GROWING
FOR GOOD

People Planet Progress Report 2023

WELCOME FROM OUR CEO

"In 2023, we launched our People Planet Progress strategy, uniting our commitments and priorities to be an inclusive, sustainable and responsible company. We bring our purpose-driven mindset and track record of innovation to focus on the matters that impact today and shape the opportunities of our future. We strive to grow for good."

Mike Fries, CEO, Liberty Global

Our People are the heart of our business. Throughout 2023, our Belonging strategy continued to strengthen our culture of diversity and inclusion, where people can feel free to speak up, think out loud, and are empowered to contribute. We established a Youth Council to enhance the voices and priorities of our younger generations and continued to track strongly toward our gender diversity ambition to reach 45% women representation.

We are committed to supporting equitable access to the digital world. Today, 33% of the global population remains offline, and the proliferation of AI is predicted to widen the gap for communities lagging digital opportunities. To date, we have connected over 225,000 customers with affordable digital access and our joint ventures have reached nearly 2 million people through online education programs and partnerships.

In 2023, our employees volunteered a record number of hours, contributing to a combined $5.5 million of in-kind donations, cash contributions and volunteer work provided to our communities and partner charities.

Our commitment to our Planet also underlies our priority to ensure a future of opportunity and vitality for upcoming generations. In addition to reducing our reported carbon emissions in 2023, we continued to make our products and services more sustainable and energy efficient. Our newest consumer devices are made from 100% recycled materials, while we refurbished more than 630,000 older devices for second life. Our focus on renewable energy and ensuring a greener fleet continued to progress, and we are seeing AI solutions bring a potential of more than 10% energy consumption savings across our networks today.

We work to ensure the Progress of our strategy and efforts is credible and transparent, and that we are a trusted partner. Last year, we joined the UN Global Compact, the Joint Alliance for CSR, and the Sustainable Markets Initiative, to help amplify our commitments and the impact we are able to make on the issues that matter to society, our communities, and our environment.

I would like to thank our dedicated businesses and partners for a rewarding first year.

ABOUT THIS REPORT

This annual sustainability report has been prepared in accordance with our Environmental and Community Investment Reporting Criteria and with reference to the Global Reporting Initiative (GRI) Standards. All data in this report covers the period from 1 January to 31 December 2023, unless otherwise stated.

We report our consolidated operations in Europe under the consumer brands Telenet in Belgium, Sunrise in Switzerland, Virgin Media in Ireland and UPC in Slovakia, as well as our centralised and corporate functions predominantly in the Netherlands, the UK and the US, herein referred to as Liberty Global Group or Group. We have included our proportional share of Scope 1 and 2 (market-based) emissions from the Virgin Media O2 joint venture (VMO2), the VodafoneZiggo joint venture (VodafoneZiggo) and the AtlasEdge joint venture (Atlas Edge) in our Scope 3 emissions. Our policy is to include performance data of newly acquired subsidiaries at the end of their first full year under our ownership. Subsidiaries for which we no longer have operational control are excluded as of the reporting year that our operational control ends. We rebase prior-year data for material acquisitions and dispositions.

We engaged KPMG LLP to undertake independent limited assurance, reporting to Liberty Global Ltd., using the assurance standards ISAE (UK) 3000 and ISAE 3410, for selected community investment, energy consumption and greenhouse gas (GHG) emissions data.

Additional details, including our latest stories, 2023 GRI Standards Content Index, Environmental Reporting Criteria, Community Investment Reporting Criteria and the KPMG Independent Limited Assurance Statement, can be found on our website.

Your views are important to us. Please send comments and suggestions to: cr@libertyglobal.com.

ABOUT LIBERTY GLOBAL

Liberty Global is a world leader in converged broadband, video and mobile communications services and an active investor in cutting-edge infrastructure, content and technology ventures.

Through our investments in fibre-based and 5G networks we play a vital role in society, currently providing over 85 million fixed and mobile connections[1] and launching next-gen products and services, while readying our networks for 10 Gbps and beyond.

We are creating national champions, combining the best broadband and mobile networks under brands such as VMO2, VodafoneZiggo, Telenet, Sunrise, Virgin Media Ireland and UPC. Liberty Global's consolidated businesses generate annual revenue of over $7 billion, while VMO2 and VodafoneZiggo generate combined annual revenue of over $18 billion[2].

Liberty Global Ventures, our global investment arm, has a portfolio of more than 75 companies and funds, including stakes in companies like ITV, Televisa Univision, Plume, AtlasEdge and the Formula E racing series.

1   Represents aggregate consolidated and 50% owned non-consolidated fixed and mobile subscribers. Includes wholesale mobile connections of VMO2 and B2B fixed subscribers of VodafoneZiggo.

2   Revenue figures above are provided based on full-year 2023 Liberty Global consolidated results and the combined as-reported full-year 2023 results for VodafoneZiggo and full year 2023 US GAAP results for VMO2. For more information, please visit www.libertyglobal.com.

CONTENTS

FORWARD-LOOKING STATEMENTS

This report may contain forward-looking statements within the meaning of the US Securities Act of 1933, as amended, the Securities Exchange Act of 1934, as amended, and the Private Securities Litigation Reform Act of 1995, including statements with respect to our plans, goals and strategies (regarding Environmental, Social and Governance (ESG) matters; improvements in operating procedures and technology, and potential benefits to us therefrom; our efforts to enable our customers and vendors to achieve their own ESG goals; revenue and cost expectations; financing of operations; source and sufficiency of funds required for building new equipment and upgrading existing equipment; demand for our services; competition; government regulation; and other matters that are not historical fact. Forward-looking statements can be identified by the fact that they do not relate strictly to historical or current facts, and they often use words such as 'aim', 'anticipate', 'believe', 'budgeted', 'commit', 'continue', 'could', 'estimate', 'expect', 'goal', 'intend', 'may', 'plan', 'predict', 'potential', 'project', 'pursue', 'should', 'strategy', 'target', 'will' or 'would', or the negative thereof and other words and expressions of similar meaning. These forward-looking statements involve certain risks and uncertainties that could cause actual results to differ materially from those expressed or implied by these statements. These risks and uncertainties include events that are outside of our control, such as changes in legislation, regulation, rules, codes of practice and other governmental and non-governmental policies; our inability to reduce our environmental impact and emissions; our inability to perform at our desired standards; our inability to develop

and deliver equipment, technology and software solutions to enable our customers to achieve their own ESG goals; our inability to realise intended benefits from our ESG strategies and initiatives; global economic conditions, including inflationary pressures and risks of economic downturns or recessions, environmental risks and our ability to satisfy future environmental costs; technology-related disputes; legal proceedings and actions by governmental or other regulatory agencies; public health crises, pandemics and epidemics; weather; operating costs; and other factors detailed from time to time in our filings with the US Securities and Exchange Commission, including our most recently filed Form 10-K, Form 10-K/A and Form 10-Qs. The forward-looking statements are based on certain assumptions and analyses we make in light of our experience and our perception of historical trends, current conditions, expected future developments and other factors we believe are appropriate in the circumstances. Forward-looking statements are aspirational and not guarantees or promises that goals or targets will be met. These forward-looking statements speak only as of the date of this Corporate Responsibility Report. Liberty Global expressly disclaims any obligation or undertaking to disseminate any updates or revisions to any forward-looking statement contained herein to reflect any change in Liberty Global's expectations with regard thereto or any change in events, conditions or circumstances on which any such statement is based.

2023 HIGHLIGHTS

We strive to make continual advancements towards our People Planet Progress agenda to deliver positive impact on the issues facing society and our environment. Throughout 2023, we achieved notable progress across our strategic priorities.

PEOPLE

BELONGING

44% WOMEN REPRESENTATION

achieved throughout Liberty Global Netherlands, UK and US, on track for our 2025 45% target.

INCLUSIVE CONNECTIVITY

226,000+ AFFORDABLE PACKAGES

to date provided by Telenet and VMO2.

