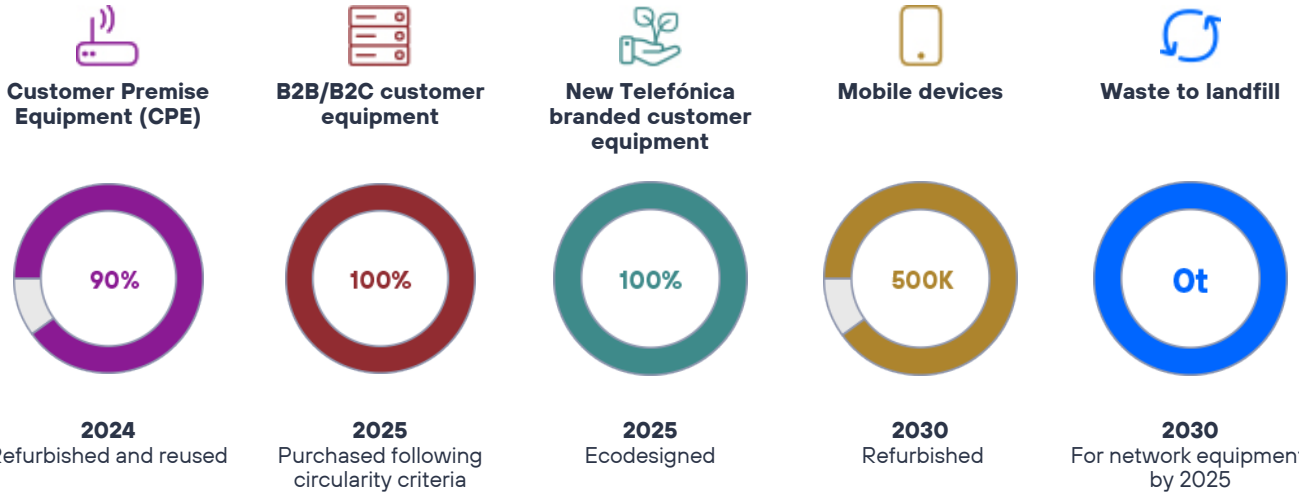
Our main target is being a Zero Waste company in 2030.

Our priority is to increase repair, reuse and recycling and to ensure that our waste does not end up incinerated or sent to landfill but transformed into raw materials that are reintroduced into the value chain:

- Refurbish and reuse 90% of Customer Premise Equipment (CPE: routers and decoders) collected from customers by 2024.
- Introduce circularity criteria in all purchases of customer electronic equipment by 2025.
- Introduce ecodesign criteria in all new customer equipment under the Telefónica brand by 2025.
- Zero Waste to landfill by 2030 through reuse and recycling (hazardous and non-hazardous waste).
- For network equipment: 100% reuse, resale and recycling by 2025 (aligned with the GSMA sectoral target).
- Refurbish 500,000 mobiles per year by 2030 through various programmes.

Circular economy targets

Moving towards becoming a Zero Waste company



2.3.3. Policies

We have several policies that lay down the basis for implementation of the circular economy throughout the Company:

- Environmental Policy.
- Energy Management Policy.
- Supply Chain Sustainability Policy.

Deriving from these policies are the following **principles for promoting the circular economy**:

- Promoting the development of an enabling regulatory framework for the circular economy.
- Promoting the best ecodesign with manufacturers and integrating circular criteria in our procurement processes.
- Reducing waste generation and encouraging reuse and recycling.
- Guaranteeing proper waste treatment with controls on our supply chain.
- Offering our customers products and services with less consumption of raw materials, environmental information which helps them in their purchases and alternatives to waste disposal for their used devices.

2.3.4. Risks and opportunities

According to the World Economic Forum, the natural resource crisis is a high-impact, high-probability **risk** that can only be reversed by seeking a more circular economy. Overexploitation of resources brings with it supply risks that affect the availability of products and services. Investing in an economy that allows the reintroduction of recovered materials into production chains helps to **reduce this risk and be less dependent on imported resources**.

The pressure on supply chains, which are recovering from the COVID-19 crisis, has been aggravated in the European Union by the war in Ukraine. In addition, the demand for critical raw materials such as lithium, cobalt and nickel is expected to increase further due to the continuing development of the technology industry.

Every year 54 million tonnes of e-waste are produced, of which only 17.4% is recovered and recycled. Manufacturing with ecodesign criteria, reuse and recycling contribute to reducing the risk of resource depletion and ensure supply chain continuity. It also reduces the associated environmental impact, as 45% of global emissions derive from the manufacture and use of products, while 90% of the biodiversity loss and water stress is caused by the extraction and processing of natural resources.

According to Accenture's Waste2Wealth study, there are five business models that could generate $4.5 trillion by 2030: renewable resources, products as a service, sharing use platforms, product life extension and resource recovery.

The reuse and refurbishment of customer equipment and network equipment is a significant **opportunity** for Telefónica as it generates savings by avoiding the purchase of new equipment. In addition, the sale of refurbished network equipment or waste such as cable from the copper-to-fibre transformation provides us with additional revenues.

Furthermore, **digitalisation and connectivity** are key tools for the circular economy. This, therefore, represents a business opportunity for Telefónica. In addition to influencing the circularity of our operations, we can also support the circularity of other economic sectors by using digital solutions.

For further information, see chapter 2.4. Digital solutions for the green transition.

2.3.5. Action plan and commitments

GRI 308-2

At Telefónica we are committed to integrating circular economy criteria transversally at three levels: **internal eco-efficiency, suppliers and customers.**

Circular economy allows us to grow using fewer resources and avoid indirect carbon emissions associated with the manufacture of new equipment.

Circular economy strategy

Enhanced circularity through digitalisation

> Internal eco-efficiency

We reduce our environmental impact through efficiency measures, such as preventive maintenance of infrastructure, replacing equipment with energy-efficient equipment and reusing it internally. This enables us to optimise our consumption of water, paper, and energy, for the latter, through an Energy Efficiency Programme.

For further information, see chapter 2.2. Energy and climate change.

To prevent waste generation in our operations and our value chain, we are committed to **ecodesign, procurement using circular criteria and reuse,** mainly of electronic equipment, as the best waste is that which is not generated at all. All this enables us to be more competitive, reduce our expenses and increase our revenue, while reducing our footprint on the environment and complying with applicable legal regulations.

Electronic equipment

We extend the useful life of equipment by reusing it whenever possible. If the equipment cannot be reused the best option is to recycle it, as each piece of equipment contains **precious metals** such as gold, copper and nickel which can be used as resources in a new product.

During our network transformation, many pieces of equipment are reused within Telefónica, thereby promoting the circular economy in dismantling processes. To encourage reuse, Telefónica has rolled out the **MAIA** project, which facilitates and promotes internal reuse with the aid of a digital platform. Each operator can access the platform to view available equipment and contact other operators in the Group to accomplish reuse. When **internal reuse** is not possible, the platform enables operators to connect with technological partners to facilitate equipment sales and therefore extend its useful life.

Waste

The waste we generate is managed outside our facilities by specialised waste management companies, which apply the most appropriate treatment according to the best available techniques, the environmental regulations in force and the established contractual requirements.

Whenever waste is collected, the staff responsible ensure that all the information is registered in Telefónica's waste management platform **(GReTel)**.This allow us to obtain and analyse real-time data on the origin and destination of the waste produced by the Company.

This system enables us to be aware of the volume of waste removed, draft reports, analyse information and keep all documentary evidence to ensure proper compliance with **environmental regulations** in each country where Telefónica operates, thus aiding decision-making with regard to promotion of a circular economy approach to waste management.

> Relationship with our customers

We support and raise awareness among our customers to reduce their impact on the planet with the **Eco Smart** and **Eco Rating** labels, which encourage innovation and environmental impact reduction.

For further information, see chapter 2.4. Digital solutions for the green transition.

We also offer our customers repair services and options to **trade in and refurbish mobile phones** to extend their useful life and give them a second use. In this way, we reduce resources and energy consumption by avoiding the manufacture of new devices.

One of the Sustainable Development Goals (SDGs) we are working towards is the development of a sustainable consumption and production model.

> Relationship with suppliers

We work together with our suppliers to introduce ecodesign measures in products, we encourage the phasing out of single-use plastics and we opt for new models based on digitalisation and dematerialisation, such as acquiring products as services.

In addition, we are progressively incorporating **circularity requirements** in the procurement of electronic equipment, using as our benchmark the criteria established in the ITU-T L.1023 recommendation on the assessment method for circular scoring. This enables us to assess the **ecodesign,** the ability to be **repaired, recycled** and **upgraded,** as well as the **durability** of each electronic device acquired.

In addition, to encourage eco-efficient procurement, our Global Supply Chain Sustainability Policy includes environmental and circular economy criteria that are taken into account when suppliers provide products or services to Telefónica.

2.3.6. Progress in 2022

> Internal eco-efficiency

GRI 3-3, 301-2, 301-3,,303-5, 306-1, 306-2, 306-3, 306-4, 306-5

Network infrastructure maintenance is the main waste-generating activity, but so are other activities such as those carried out in our offices and commercial activities with our customers.

The vast majority of the waste we generate comes from our network transformation process when we migrate from copper cables to fibre optics. In 2022, this transformation process was accelerated thanks to the Granada Plan for station shutdowns in Spain and the Vivo María do Carmo Project in Brazil, as well as various network transformation projects in Hispanoamerica and the 3G switch-off in Germany.

We promote **circular economy** in our network transformation by prioritising reuse of electronic equipment and, if not possible, by extracting value from materials through recycling. This recovery allows us to generate revenues as the network's transformation evolves. In 2022, we generated 52,906 tonnes of waste of which we managed to recycle 98%. Regarding the **electronic equipment**, we reuse about 44% of the total equipment collected and recycle the other 56%.

As a result, we reused around 4.4 million items of equipment from our network, offices and customers, avoiding 358,103 tonnes of CO_2 associated with the manufacture of new products:

- **Network equipment**: we reused 229,907 units thanks to the MAIA project (39% of total network equipment managed), making progress towards our goal of zero network equipment being sent to landfill by 2025.
- **Office equipment**: we reused 18,314 pieces of equipment and donated 745 to non-profit organisations.
- **Customer equipment**: we reused 3.8 million pieces of customer premise equipment (routers and set-top boxes) and 386,210 mobile phones, corresponding to 56% of the total customer equipment managed. In addition, we have reused 86% of the total number of customer premise equipment delivered for refurbishment, which brings us closer to our goal of refurbishing 90% of this equipment by 2024.