TOMORROW'S WORKFORCE

1.9 MILLION PEOPLE POSITIVELY IMPACTED

by VMO2 and VodafoneZiggo programmes and partnerships, preparing for Tomorrow's Workforce.

COMMUNITY IMPACT

15,000+ HOURS VOLUNTEERED

across Liberty Global Group community activities.

PLANET

REDUCING OUR ENVIRONMENTAL IMPACT

28% DECREASE IN EMISSIONS

across Scope 1 and 2 in our Group since 2019.

SMART ENERGY

92% RENEWABLE ELECTRICITY

achieved for our Group.

GLOBAL GREEN TRANSITION

SUPPORTED THE EUROPEAN GREEN DIGITAL COALITION

in development of a methodology for measuring the climate impact of digital solutions.

PROGRESS

EMPLOYEE ENGAGEMENT

LAUNCHED SustainEd

webinar series to educate employees on sustainability topics.

RISK MANAGEMENT AND PERFORMANCE

INCREASED CDP RATING

to a B grade, demonstrating our commitment to climate action.

STRATEGIC PARTNERSHIPS

Joined the

UN GLOBAL COMPACT

(UNGC), aligning Liberty Global with universal sustainability principles.

OUR PEOPLE PLANET PROGRESS STRATEGY

As a technology-driven company, we are always leveraging next-generation connectivity solutions and a pioneering spirit to keep our customers, our people and our markets ahead of the digital curve today and into the future. At the same time, we are dedicated to helping address some of the world's most important issues, with a People Planet Progress strategy rooted in our purpose of Delivering Tomorrow's Connections Today, as well as our unique heritage of change, innovation and growth.

Launched in 2023, People Planet Progress sets out our priorities and ambitions for advancing inclusive, sustainable and responsible growth. It's how we're growing for good, helping us to target our actions towards the areas in which we believe we can have the greatest positive impact.

OUR MATERIAL ISSUES

To create our People Planet Progress strategy, we first worked to understand the issues that were the most important to our business, stakeholders and communities by conducting a double materiality assessment in 2022. This included engaging external sustainability consultants and a range of stakeholders, including customers, suppliers, investors, employees, leaders, industry associations and non-governmental organisations (NGOs).

The results of the double materiality assessment showed our most strategic priorities to be climate change management; diversity, equity and inclusion; and social impact and engagement. These topics now form the basis of our People Planet Progress strategy. We will conduct further materiality assessments to ensure our priorities and plans continue to remain closely aligned with expectations of our broader stakeholder group, regulatory requirements, and the priorities and values of our company.

PEOPLE
WE GROW INCLUSIVELY

Culture of Belonging
We're championing diversity, inclusion and equitable opportunities.

Tomorrow's Workforce
We're supporting science, technology, engineering and maths (STEM) education to prepare the workforce of tomorrow.

Inclusive Connectivity
We're making connectivity inclusive for all with affordable, accessible digital services and providing equitable access to digital devices.

Community Impact
We're striving to make a positive impact through volunteering, donations and strategic partnerships.

PLANET
WE GROW SUSTAINABLY

Reducing Our Environmental Impact
We're working to reduce our environmental footprint across our business.

Smart Energy
We're driving energy innovations and renewable energy adoption.

Global Green Transition
We're engaging in partnerships and coalitions to increase our industry's impact for a healthier planet.

PROGRESS
WE GROW RESPONSIBLY

Governance
We're embedding strong governance and policies that support our ESG strategy.

Employee Engagement
We're engaging employees to embed understanding and champion our People Planet Progress agenda and the value it creates for our business.

Risk Management and Performance
We're monitoring and managing our climate-based and sustainability risks to future-proof our business.

Strategic Partnerships
We're collaborating to drive global progress for sustainability and society.

ALIGNMENT WITH A GLOBAL AGENDA

We seek to support progress against the global sustainability agenda. That is why, in 2023, we signed up as an official participant in the UNGC[3] and have since integrated the UNGC's Ten Principles within the work and priorities of People Planet Progress.
We have also aligned our strategy with the UN Sustainable Development Goals (SDGs) most relevant to our priorities.

SDG 4
Quality education

We recognise the skills gap that can result from the digital transition, as well as the quality education required to close it. Through strategic partnerships, we strive to prepare Tomorrow's Workforce for technology and STEM careers.

We also partner with Street Child, whose mission is to ensure children are safe, in school and learning.

SDG 5
Gender equality

We champion diversity, equity and inclusion, working to ensure equitable opportunities across our company. We have an ambition to achieve 45% women representation in Liberty Global's workforce in the Netherlands, the UK and the US, with similar gender ambitions across our operations.

SDG 7
Affordable and clean energy

We strive to use clean energy where possible and already procure over 90% renewable energy for our operations.

Liberty Global promotes the advancement of clean energy in our Egg business and with our investments in Believ and Formula E.

SDG 9
Industry, innovation and infrastructure

We are a world leader in converged broadband, video and mobile communications and an active investor in cutting-edge infrastructure, content and technology ventures. With our investments in fibre-based and 5G networks and our development of next-gen products and services, we play a vital role in society by enabling seamless, high-speed connections.

SDG 10
Reduced inequalities

We are committed to advancing Inclusive Connectivity in our markets by enabling equitable access to services such as e-government, e-banking, e-commerce, streaming, browsing and video calling.

SDG 11
Sustainable cities and communities

Our next-gen technologies enable sustainable innovation and the green transition for other sectors. Our fibre networks are less energy intensive and enable customers to apply other sustainable, connectivity-supported solutions such as connected agriculture.

SDG 12
Responsible consumption and production

By refurbishing entertainment and connectivity boxes and using recycled plastics, Liberty Global promotes responsible product life cycles. We are investing in improving product design, shipment and packaging to reduce environmental impacts of production and consumption.

SDG 17
Partnerships for the goals

We recognise the pivotal role partnerships play in building scaled impact to address global environmental and societal issues. This is why we actively partner with organisations like the Joint Alliance for CSR (JAC), Sustainable Markets Initiative (SMI), the European Green Digital Coalition (EGDC) and Global Enabling Sustainability Initiative (GeSI).

3   Sunrise also became a member in 2023, while Telenet has held membership since 2011.

PEOPLE
WE GROW INCLUSIVELY

Our business is all about people — from the customers and communities we bring together, to the employees that drive our every innovation. We foster equitable and inclusive opportunities, empowering everyone to reach their full potential for growth.

OUR CULTURE OF BELONGING

With 61 nationalities represented across Liberty Global, our aim is to create a culture where everyone feels they can belong; where we can nurture inclusive connections and innovative ideas that deliver positive impact for our people, communities and businesses.

BELONGING

Everyone should feel supported to be themselves at work every day. Providing a culture that supports all colleagues isn't just the right thing to do, it also drives business performance and growth. That is why our Belonging strategy outlines strategic diversity pillars ensuring that no one is left behind. We focus on race, ethnicity and heritage, LGBTQIA+, gender, disability and neurodiversity, and multi-generational priorities.

We are committed to our Belonging priorities and to supporting our network of Employee Resource Groups (ERGs) — colleague-led groups that provide space for people to come together to celebrate diversity, equity & inclusion (DE&I) as well as bring awareness and ideas forward for positive environmental and climate progress.

"ERGs at Liberty Global provide a safe space for employees to connect with like-minded colleagues, building valuable networks that offer day-to-day support, education and celebration. This commitment to making a difference is why I became part of an ERG."

Charlotte Wilson, Finance Director, Energy Transition

"I care deeply about creating a more equitable world and believe every step we take towards gender equity creates a better place to work and a better world. As a bonus, working with WIN's organising committee — filled with passionate people — is incredibly fun, too."

Stephanie Temaat, Senior Manager, Internal Communications

SPOTLIGHT

Race, Ethnicity and Cultural Harmony (R.E.A.C.H.): Focused on racial, ethnic and cultural diversity.