Managed Electronic Equipment 2022 (Tonnes)

Reused equipment	5,557	Mobile phones	54
		Customer premise equipment	1,896
		Office equipment	19
		Network equipment	3,589
Recycled equipment	7,170	Mobile phones	40
		Customer premise equipment	1,508
		Network and office equipment	5622
Equipment sent to landfill	22.5	Mobile phones	0
		Customer premise equipment	0.1
		Network and office equipment	22.4
Equipment with other treatment	1	Network and office equipment	1

Electronic equipment (%)	2021	2022
Reused equipment	15.59%	43.58%
Recycled equipment	84.32%	56.23%
Incinerated equipment	0	0
Equipment to energy recovery	0	0
Equipment sent to landfill	0.10%	0.18%

VICKY and APOLLO: Circular Economy for Customer Premise Equipment

VICKY is an initiative that uses blockchain technology to achieve greater traceability throughout the value chain of modems, routers and TV set-top boxes. This significantly improves recovery rates, refurbishment processes and equipment lifespans. The solution has been recognized for its innovation (Gartner, Forbes) and for encouraging a more efficient, faster, simpler and more sustainable supply chain.

APOLLO, meanwhile, improves efficiency in reverse logistics processes by using big data and analytics to optimise collection routes for uninstalled or inactive equipment, both at the customer's premises and at collection points. Both initiatives are being rolled out across the organisation with the aim of reusing 90% of customer premises equipment by 2024 and being a zero waste company by 2030.

In terms of mobile handset reuse, Telefónica has a global **MARA** initiative, an omnichannel model with an end-to-end approach that allows our customers to assess their devices automatically and access trade-in programmes anywhere (home, retail and voice channels). This process optimizes device management times, reduces discrepancies and logistics while generating revenue from the reuse and resale of handsets, preventing them from becoming waste.

Zero waste by 2030 thanks to reuse and recycling

Circularity in electronic equipment
To reduce its impact and waste generation, we extend the life of electronic equipment by reusing it wherever possible and recycling the rest:

Reused equipment

4.4 Million

44% Reused

56% Recycled

Routers and set-top boxes

3,791,315 Units

Mobile phones

386,210 Units

Donated equipment

745 Units

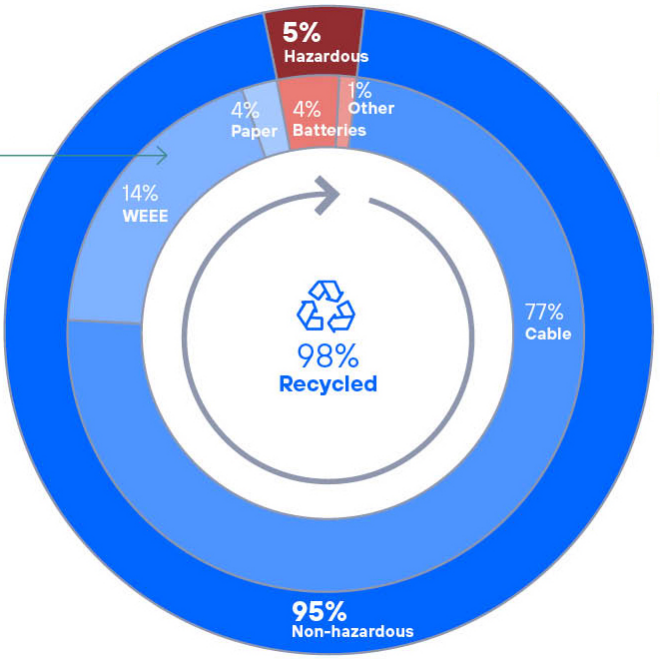
Office equipment

18,314 Units

Network equipment

229,907 Units

Total waste: 52,906 tonnes



Zero waste by 2030: targets and indicators

Target	Indicator	2022
Zero waste to landfill	% recycled waste	98%
To refurbish 90% of customer premise equipment (routers, set-top boxes, etc.) collected from customers by 2024	% CPE reused or refurbished	86%
Refurbish 500,000 mobiles a year by 2030 thanks to different programmes	Number of reused customer mobile phones	386,210
B2B/B2C customer equipment purchased with circular economy criteria	% of procurement processes for B2B/B2C equipment incorporating circularity criteria	Purchase of B2B routers and switches at Telefónica Spain
100% of new Telefónica-brand customer equipment ecodesigned by 2025	% of new Telefónica-brand equipment which have been ecodesigned	Life Cycle Assessment (LCA) on a new 5G router model

Telefónica's waste

	Non-hazardous waste			Hazardous waste			Total		
	2020	2021	2022	2020	2021	2022	2020	2021	2022
Total waste generated (t) (excludes reuse as it is not considered waste until its useful life has ended).	41,637	60,791	50,340	4,863	3,268	2,566	46,499	64,059	52,906
Waste diverted from disposal (t) (includes recycling, reuse and other treatments).	43,176	62,468	55,348	4,801	3,200	2,333	47,978	65,669	57,682
Waste directed to disposal (t) (includes energy recovery, incineration and landfill).	322	571	548	61	67	233	383	638	781
Treatments prioritized according to the waste hierarchy principle									
Reused equipment (t)	1,840	2,207	5,557	n/a	n/a	n/a	1,840	2,207	5,557
Waste recycled (t)	40,813	60,030	49,491	4,749	2,520	2,164	45,562	62,549	51,655
Waste for energy recovery (t)	1	17	68	17	21	148	18	38	216
Other treatments (t)[1]	502	191	300	53	681	169	554	871	470
Waste incinerated (t)[2]	6	11	0	1	0	13	7	12	13
Waste sent to landfill (t)[2]	314	543	480	44	576	72	358	588	552

All data in this table exclude the United Kingdom from the reporting perimeter to facilitate comparability between periods.

Water

In 2022, our overall consumption was 3,194 ML (3.2 Hm^3), 765 ML in high water stress areas, which represents 24% of the total. This consumption was mainly due to sanitary use and to a lesser extent due to its use in air conditioning. For this reason, in each country where we operate we establish specific **measures** to **improve efficiency** in its use and **reduce** consumption, especially in areas where water stress is highest, as is currently the case in Spain, Chile and Mexico.
Over 1,700 buildings have a Sustainable Water Management Plan, which includes measures such as:

- Water-saving systems and pressure monitors.
- Preventive maintenance to avoid leaks in taps, cisterns and water heaters.
- Awareness-raising campaigns for employees.
- Clauses in building maintenance and cleaning contracts to encourage efficient and responsible water use by our suppliers.

In addition, we collaborate with public and private sector entities to promote the efficient use of water, especially in Brazil where we have participated in the water thematic chamber of the Brazilian Business Council for Sustainable Development (CEBDS) and in the UN Global Compact's platform for action on water and oceans. It promotes the commitment of Brazilian companies to SDG 6 (clean water and sanitation) and SDG 14 (life below water) through the development of collective actions and impact solutions. All of this is aligned with the CEO Water Mandate platform and the UN Ocean Decade.

[1] Other treatments: includes physical treatments, biological treatments, secure cells and intermediate treatments prior to recycling.
[2] 2020 and 2021 data recalculated according to the improvement applied as of fiscal year 2022: separate reporting of waste for landfill and incineration.

In terms of the measures carried out in **regions with high water stress**, the following stand out:

- Treatment systems in cooling towers at Telefónica Chile.
- The commissioning of the grey water treatment plant for the collection and reuse of rainwater and the installation of energy saving devices and sanitary supply valves with sensors to limit consumption in the Torre Telefónica building in Mexico.
- The sustainable water use plan implemented at our headquarters in Madrid (Spain), which reduces consumption by collecting rainwater for irrigation and other water-saving systems in sanitation.

Details of water consumption in 2022 (m^3)

Total consumption	**3,194,277**
Municipal potable water	99.4%
Surface water	0.2%
Groundwater	0.4%

However, despite the savings measures implemented, the return to office-based working after two years of teleworking due to the pandemic situation has led to an increase in water consumption, albeit to levels somewhat lower than pre-pandemic levels (-2% vs 2019).

Water consumption from all regions (ML)

2019	2020	2021	2022
3,248	2,777	2,949	3,194

All data in this table exclude the United Kingdom from the reporting perimeter to facilitate comparability between periods.
The 2021 figure has been recalculated due to better data quality obtained from our German and Venezuelan operations.

Water consumption from regions with high water stress (ML)

2019	2020	2021	2022
806	750	765	765

Water consumption in countries with high levels of water stress according to the Aqueduct Baseline Water Stress Atlas, from the World Resources Institute (Spain, Chile and Mexico)

Total water consumption

We adopt specific measures to achieve efficient consumption, especially in regions with high water stress.

76%
From non water-stressed regions

24%
From water-stressed regions

Paper

Of the paper we consumed in our offices last year, 96% was of recycled or certified origin (FSC, from the Forest Stewardship Council, or PEFC, from the Programme for the Endorsement of Forest Certification schemes). In addition, 189 million customers chose **paperless bills.** We therefore generated over 830 million electronic bills which avoided the consumption of 4,151 tonnes of paper and the felling of almost 70,564 trees.

> Relationship with our customers

For more details on the total customer electronic equipment reused and initiatives, please **refer to the previous section on internal eco-efficiency**.

In addition, we provide other initiatives for our customers, such as **Eco Smart** services and the **Eco Rating** label, which owing to their importance have been accorded their own specific chapter.

For more information, see chapter 2.4. Digital solutions for the green transition

> Relationship with suppliers

Ecodesign and innovation

Ecodesign helps us to extend useful life and reduce use of raw materials in manufacturing, lessen the energy consumption of the product and avoid emissions. Therefore, we cooperate with our suppliers to integrate ecodesign into electronic devices that are designed under the Company's brand image (Movistar, O2 or Vivo). Our aim is for all these devices to integrate ecodesign criteria from 2025 onwards. For this reason, from 2021 and throughout 2022, we have been collaborating with the Basque government's public environmental management company IHOBE in carrying out a **Life Cycle Assessment** (LCA) study on a new router model.

This study has helped us to ascertain which elements of the device have a greater environmental impact in order to establish measures to **reduce it** by design. The identified criteria will provide the basis for the incorporation of ecodesign in other devices. Additionally, we have undertaken a study of how repairable, recyclable and durable the device is in order to integrate the circular economy approach even further through its design.

Furthermore, we are working on reducing use of plastic in our SIM cards through our Half SIM Card format, which has enabled us to halve the amount of plastic used to manufacture the cards. It also represents an improvement in the **efficiency** of the logistics process, by reducing the size of the containers used to transport and store them. In 2022, we avoided the production and consumption of 228 tonnes of plastic. This format has already been implemented at nine of our operations and is gradually establishing itself as the main format in the Group. In addition, in 2022 our joint venture in the UK, VMED O2, incorporated recycled PVC/ABS plastic into its SIM cards.

Procurement using circular criteria

Following the 2021 pilot in Spain to apply circular criteria in the B2B router and switch procurement process, in 2022 we broadened expanded the product categories in order to expand the implementation of these guidelines. This allows technical areas to include circular economy criteria in more procurement processes.

We work with our suppliers **to reduce GHG emissions** from the products and services they provide us with through various initiatives explained in the section on Scope 3 emissions.