ReMARKable: Focused on ability and neurodiversity.

Proud: Focused on the LGBTQIA+ community.

Thrive Network: Focused on diverse generational experiences.

Women's Inclusion Network (WIN): Focused on women and equitable representation.

Better Future: Focused on sustainability.

"I'm really proud of spearheading the R.E.A.C.H. Employee Resource Group. We launched a reverse mentoring programme where our ERG members were paired, as mentors, with executives from the DE&I Council as mentees. Another initiative I am really proud of is a partnership with Black creator platform Jamii, which supported a competition to uplift and advance Black-owned businesses with a grant."

Mishern Chetty, Finance Senior Manager

CASE STUDY

Empower Hours: Inspiring deeper engagement

Our ERGs create opportunities for people to further their understanding of our priority areas. One such opportunity is Empower Hours — forums for discussion and exploration, hosted by our ERGs, and designed to keep people connected and empowered to uphold our culture of Belonging. We hosted several sessions in 2023, with more than 1,000 people joining.

Throughout the year, we invited prominent speakers — including Katie Neeves (British Diversity Awards 'Hero of the Year') and Khalia Ismain (Founder of Jamii) — to share their experiences and expertise with our colleagues. WIN also hosted an Empower Hour to mark International Women's Day.

GENDER DIVERSITY

We're fostering a culture that celebrates diverse perspectives and experiences. To support our efforts, in 2022, we set out the following ambitions to increase representation of women by the end of 2025 among Liberty Global corporate employees in the Netherlands, the UK and the US:
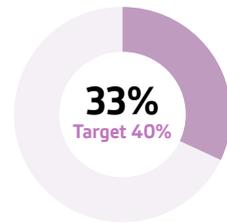
• 45% women among the workforce.
• 40% women among the wider leadership team (director positions and above).

We're proud to have made progress against these goals in 2023, achieving over 44% women representation overall and 33% at leadership level.

Representation overall
Women

44%
Target 45%

Leadership
Women

33%
Target 40%
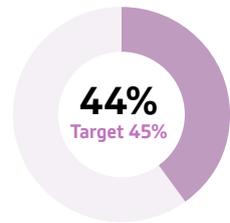
Our policies and approach to hiring have contributed to this growth. We have increased the number of diverse interview panels and candidate shortlists — aiming for gender balance in our shortlists — while standardising candidate scoring and leveraging AI to detect biased language in all job listings. We have also refreshed our recruitment partnerships to widen our pool of potential talent and introduced inclusive hiring training for all people managers.

We are

on track

with our gender ambition, achieving 44% women representation against our 2025 ambition of 45%.

CASE STUDY

Sunrise

Sunrise:
Supporting gender equality

Sunrise supports initiatives that build gender equality. This includes its membership with Advance, Switzerland's leading business association for gender equality, as well as being part of Ringier's EqualVoice initiative, which enables women to have an equal voice and participate in political, economic and social affairs. Sunrise was also awarded the Fair-ON-Pay Advanced certificate affirming its gender pay equity.

GENERATIONAL DIVERSITY

We have further developed our employee strategy to foster the next generation of leaders and programmes, harnessing the talent, perspective and culture of young professionals at Liberty Global and adding to our social impact.

In 2023, we launched our Youth Council to inject fresh new perspectives into our business. This independent voice acts as an advisory body to executive leaders, bringing together 12 commercially savvy young professionals to drive diversity of thought.

The Youth Council focuses on three business-relevant areas where generational differences are significant: changing market conditions and new revenue; people and planet; and our talent and culture. Throughout 2023, this included mapping and analysing more than 15 business-relevant topics — including sustainable business travel and AI — and discussing relevant opportunities with the Executive Leadership.

"When first joining the Youth Council, I loved the idea of helping the company with business initiatives. Given we are involved in fast-changing and forward-looking industries, it makes sense to include a dedicated youth perspective in our strategy. In less than a year, we have worked on topics ranging from sustainability to ways of working and beyond. I hope to continue creating change in both aspects and to pave the way for the council that comes after us."

Durodoluwa Adebayo, Finance Graduate Analyst and Youth Council member

EQUITABLE OPPORTUNITIES FOR GROWTH

We believe in creating equitable opportunities for talented, passionate people to advance their careers at Liberty Global. We invest in early careers, recruiting and developing promising next-gen talent.

Expanding entry-level career opportunities

Across the UK and the Netherlands, we offer various programmes aimed at providing career opportunities for entry-level talent. We have an established graduate programme spanning finance, digital, technology, cybersecurity and people functions, with over 120 graduates currently participating. Since the programme began in 2017, we have fast-tracked 81% of participants into permanent employment. Our operations have similar programmes in place to develop talent within their businesses. Collectively, we currently have 339 graduate programme participants across our Group as well as VodafoneZiggo and VMO2.

We also have intern programmes aimed at university students. To target more experienced students, we have a two-year MBA programme, during which participants complete rotations across various departments, with the ultimate aim of progressing to a mid-senior position. For young people in the UK who choose routes other than a university degree, we provide apprenticeships spanning multiple disciplines.

Continuous improvement is at the forefront of our strategy, and we were pleased to see engagement scores across early-career participants increase in 2023 compared to 2022. The diversity of our programme participants is a priority, and we are proud to have achieved 50/50 gender representation for graduates and interns in 2023, supported by attraction and recruitment process improvements.

81%

employment rate for our corporate graduate development programme.

DATA-DRIVEN ACCELERATION

We're taking a data-driven approach to creating a culture of Belonging. That's why we listen to our employees, leaning in to understand how they feel about our business and using these insights to inform our strategy. In 2023, we once again conducted our Belonging survey to gather employee sentiment. In total, 82% of employees participated, an all-time high participation rate.

The survey showed that we needed to focus on creating an environment where people feel safe to speak up, open up and take risks. In response, we delivered a new training on psychological safety to help identify and deliver improvements in this area and launched a new leadership awareness and education programme.

In 2023, we again conducted our internal Zoom survey to measure our Employee Net Promoter Score (eNPS), with an 83% participation rate.

CASE STUDY

Telenet:
Increasing psychological safety

Telenet is working to increase psychological safety among its teams. Telenet's people leaders developed a team charter covering a range of topics including how to ensure wellbeing and more strategic topics such as team missions. Employees were also presented with situations of unsafe behaviours based on testimonials and demonstrated by actors.

TOMORROW'S WORKFORCE

Today's young minds are tomorrow's leaders, and we are dedicated to helping upcoming generations develop critical capabilities through digital skills and STEM education.

1.9 MILLION

people positively impacted by VMO2 and VodafoneZiggo programmes and partnerships preparing for Tomorrow's Workforce.

The world is rapidly and continuously moving towards greater digitisation. According to the European Commission, as of 2023, 77% of companies across the EU are finding it difficult to recruit people with the skills needed. That's why we are working with strategic partners to prepare the workforce of the future with the skills and aptitude to pursue careers in technology.

BRINGING LEARNING ONLINE

According to research commissioned by VMO2, approximately 80% of parents do not believe they have enough information on the online streaming industry, while over half are unaware children can make payments to content creators online. We believe in the power of education to address issues such as these and, across our Group as well as VMO2 and VodafoneZiggo, we deliver a variety of targeted courses designed to enhance understanding and safe use of the online world.

For example, in the Netherlands, VodafoneZiggo offers Online Masters, a free educational programme for schools that helps children safely and skilfully navigate the digital world. Developed together with Safe Internet (Veiliginternetten.nl) and Netwerk Mediawijsheid, Online Masters uses video lessons and field experts to teach students, teachers and caregivers about online safety and online skills, which in 2023 helped over 183,000 students and nearly 6,000 educators advance these critical capabilities.

VMO2 is a founding member of a similar initiative in the UK, Internet Matters, to educate parents and guardians on safe internet use. Here, VMO2's broadband and mobile customers can access technical tools and advice to help build digital resilience in children, with 1.7 million people benefiting in 2023.