For further information, see chapter 2.2. Energy and climate change

VMED O2 UK

The details of the waste indicators for VMED O2 UK for 2022 are given below:

	VMED O2 (Fixed and mobile operations)
Total waste produced (t)	5,053
Total waste recycled (t)	4,252

MILESTONES

- → Thanks to eco-efficiency measures, we recycled 98% of our waste.
- → In 2022 we repaired and reused 4.4 million items of electronic equipment.
- → We have sustainable water management plans in over 1,700 buildings.
- → We promote various Company initiatives (VICKY, APOLLO, MARA and MAIA) to boost our transition to the circular economy.
- → We are making progress in ecodesign and integrating circular criteria in the procurement of electronic equipment.

2.4. Digital solutions for the green transition

KEY POINTS

- 54% of our solutions have been verified as Eco Smart solutions due to the environmental benefits they generate in our customers' operations.
- In 2022, we conducted a survey of over 3,300 customers to understand how our connectivity services enable the reduction of CO_2 emissions.
- We have implemented Eco Rating in 100% of our operations to help consumers make more informed and sustainable purchasing decisions.

2.4.1. Vision

At Telefónica, we are committed to achieving a world in which **technology contributes to protecting the planet**. That is why we promote **the digital and green transition as twin transitions**. It is becoming increasingly urgent to accelerate the green transformation of the economy and society to achieve the required level of decarbonisation and limit the global temperature increase to below 1.5°C. The digital transition is key to achieving this while at the same time improving the competitiveness of the economy.

Organisations such as the World Economic Forum and the Exponential Roadmap initiative state that digital technologies can help **reduce global greenhouse gas emissions by 15%** by 2030 when implementing solutions in industrial sectors, and **up to 35%** if we consider their ability to transform people's habits.

At Telefónica, we develop green digital solutions to help our customers in their transition towards more sustainable and competitive business models.

This issue is more important than ever in the current uncertain landscape marked by rising energy costs and geopolitical tensions. We also provide clear and transparent information on the environmental benefits of our products. In this way, B2B and B2C customers can incorporate sustainability criteria into their purchasing decisions and **consume technology in a more responsible manner.**

We envisage a world where technology contributes to protecting the planet.

2.4.2. Targets

We are committed to further develop new digital solutions to accelerate the decarbonisation of the economy.

The emissions avoided for our customers in 2022 are higher than our target of avoiding 12 million tonnes of CO_2 per year in 2025, because we have increased the scope of the calculation, including new services.

We are working on the definition of a new long-term target aligned with the methodological recommendations being developed in the European Green Digital Coalition (EGDC).

2.4.3. Risks and opportunities

While it is true that connectivity and digital solutions reduce CO_2 emissions from other sectors, according to the GSMA the telecommunications sector is responsible for approximately 0.4% of global emissions. Therefore, the challenge for us is to ensure that the **solutions we offer have a positive climate impact**, contributing to **reducing more emissions than they generate**. To do so, we are reducing the environmental footprint of our network with energy efficiency and renewable energy.

For further information, see chapter 2.2. Energy and climate change.

The UN expert panel has warned that the world must cut greenhouse gas emissions by 45% before 2030 and achieve net-zero emissions by 2050 globally.

This is why governments and businesses urgently need to transform society and the economy towards a low-emission, circular and environmentally-friendly model.

As a result, we foresee an **increased demand for technological solutions** from our customers to implement more sustainable processes. This will allow us to seize **new business opportunities** through our Eco Smart solutions and services which we will develop in the coming years based on innovative technologies such as 5G and artificial intelligence (AI).

2.4.4. Action plan and commitments

One of the priorities of our environmental strategy is **to boost connectivity and digitalisation as key factors enabling the green transition,** and improve the competitiveness of our customers.

At the same time, we also provide **information on the environmental benefits or attributes of our products and services** so that customers can identify how their technology purchase will contribute to achieving their own sustainability goals.

We have the following lines of action for this purpose:

> B2B - Development of Eco Smart services

We develop services based on connectivity, the Internet of Things (IoT), the cloud, big data and 5G. These solutions provide not only operational and cost-saving benefits, but also environmental benefits. To identify them, at Telefónica we use the **Eco Smart** label. These services are externally verified by AENOR.

The label has four icons, which represent: energy savings, reduction in water consumption, reduction in CO_2 emissions, and the promotion of the circular economy.

The icons are coloured to identify the environmental benefit our products and services impact where applicable.

Below are some of our most significant Eco Smart solutions, all of which are based on our fixed and/or mobile connectivity.

Connectivity
Connectivity is the fundamental requirement for access to the digital world. It is a core service that we offer directly to our customers and is also **present in the majority of the most-advanced digital solutions**. Telecommunications networks are therefore the main and most powerful platform for making progress towards the green transition.

Our sustainability strategy focuses on optimising these networks through energy efficiency, renewable energy, and advanced technologies. This includes fibre optics replacing copper (85% more energy efficient) and 5G (up to 90% more efficient than 4G in terms of energy consumption per unit of traffic).

Thanks to this, we can offer a robust, secure, stable and increasingly-sustainable network to respond to the growing demand for data, **allowing us to take actions** that contribute to **the reduction of CO_2 emissions**, such as **teleworking**, **migration** of services and servers to **the cloud**, remote training, or medical care, among others.