CASE STUDY

Enhancing education through gamification

We teamed up with IT Randsteden, a company specialising in tech education, to help young people develop digital skills while learning about environmental responsibility. Together we designed a Minecraft-based education game, Eco City, that tasks students with creating an eco-city with the lowest possible carbon footprint. At the same time, participants develop core skills such as internet research and collaboration. Launched in December, the game has been played by over 3,000 children to date. We have also made it publicly available so more young people can learn about sustainability and digital literacy in a fun and engaging gaming format.

"Minecraft is the ideal tool for digital skills because kids love Minecraft. But it's not just a game. They must learn a lot of things about research, about working together, working with the computer and combine it all together. They see it as playing, but they're learning a lot."

Richard Meijer,
Director, IT Randsteden

REAL-WORLD EXPERIENCES FOR TECH CAREERS

We want to get young people fully immersed in digital learning, offering a range of events designed to provide real-world education opportunities and insights into STEM careers.

CASE STUDY

VodafoneZiggo: Experience Days

During 2023, we launched a partnership with a Dutch organisation focused on education, JINC, to deliver tailored day internship programmes where Liberty Global employees engage students through in-person, technology-focused workshops.

VodafoneZiggo holds a similar partnership with JINC which has supported the development of Experience Days, in which primary school students can explore the technologies of today and tomorrow across its offices. During the Experience Day, students participate in a variety of workshops, supported by VodafoneZiggo colleagues. During 2023, nearly 700 students took part in an Experience Day, getting the opportunity to experience the possibilities of the tech world and explore technology careers in real life.

CASE STUDY

Virgin Media Ireland: Work placements for students

Virgin Media Ireland is an industry partner for the P-TECH (Pathways in Technology) education model. This innovative pilot programme, developed in collaboration with the Department of Education and other partners, combines secondary and further/higher education with diverse workplace experiences.

Students can earn a college-level qualification, the Certificate in P-TECH, recognised by Quality and Qualifications Ireland (QQI) and delivered in schools through the National College of Ireland. This initiative emphasises future skills, equipping students to meet the demands of the world of tomorrow and preparing them for successful careers in a rapidly evolving job market.

Throughout 2023, Virgin Media Ireland delivered workshops and hosted study visits in their studio for 120 students. Additionally, 12 transition-year students interested in digital marketing chose Virgin Media Ireland for their work placements.

CASE STUDY

Girls' Day

In the Netherlands, we hosted more than 20 girls with an interest in technology to raise awareness of STEM careers — an initiative supported by our WIN ERG. To enhance the learning experience and connect with professionals in the field, participants engaged in speed networking sessions, building connections that could shape their future careers. Additionally, we provided valuable information about early STEM career paths — from internships and apprenticeships to full-time roles — to help participants explore the exciting possibilities ahead.

INCLUSIVE CONNECTIVITY

As a company at the forefront of technological change, we are committed to enhancing digital inclusion for our communities and wider society. With the International Telecommunication Union reporting that 33% of the global population is still offline, we are leveraging our next-generation services to connect those at risk of digital exclusion, accelerating inclusive, affordable access to the online world.

To date,

226,000+

people have benefited from Inclusive Connectivity packages offered by Telenet and VMO2.

We provide over 85 million connections[4] across Europe through fibre, 5G and other digital services, and with our focus on Inclusive Connectivity, we are taking action to make those connections work for more people. We are expanding coverage of our next-gen services to unconnected, underserved communities – making affordable options available in our markets for vulnerable groups and those impacted by income inequalities.

AFFORDABLE CONNECTIVITY

Connectivity plays a crucial role in our daily lives. Not only does it bring people together and enable endless innovation, but it also facilitates many other important aspects of modern living. Through a series of programmes and partnerships, we are making moves to close the digital divide, rolling out fibre and 5G across our footprint and seizing opportunities to maximise connections.

Our operating companies offer affordable connectivity packages for vulnerable customers.

4   Represents aggregate consolidated and 50% owned non-consolidated fixed and mobile subscribers. Includes wholesale mobile connections of VMO2 and B2B fixed subscribers of VodafoneZiggo.

CASE STUDY

Telenet: Affordable packages

We strive to remove barriers to connectivity for vulnerable groups. Since 2005, Telenet has offered Social Tariff (now revised to Social Internet), in alignment with the Belgian government's requirements, which provides a fixed discount on an internet package chosen by eligible individuals. As of 2023, over 75,000 people across Flanders have benefited from Social Tariff via Telenet.

In addition, Telenet launched Essential Internet in 2020, an initiative to help close the digital divide. The programme offers internet solutions designed to help the most vulnerable people in society with no or very limited at-home connection who are unable to afford existing offers. Telenet works with more than 700 partners to make sure that Essential Internet is distributed to those in need. By the end of 2023, over 1,100 individuals and families had participated in the programme.

CASE STUDY

VMO2: The National Databank

The National Databank in the UK is a collaborative effort between VMO2 and the digital inclusion charity, Good Things Foundation. Essentially a 'foodbank' for data, VMO2 has committed to delivering over 61 million GB of data via the National Databank by the end of 2025 to address digital poverty. In December 2023, this included rolling out free access at over 240 O2-owned stores as well as homelessness charities.

The Christmas drive was the next in a series of steps already taken to advance digital inclusivity through the National Databank. In 2023, the distribution of free data vouchers helped over 44,600 people get online[5]. In fact, throughout the year, VMO2 connected over 106,000 people through the National Databank and additional services such as Free Community Broadband, Community Calling, Tech Lending Hubs and Essential broadband, meaning there have been 150,000 beneficiaries since the programme began.

100,000+

people received connectivity by VMO2 through the National Databank in 2023.

Our other operations are also strengthening their propositions to connect vulnerable customers. For example, in the Netherlands, VodafoneZiggo has teamed up with other connectivity providers and local organisations to launch the Digital Participation Package (Digitaal Meedoen Pakket) pilot initiative. And in Switzerland, Sunrise is partnering with the non-profit organisation Caritas to provide access to discounted mobile, internet and television services for households living at or below the poverty line.

THE GIFT OF DEVICES

As well as uplifting our communities through affordable connectivity, we support equitable digital access in the form of in-kind donations. Throughout 2023, our corporate office in the Netherlands donated just under 400 digital devices — including monitors, docking stations, televisions, phones, printers and laptops — to several social impact organisations.

To maximise impact, we make sure our donations are directed towards those with no or limited digital access. With much of our lives happening online, having a device can open new opportunities to those in need. Through supporting organisations that focus on vulnerable groups, we make sure that our devices are given a purposeful second life.

"We help our clients with disabilities to pursue education and work. Our clients may have limited money to spend, where purchasing a laptop is not possible, but necessary to help take a step further in education or towards work opportunities. Laptop donations are crucial for this."

Cordaan, Booz Allen charity partner

Similarly, our UK corporate office donated over 1,700 items to Solidaritech, a non-profit that redistributes used tech to asylum seekers and refugees.

Sunrise contributed approximately 900 devices to various non-profits and schools across Switzerland and Romania, while Telenet donated approximately $1.2 million in product and equipment throughout 2023.

5   Connections made through the National Databank. Figures include our 'household impact multiplier'.

COMMUNITY IMPACT

Our people are committed to positive Community Impact — bringing their time, purpose and passions to volunteering and other philanthropic endeavours across a variety of causes that benefit our local communities.

49%
of employees participated in Connected Communities in 2023, up from 43% in 2022.

Liberty Global's volunteering activities in the Netherlands, the UK and the US are coordinated through our global Connected Communities programme, which we launched in 2021. Similar initiatives exist across most other areas of our organisation to enable employees more broadly to support locally relevant causes.

Through Connected Communities, we focus on actions that support the three pillars of our People Planet Progress strategy, while also responding to urgent community and even global needs.

OUR VOLUNTEERING IN NUMBERS

In 2014, we launched our first Liberty Global Volunteer Day, although some of our volunteering initiatives started as early as 2008. A decade later, engagement with our volunteering programme continues to grow and evolve year-over-year, with employees contributing within the communities year-round.

Liberty Global Group volunteering performance
Hours

Year	Hours
2023	**15,551**
2022	9,269
2021	6,656
2020	3,527
2019	4,568
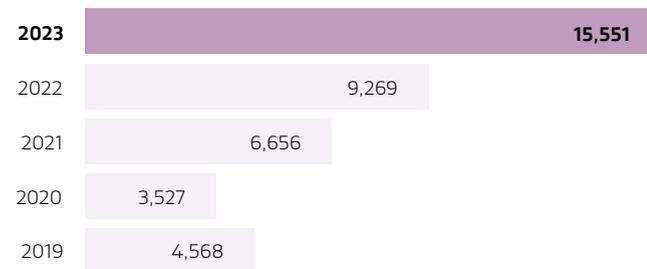
We continually work to evolve Connected Communities, a highly engaging initiative that helps our people contribute to their communities. As we move forward, we will be implementing new programme features that help repeat volunteers amplify the impact of their actions through company donations. We are also developing a volunteer champions network to help streamline how we support employees and their community actions.

Liberty Global volunteers

Chapter One

"To see my students' reading and comprehension skills develop week on week is so satisfying. Chapter One is such a rewarding volunteering opportunity and to do it knowing you are helping future generations to develop an essential life skill is amazing. Thank you, Chapter One, and Liberty Global."

Karen Prichard, Managing Director, Chief Security Officer

"I volunteer because I've been fortunate, and I believe in extending that fortune to others on their journey to safety and self-reliance. I help people who have come to the Netherlands and need help to integrate. I currently work with four different families helping them to become more independent and confident and feel safe in the country they now call home."

Isla Thompson, Senior Manager, IT Governance and Compliance

EforAll®

"I firmly believe that what we do outside of our regular jobs cannot only be more impactful to the community we live in, but it can also help us become more well-rounded human beings by interacting with and elevating those less fortunate than us. Having had the opportunity to volunteer with EforAll for the past two years. I have learnt a huge amount from the entrepreneurs I have worked with and also the other mentors on the programme."

Hamish Lynde, Senior Accountant, Accounting & Financial Reporting

STREET CHILD:
PROVIDING LONG-TERM EDUCATION SUPPORT GLOBALLY

We believe in the power of long-term partnerships to drive enduring community benefits. For more than 10 years, we have partnered with the charity Street Child to help advance its mission of keeping children safe, in school and learning.

Today, approximately 265 million children in the world are out of school. Prioritising children in the most marginalised populations across more than 25 countries globally, Street Child tackles educational gaps through interventions to address children's immediate needs, while building capacity for caregivers, communities and schools to drive improvements for the long term. As a company that maintains a keen focus on nurturing Tomorrow's Workforce, we hold Street Child's work close to our hearts.

STREET CHILD

In 2023, Street Child helped the lives of
90,000+
children through contributions and funding from Liberty Global and our partners.

Our partnership in 2023

2023 represented a milestone year for the organisation, having helped 1 million children since being founded in 2008. Liberty Global is honoured to have played a role in this accomplishment by supporting various activities throughout the years.

Our support of Street Child's work comes in a variety of ways. Our combined donations support around 30% of their annual programmes, indirectly contributing to the support of nearly 40,000 children in 2023. This often includes forgotten crises, like in northeast Nigeria and Afghanistan where conflict and poverty are threatening children's futures, as well as in conflict areas such as Syria and Ukraine.

Our contributions towards the charity's events, such as the Big Ride, reached nearly 7,000 children with life-changing initiatives.

Fundraising from our wider partner network allowed the organisation to reach another 45,000 children.

SPOTLIGHT

Emergency relief for those in need

As well as advocating for education, Street Child is one of our emergency relief partners. In 2023, we supported their emergency relief efforts following the earthquakes in Turkey and Syria. The response provided immediate, life-saving support such as shelter and food, as well as longer-term interventions to help survivors begin the complex road to recovery.

Several of our operating companies offered support to those affected, providing free calls, switching off roaming charges and donating to the charity, as well as other organisations such as Jangala, Oxfam and the Red Cross.

SPOTLIGHT

A Big Ride for children's education

Every year we partner with Street Child to host our flagship fundraising event, The Big Ride. Across two days, hundreds of people get involved by walking, running or cycling to raise money.

In 2023, the event was held in the Netherlands and brought together a record 650 participants — increasing from 550 in both 2021 and 2022. The Big Ride raised nearly $925,000 in 2023.

Our support for Street Child is important to us as we believe education is life-changing and key to advancing a well-functioning global society. We look forward to continuing our work together in the coming years.

Nearly
$925,000
was raised through
our Big Ride in 2023.

COMMUNITY INVESTMENT

Wherever we operate, we are creating positive impact in the communities that surround us. We seek out opportunities to support our People priorities in a variety of ways.

We enable actions across each of our priorities: Belonging; Tomorrow's Workforce; Inclusive Connectivity; and Community Impact — delivering on our commitment to the issues impacting our communities and broader society.

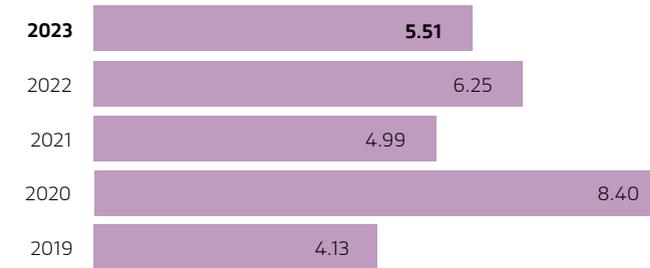Our community investment figures cover several actions:

- **Cash donations:** We provide financial resources to support local and international initiatives, non-profits and community efforts.
- **In-kind donations:** We support people and organisations by donating goods such as legacy equipment, as well as services such as discounted packages.
- **Volunteering:** We offer Liberty Global Corporate employees 24 hours of paid time off annually to volunteer, as our operating companies also have meaningful volunteer options and formal volunteering policies in place.
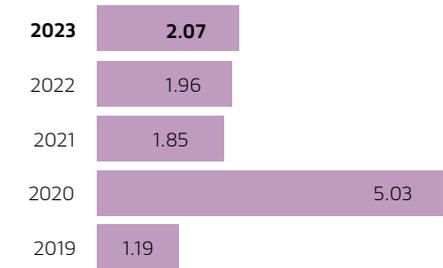
OUR COMMUNITY INVESTMENT IN 2023

Throughout 2023, we continued working to support our communities, investing approximately $5.5 million, when expressed in monetary value, in contributions to worthy causes. This is part of our ongoing efforts to create value for our communities. We are particularly proud to have amplified how we give back through volunteering year on year, demonstrating the commitment of Liberty Global colleagues to actively supporting our social impact efforts.

Total community investments[6]

Total (millions USD)

Year	Value
2023	5.51
2022	6.25
2021	4.99
2020	8.40
2019	4.13

In-kind (millions USD)

Year	Value
2023	2.07
2022	1.96
2021	1.85
2020	5.03
2019	1.19

Time (millions USD)

Year	Value
2023	0.53
2022	0.29
2021	0.24
2020	0.12
2019	0.15

Cash (millions USD)

Year	Value
2023	2.91
2022	3.99
2021	2.91
2020	3.25
2019	2.79
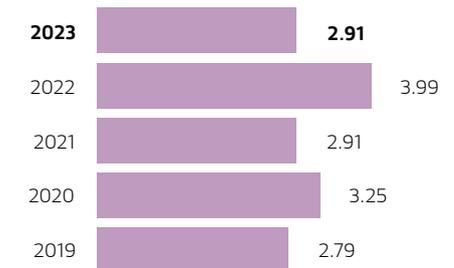
$29 MILLION

in cash, time and in-kind donations since 2019.