Digital workplace

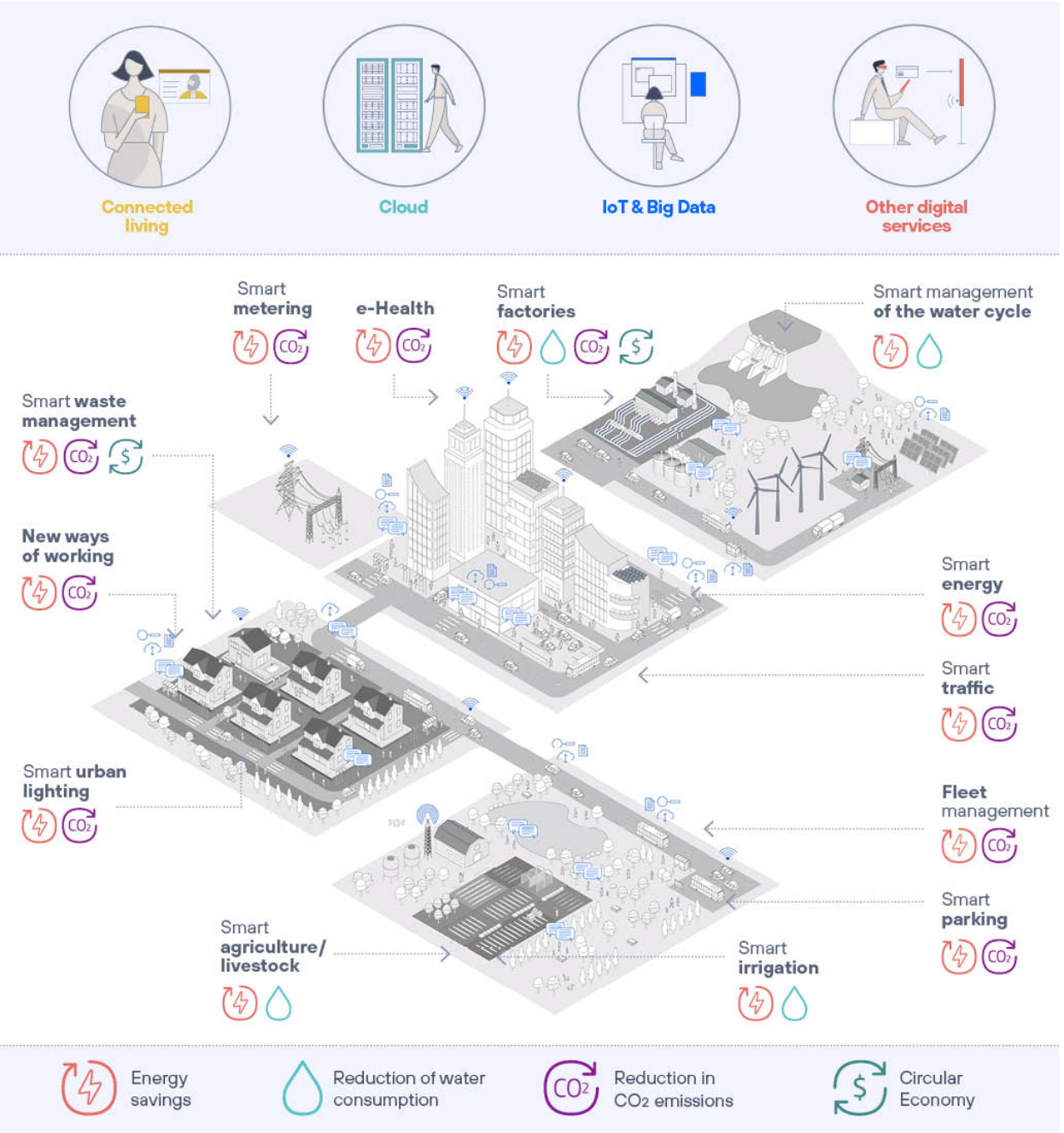
Productivity and collaboration solutions allow people inside and outside the organisation to connect and work remotely. They deliver **considerable environmental benefits** by reducing travel, fuel consumption and office HVAC. All this translates into lower CO_2 emissions and reduced pollution in cities.

Cloud

Companies are increasingly relying on the cloud to carry out an endless number of processes that make them more agile, flexible and efficient. The cloud offers them a place to integrate all their networks and services safely, provides instant access to critical information and greater control of their business, and increases engagement among their employees.

Our commitment is to offer companies solutions that best suit their needs. That is why we have a comprehensive portfolio of global services, enhanced by worldwide agreements with leading hyperscalers including AWS, Google and Microsoft Azure.

Digital solutions for environmental challenges



Our cloud services use servers hosted in data centres that meet high energy efficiency standards. The average PUE (Power Usage Effectiveness) of our main data centres was 1.70 in 2022.

As a result, the migration of companies to the cloud leads to a reduction in energy consumption as well as a reduction in emissions.

IoT, big data, AI and blockchain

Technologies such as IoT, big data, AI and blockchain are key to economic recovery and sustainability.

All the connected objects and equipment generate data in real time. By combining them with our customers' data and other external sources, the processed and analysed information makes it possible to increase the efficiency of production processes, reduce consumption of raw materials, decrease wastage and even extend the life span of equipment. All this can be seen in services like:

- **Smart meters** for our customers, such as in Spain and the United Kingdom, where Telefónica manages millions of connected electricity, water and gas meters.
- **Solutions for smart cities**, based on optimising lighting, the use of parking spaces, waste management and collection, and high-granularity prediction and analysis of air pollution in cities.
- **Energy efficiency solutions,** telemetry, and remote management of energy consumption at the offices, factories or buildings of companies with large geographical dispersion, such as hotels, banks and supermarkets, among others.
- **Agricultural management solutions** such as Smart Agro, which enables innovation, digitalisation and data analysis for crops, with the aim of optimising resource use.
- **Solutions for the transport sector** helping to optimise planning of transport systems and infrastructure through greater understanding of passengers, timetables and routes, thereby adapting plans to the real needs of passengers with maximum budgetary control and minimal environmental impact.
- **Mobility solutions,** such as our fleet management and asset-tracking solutions.
- **Solutions for Industry 5.0**, in which private networks (5G or LTE) and associated solutions (for example, AGVs, drones, predictive maintenance, asset control and operator safety) take the manufacturing and mining industries and the port and airport management sector to a new level of operation, flexibility, productivity and efficiency.

In addition, the inclusion of the technological capacities of **blockchain** in many of the use cases mentioned above improves traceability, transparency and security, enabling faster and more efficient ways of doing things. As an example, we have implemented document management (eliminating the use of paper in the management of delivery notes, official certificates, contracts, etc.) and the traceability of foodstuffs and medicines to optimise logistics and promote the circular economy.

5G solutions

5G is expected to represent an unprecedented, disruptive, technological change in different economic sectors and society over the next decade. **At Telefónica, we are already marketing 5G solutions for large companies and administrations**. The first use cases we offer involve, for example, the incorporation of robots into industry to improve processes and operations; remote assistance for supervision, assembly or operation of assets attended remotely by expert staff; and the use of drones for inspections of critical and remote assets, stock control, supervision and control of spaces, and swift assistance, etc.

These use cases prevent travel, improve predictive maintenance, increase the efficiency of productive processes and therefore generate significant environmental benefits for our customers.

> B2C - Connected living

Connectivity is the fundamental requirement for access to the digital world. Thanks to this, our **customers in the residential segment** can use applications or online services that allow them to **transform** many of their **daily actions into more environmentally friendly ones**.

To understand the usage profile of these applications and the adoption of new, more sustainable habits, such as reducing travel or commuting, **in 2022 we launched a survey of over 3,300 customers in Spain, Brazil and Germany**. With the data obtained, **we have developed a methodology that allows us to measure the CO_2 emissions avoided through the use of our connectivity and digital applications by B2C customers**.

More digitalisation and fewer emissions in our daily lives.

The main findings of these surveys were that the digital services with the highest penetration are audio/video calling, online shopping and online banking. They all make it possible to reduce or eliminate daily commutes or longer distance journeys by facilitating teleworking, remote training and access to online services. This leads to a reduction in the fuel consumption of these vehicles, which are no longer in use, and therefore in the related GHG emissions.

Our customers also use car sharing apps and accommodation options -that are less polluting than traditional ones-, as well as public transport apps that provide real time information to boost their use and satellite navigation apps that provide the most efficient routes.

> European Green Digital Coalition (EGDC)

In line with our commitment to promoting green digital solutions and transparently communicating the environmental benefits they deliver, we have been a founding member of the EGDC since 2021.

EUROPEAN GREEN DIGITAL COALITION

It is an initiative promoted by the European Commission and the main European companies in the ICT sector. To make the EU's green transition possible, we, the participating companies, are committed to:

- Investing in the development and deployment of green digital solutions with a strong focus on contributing to energy efficiency.
- Collaborating with key organisations to develop standardised methodologies for assessing the net environmental impact of digital solutions.
- Promoting cross-sectoral dialogue.
- Contributing to the development of guidelines and recommendations for the deployment of these solutions.

Telefónica has been working along these lines for many years. For example, we not only use the Eco Smart label to identify environmental benefits qualitatively but we also measure the emissions avoided by the services.

Since 2019, with support from the Carbon Trust, we have developed a **calculation methodology that converts the efficiencies** (energy, operational or material consumption), produced by our services when implemented for a customer, **into avoided CO_2 emissions**. We continuously update it to include new digital services and the technological development of our solutions and customers, while applying industry guidelines or methodological recommendations.

Digitalisation is vital to achieving the emission reduction targets required to limit the average global temperature increase to below 1.5°C.

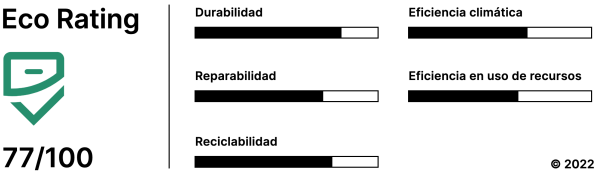
> Other initiatives for B2C customers

We want our customers to consume technology responsibly by providing them with information and alternatives that allow them to make the most sustainable choices.

Eco Rating

Telefónica is part of the Eco Rating consortium, the driving force behind a system that measures the environmental impact of mobile phones throughout their life cycle. Our aim is twofold: to help our customers make informed decisions about the handsets they buy and for mobile phone manufacturers to incorporate environmental criteria into their design and manufacturing processes.

The Eco Rating methodology **assesses the environmental performance of phones** from 1 to 100. The higher the score, the more environmentally friendly the phone.



It covers 19 environmental and material efficiency indicators and criteria. It is based on information provided by the manufacturers themselves on the technical specifications and components of each mobile phone.

Carbon offsetting in the purchase of devices
Telefónica's online shop for devices and accessories "tu.com" is the first sustainable-technology e-commerce shop in Spain.

On tu.com, customers can offset the carbon footprint associated with the manufacture of the devices they purchase (mobile phones, TVs, smartwatches, etc.). During the purchase process, information is provided on the kilograms of CO_2 resulting from the manufacture of the device and the option is offered to offset it free of charge by choosing from a number of reforestation or nature conservation projects.

Refurbished mobile phones
We sell refurbished second-hand phones with the aim of promoting the circular economy.

For further information, see chapter 2.3. Circular economy.