6   We measure the impact of our community investment programmes using the globally recognised B4SI model (formerly known as London Benchmarking Group). This methodology records the inputs, outputs and positive community impacts of our investments in cash, time and in-kind contributions. These figures cover our corporate organisation and our consolidated operations across Europe.

PLANET
WE GROW SUSTAINABLY

To safeguard tomorrow, we are acting today to address climate change risks and pressing environmental issues. Our Planet strategy ensures that as we innovate, grow our business and connect our customers to an advancing digital world, we remain sustainability-minded and a good steward for our planet and generations to come.

OUR PLANET STRATEGY

In 2023, we introduced our People Planet Progress strategy — coinciding with the earth's warmest year ever on record. At Liberty Global, we understand the gravity of climate change and are pursuing a strategy to reduce emissions and our environmental impact. We are implementing sustainable solutions that serve our business and our industry, and will ultimately support others in a long-term green transition.

Our three Planet priorities demonstrate our focus:

First, we are dedicated to Reducing our Environmental Footprint. This involves lowering our carbon emissions company-wide — from our offices to our fleet and the way we travel. We contribute to the circular economy, promoting responsible products and limiting e-waste. As most of our carbon footprint is created in our supply chain, we are actively working with our supply chain partners to encourage decarbonisation.

We also invest in Smart Energy, which helps us manage our energy use in more innovative and efficient ways. We focus on the energy efficiency of our networks, continuously seeking new applications and AI-enabled solutions for energy management. We also strive to use renewable energy to ensure that the energy used in running our business has the least environmental impact.

Lastly, we support our Global Green Transition, which enables climate action and green strategies for industries beyond our own. Global platforms, such as the European Green Digital Coalition, the Sustainable Markets Initiative and others, allow us to create a positive impact both within and outside our company.
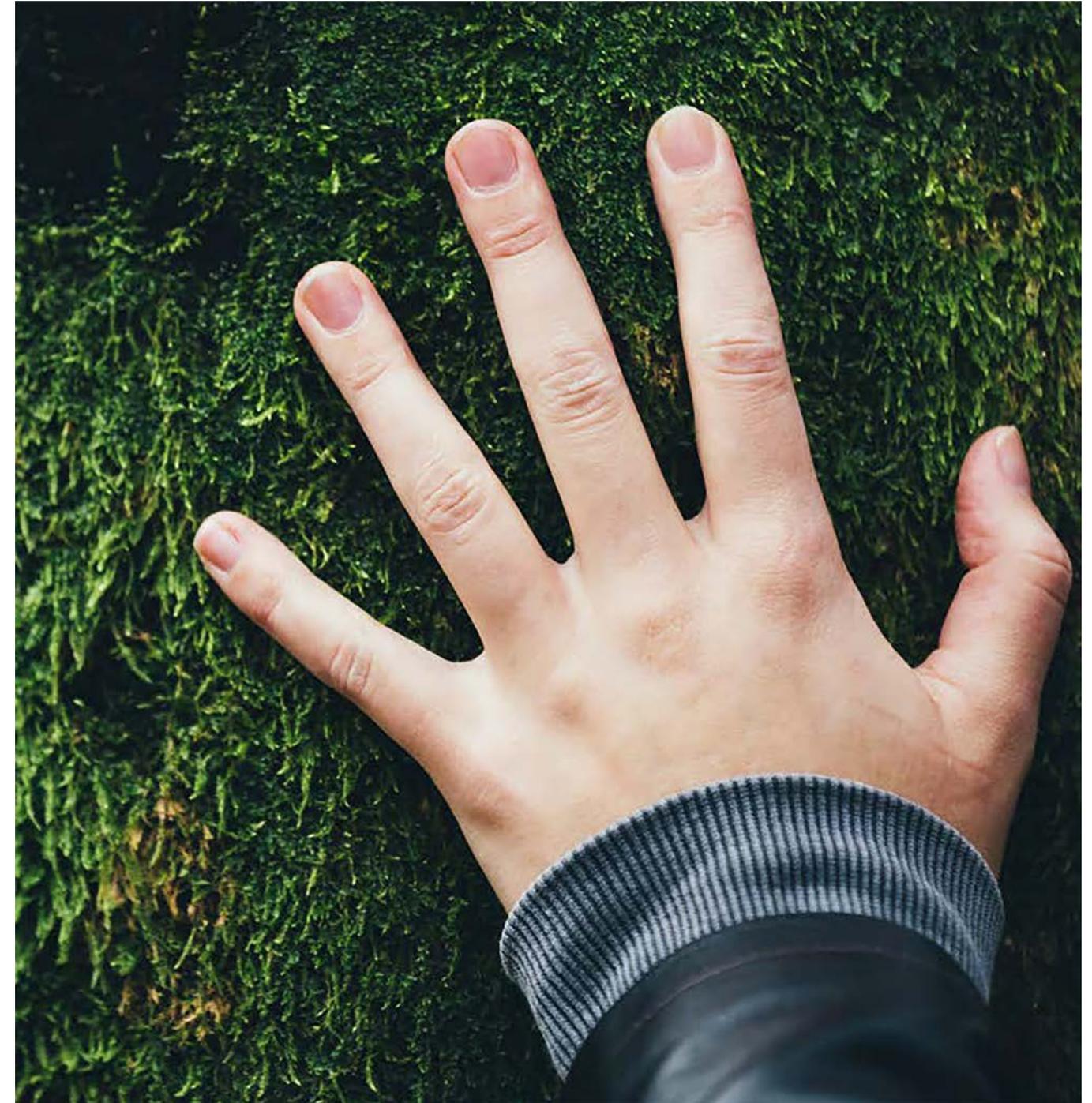
REDUCING OUR ENVIRONMENTAL IMPACT

To reduce our impact on the world around us, we are working to lower the carbon emissions from our operations and travel and to reduce the energy used by our networks. We encourage our supply chain partners to adopt a similar approach to decarbonisation.

Our product design embodies our commitment to our Planet priority. By integrating innovation and sustainability, we ensure exceptional customer experiences while setting new standards for more sustainable products. This is where our People Planet Progress strategy comes to life.

OUR PRODUCT SUSTAINABILITY

As our entertainment and connectivity products go into customers' homes, it is our responsibility to ensure they are as energy efficient as possible. That is why we continue to evolve them, taking design, energy use, materials and end-of-life into account.

For example, our TV remote control was previously made from 100% virgin material. But through redesign, the latest TV remote control contains 85%[7] post-consumer recycled (PCR) material and nearly all the single-use plastic has been removed from the packaging. In 2024, we will launch a new, more energy-efficient model that will use fewer than half the number of batteries during its lifetime.

100%

PCR for all new entertainment and connectivity boxes.

CASE STUDY

Our product evolution

Energy-efficient devices

Whenever we design and upgrade our products, we think about their energy efficiency, identifying potential updates and new features to reduce annual energy consumption for our customers.

For example, we have reduced the annual energy consumption of entertainment boxes from 162 kWh to just 16 kWh[8]. Similarly, in our connectivity products, we have reduced the annual energy consumption from 107 kWh to 82 kWh[9]. These reductions could translate into customer savings of nearly $72 a year for entertainment products and $12 for connectivity products[10].

Material use

Natural resources are finite and we all have a role to play in preserving them for future generations. Considering this, a core focus for us is material use reduction and product minimisation. We also look to increase the proportion of recycled content we use – this is why we no longer use white plastic, which is harder to produce from PCR material.

Our material achievements are worth celebrating. Whereas early devices were made entirely of virgin plastic, we have now transitioned to 100% PCR for all new entertainment and connectivity boxes. In addition, through a journey of continual lightweighting, we have managed to reduce the size of our entertainment products dramatically – from the previous generation of TV box, which was 1.41 kg, to our latest Mini TV Box, which is less than a tenth of that at 102 g, making it 14 times lighter and significantly reducing material requirements.

Not only do smaller products require less material to produce, but also helps us save and prevent carbon emissions in bulk shipments. We are able to ship around 20 times more Mini TV boxes in the same volume shipment compared to previous generation devices.

Mini TV Box

Annual energy consumption of entertainment boxes reduced to 16 kWh

TV remote control

85% post-consumer recycled (PCR) material and nearly all the single-use plastic has been removed from the packaging

Connect Box 3

Annual energy consumption reduced to 82 kWh

Customer savings on their electricity bills

Up to $72 a year

Lighter

14 times lighter compared to previous generation of TV boxes

100% PCR

for all new entertainment and connectivity boxes

Customer savings on their electricity bills

Up to $12 a year

---

7   The IR lens in the TV remote control currently must be made of virgin material, which is why we haven't achieved 100%.

8   Power measurements are calculated using the standard Voluntary Industry Agreement user behaviour and the entertainment box going into a network standby mode when not active. Comparison made between the previous generation of TV boxes and our latest Mini TV Box entertainment boxes.

9   These power measurements are calculated based on an assumption of low-traffic conditions and modelled user behaviour validated by customer trials. Comparison made between Connect Box V1 and Connect Box V3 connectivity boxes.

10 Estimates for customers in the Netherlands based on Eurostat and DESNZ data as of December 2023.

Circular design

We want to keep our products in use for as long as possible. This includes evolving models that are optimised for refurbishment and deployment to new customers across our markets, with finishings that are simple to recycle and casing structures that lend themselves to easy disassembly and parts replacement.

Refurbishment in numbers

We are working to increase product refurbishment and redeployment to customers across our markets. While we take every opportunity to refurbish and redistribute fit-for-purpose products, we also periodically switch out legacy models for new, more energy-efficient alternatives. This results in cyclical fluctuations in annual refurbishment rates as we strive to balance circularity with efficiency.

Customer Premise Equipment (CPE) refurbishments[11]
Products

Year	Value
2023	**632,884**
2022	509,983
2021	700,290
2020	580,745
2019	540,106
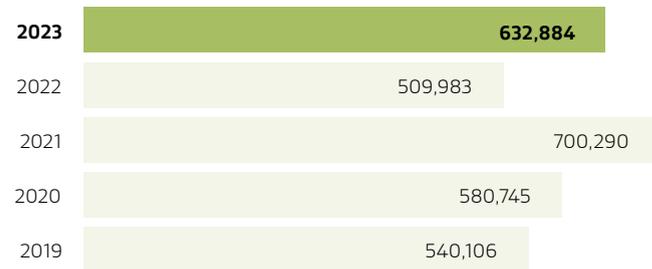
11 Refurbished CPE units: reported numbers adjusted for subsidiary dispositions, but do not include CPEs belonging to Sunrise prior to the year of acquisition.

Circular connectivity and entertainment products

We are collaborating with our refurbishment partners to keep more used products in circulation for longer while giving our customers the same great experience. We are reducing e-waste and emissions associated with product manufacturing and transport. At the refurbishment facilities, products are assessed, tested, updated, cleaned and quality checked before being redistributed. During this process, additional manufacturer tests are conducted and parts are replaced if required.

Our partners are continually looking to enhance the process, from trialling sorting systems that use machine learning to tailor acceptance criteria, to developing automated testing systems that confirm the proper functionality of TV remote controls. We are also conducting a study to compare manufacturing emissions with refurbishment emissions with the aim of identifying opportunities for reducing both.

Another improvement — switching from high-gloss finishes to textured surfaces — has reduced scratch visibility on our devices. This has also brought significant cost savings by increasing the inspection pass rate and reducing the number of parts requiring replacement.

Closing the loop on packaging

We believe in continuous improvement — always innovating to push our products forward. This includes considering the packaging we use to protect our products, removing unnecessary plastic and shifting to more recycled and recyclable alternatives.

Plastic reduction in bulk packaging

Our commitment to plastic packaging reduction begins behind the scenes, with the materials used to protect our products in transit. We have made the switch to bulk cartons and unit packaging that are 100% free of single-use plastic for our latest Mini TV Box products, opting for a cardboard alternative that is easy to recycle and provides the same level of product protection.

Today, we are working with our suppliers to design the last single-use plastic component — pallet stabilisation wrap. We are also partnering with key market vendors to make end-user packaging free of single-use plastic, with only plastic battery tabs in TV remote controls left to design out.

FLEET MANAGEMENT AND FUEL USAGE

A greener fleet has also been at the forefront of our priorities and making sure that our employees are moving around with the least environmental impact is part of our Planet agenda. Currently, 27% of our mobile fleet is electric but our goal is to reach a near-100% electric fleet in the future.

The mobile fleet is currently contributing to 50% of our direct emissions. With ongoing electrification in 2023 we managed to reduce our emissions by 12%. We will continue to accelerate our greener fleet efforts while continuing to monitor the progress of enabling infrastructure in our markets, local regulation and working with our suppliers on fleet requirements.

We have reduced our fossil fuel consumption and increased the use of sustainable fuel use across our operations. Currently, our biggest fuel categories are natural gas, which is used to operation certain facilities, as well as petrol and aviation fuel, which enable our mobility.

We continue to look for opportunities to further electrify our fleet and continue our progress in identifying other alternatives for fossil fuels.

Electricity

Our networks, our offices and now even our fleet all require electricity. Currently, 93% of our electricity consumption is attributed to the operation of our network[12]. It is crucial that we source renewable electricity and increase network energy efficiency as much as possible, as energy usage is likely to increase in the future with growing data consumption and the deployment of AI.

Renewable electricity is a key lever in our efforts to reduce emissions, and we are working to increase its usage in overall electricity consumption. In 2023, we achieved 92% renewable electricity for Liberty Global operations.

Renewable energy consumption
Renewable electricity percentage

Year	Percentage
2023	**92%**
2022	92%
2021	91%
2020	72%
2019 (baseline)	30%
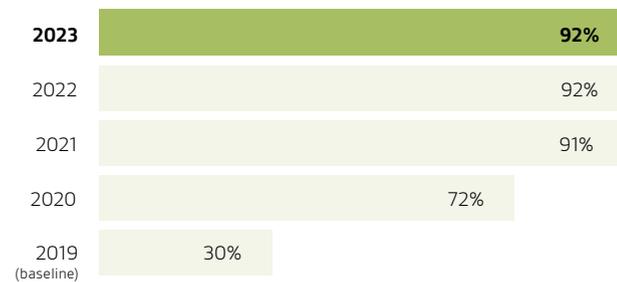
12 Operation of our network includes: data centres, technical sites (headend/hub site/ server room), proprietary outside plant infrastructure, third-party outside plant infrastructure and mobile infrastructure.

THE PROGRESS ON OUR CARBON REDUCTION TARGETS

We have set Science Based Targets initiative (SBTi)-approved targets in 2020 which helps guide our efforts today.
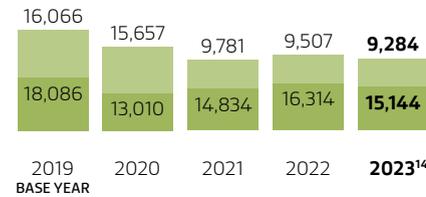
Our targets

Our target is to reduce our absolute Scope 1 and 2 emissions 50% by 2030 and 80% by 2050 (versus 2019). In the meantime, we continue to work towards our Scope 1 and 2 carbon-neutrality ambition for 2030 announced in 2021.

We also committed to reduce absolute Scope 3 GHG emissions from the manufacture and use of customer premises equipment by 50% by 2030 and to reduce Scope 3 GHG emissions by 50% per home over the same target period, from a 2019 base year.

We are continuing our work towards setting a long-term ambition, informed by science-based net zero principles, to reduce all possible emissions across Scopes 1, 2 and 3. To advance our efforts, we have pursued a series of initiatives that will help us accurately calculate and account for Scope 3 emissions. We are also engaging our suppliers to reduce their emissions, while reducing our own impact though product manufacturing and use.