> Planet Pledge
In line with our commitment to transparency, in 2021 we joined the Planet Pledge initiative launched by the World Federation of Advertisers (WFA). It aims to help companies' marketing and communications teams to be part of the solution to climate change.

We are committed to:

- Being part of the global Race to Zero campaign and encouraging our marketing supply chain to do the same.
- Increasing the capacity of our marketing and communications teams to spearhead climate action by providing tools and guidance to marketing specialists and agencies.
- Harnessing the power of our communications to encourage more sustainable consumer behaviour.
- Enhancing a trustworthy marketing environment, where sustainability claims can be easily substantiated to build consumer confidence and avoid greenwashing.

2.4.5. Progress in 2022

> Avoided emissions
In 2022, thanks to the efficiencies generated by our **Eco Smart and connectivity services**, our customers **avoided the emission of 81.7[1] million tonnes of CO_2**. This demonstrates the capacity of new technologies to accelerate the transformation of the economy into a more sustainable model.

This figure, which is significantly higher than in previous years, is due to the fact that we have updated and added new services to our methodology for calculating the decarbonisation effects of our solutions. Specifically, we have included:

- **Connected Living**: **mobile connectivity and broadband** services for the **B2C segment** which enable our customers to use digital applications that allow them to adopt more sustainable habits such as teleworking, distance learning, audio/video calls, car sharing, use of satellite navigation apps, real-time access to public transport applications, shared accommodation, online shopping and online banking services.
- New **remote healthcare** services.
- **IoT services for water cycle management**.

> Eco Smart
Last year, we continued to roll out the Eco Smart label: AENOR has assessed the **Telefónica Tech , Spain, Brazil, Germany and Chile solution portfolios, certifying that 54% of the services we offer for the B2B segment** provide environmental benefits and contribute to mitigating the environmental impact of our customers.

[1] Of the total figure, 80.6 million correspond to services where Telefonica only provides broadband and mobile connectivity for the B2C segment and 1.1 million to IoT, Cloud, Big Data and Health services where Telefonica provides connectivity, IoT devices, platforms, servers and/or software. This data includes the emissions generated by the connectivity and network infrastructure that are part of these services.

> Eco Rating

In 2022, Telefónica implemented the Eco Rating in all our markets by extending it to operations in Latin America (with the exception of Venezuela, as we do not sell devices there) and Europe. Furthermore, since its implementation in all our markets, by the end of 2022 we have assessed **71% of the mobile portfolio** we offer to our customers under this system.

The Eco Rating consortium has been expanded to include 9 telecommunications companies and more than 20 mobile device manufacturers. Collectively, over 300 handsets were assessed and we expanded the system to a total of 35 countries.

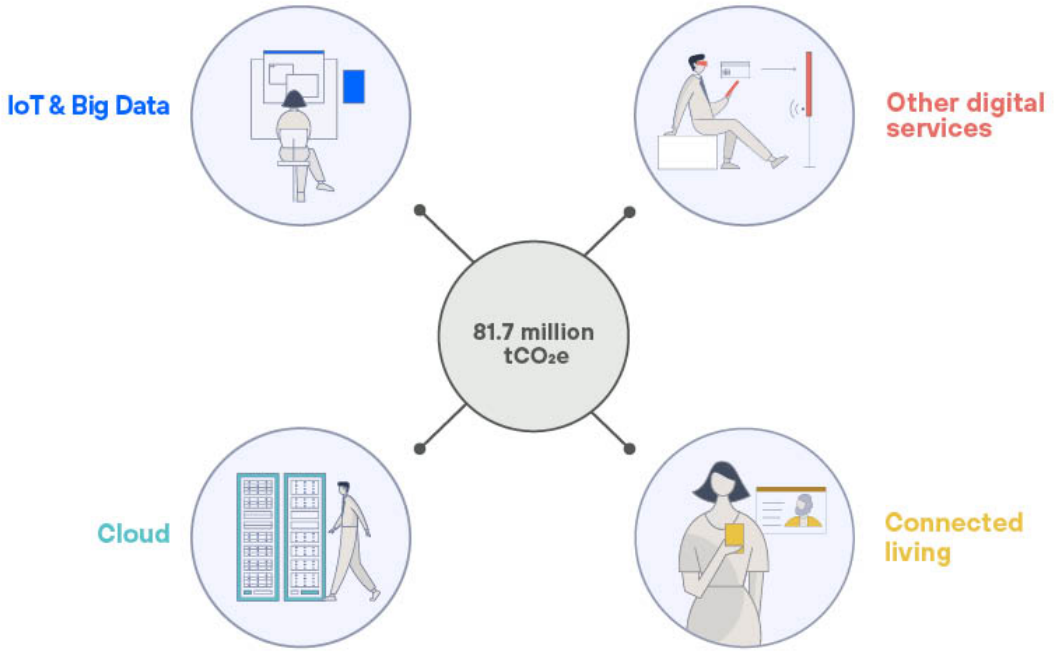
> Carbon offsetting for the purchases of devices

At the end of 2022, more than 388 tCO_2e of device emissions have been offset at Tu.com.

> Planet Pledge

In 2022, we trained around 400 marketing, communications, events and sponsorship staff to identify the environmental impact of their projects and help them reduce it. We also provided them with guidelines and recommendations on how to avoid and detect greenwashing.

Customers' emissions avoided through digitalisation



MILESTONES

- → We avoided 81.7 million tonnes of CO_2e thanks to our products and services.
- → 54% of Telefónica's services have been verified as being Eco Smart.
- → We implemented the Eco Rating in 100% of our markets.