Emissions progress (metric tonnes CO_2e)[13]

Scope 1 & 2

	2019 BASE YEAR	2020	2021	2022	2023[14]
Scope 1	16,066	15,657	9,781	9,507	**9,284**
Scope 2 (marked-based)	18,086	13,010	14,834	16,314	**15,144**

● Scope 1
● Scope 2 (marked-based)

Scope 3

| 2019 BASE YEAR	2020	2021	2022	2023[14]
66,536	61,635	49,360	48,547	**43,509**

Our Scope 1 and 2 emissions

Scope 1 emissions are direct emissions produced from sources we control, such as our fleet, heating and cooling. Scope 2 emissions are indirect emissions associated with the energy we purchase.

Throughout 2023, we remained focused on reducing these emissions in line with our SBTi target. As a result, we have achieved a 5% reduction in Scope 1 and 2 market-based[15] emissions versus 2022 and a 28% reduction versus 2019.

Reductions in Scope 1 and 2 emissions were driven by improvements in fleet management, reduction in fossil fuels and investments in energy efficiency and renewable electricity.
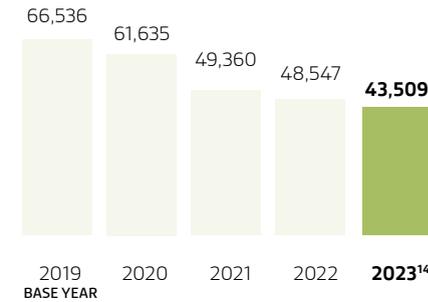
Our Scope 3 emissions

Scope 3 emissions are indirect emissions that occur within our wider value chain. During 2023, we began efforts to assess our wider Scope 3 emissions more closely and will provide an expanded view of our Scope 3 emissions and comparison to targets as available.

Addressing Scope 3

Given most Scope 3 emissions occur in our supply chain, we are taking steps in engaging with our most significant suppliers to understand their emissions and decarbonisation journeys towards net zero. We also continue to deploy efforts to reduce the carbon footprint and energy consumption of our products, we look to reducing our emissions related to travel and waste management, and ultimately, we work closely with our JVs to align on emissions-reduction efforts.
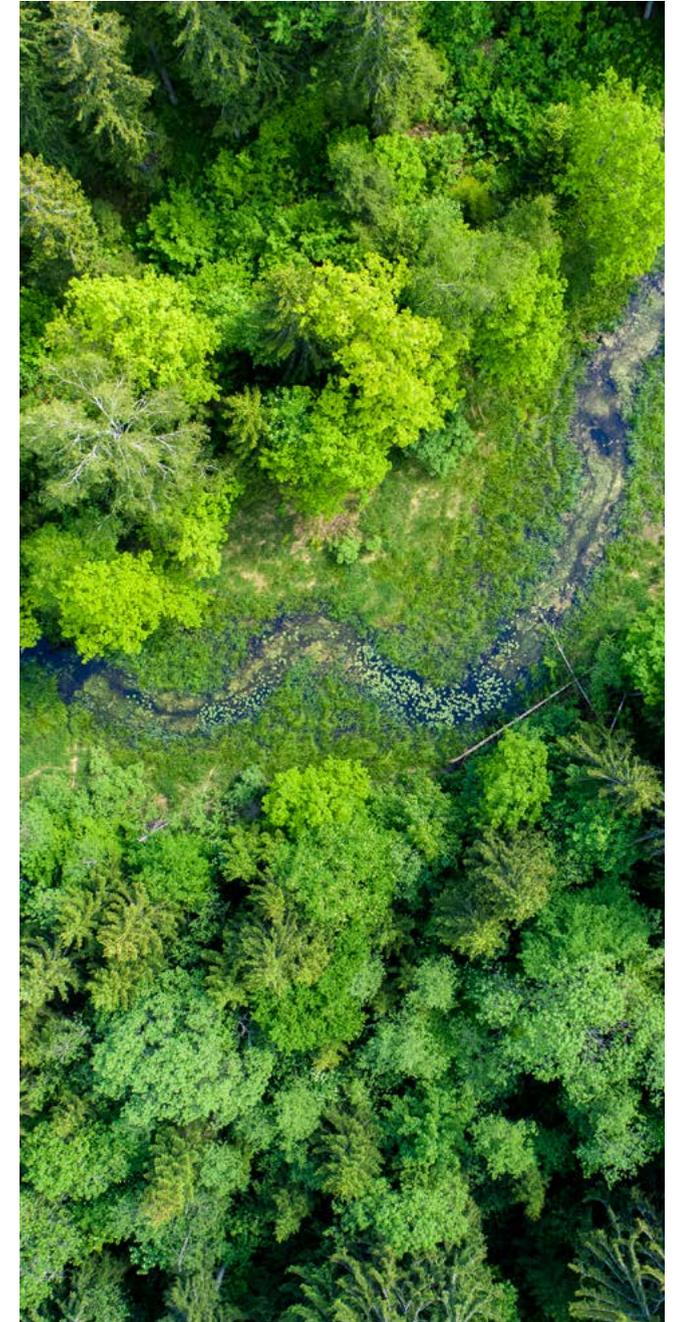
28%
reduction in Scope 1 and 2 market-based emissions since 2019.

13 Prior period information includes certain restatements. For further information, please see the 'Prior-period restatements' section in our Appendix.

14 Within KPMG LLP's independent limited assurance scope. Please see the KPMG Independent Limited Assurance Report on our website for further information.

15 Market-based emissions are associated with the energy a company purchases, which is different from the power the local grid generates.

SMART ENERGY

Great connectivity is about more than just the products and services we offer; it is about how we power them too. We take a smart approach to energy, innovating to enable energy savings — both within our sites and at the customer-use phase — while pursuing more opportunities to harness renewable sources.

1,100

households' worth of annual electricity use avoided by Sunrise thanks to Powerstar software.

As the majority of our electricity consumption comes from electricity used in our networks, we are focused on finding smart ways to curb network-related energy use. We employ a range of solutions to tackle energy use in our mobile networks. Internet of Things (IoT) and AI-based techniques help optimise facility efficiency and reduce unnecessary energy consumption by helping predict requirements in real-time.

REDUCED ENERGY USE, SAME GREAT EXPERIENCE

During 2023, the Sunrise energy management programme, Powerstar, continued to deliver reductions of electricity consumption within its mobile network.

Since 2021, Sunrise has used Powerstar to analyse radio access network traffic using AI algorithms and reduced its mobile network energy consumption by over 5,500 megawatt hours (MWh) annually — equivalent to the annual energy consumption of 1,100 Swiss households[16].

Sunrise strives to make sure such reductions can also be achieved in other areas of the business. To drive efforts forwards, Sunrise considers energy efficiency throughout the business decision-making process, including investing in next-gen network equipment to replace old technologies, which will further reduce energy consumption in the coming years.

We have seen energy efficiency innovation solutions gaining more momentum. Sunrise, one of the pioneers in this space, has shown the potential with more companies with our other operations following in similar footsteps.

16　Calculated based on standard household consumption in Switzerland of 5,000 kWh a year according to EnergieSchweiz, August 2021.

CASE STUDY

vodafone **Ziggo**

VodafoneZiggo: Minimising network power use

VodafoneZiggo Mobile Engineering teams have implemented software features that will help reduce network power consumption by approximately 10% without impacting customer experience.

Today, network components can be powered down during periods of low network traffic to help minimise unnecessary energy use. To automate and optimise the approach, the team has implemented a control system which enables energy-saving features across the entire network to be coordinated from a single centralised point. At the same time, various network parameters are assessed to ensure VodafoneZiggo customers still get the best user experience possible.

While the savings already achieved are worthy of celebration, they only represent one step in VodafoneZiggo roadmap to enhance network efficiency. As new 5G frequencies continue to be rolled out across the Netherlands, VodafoneZiggo will continue finding new and better ways to reduce power consumption with the goal to deliver an excellent digital experience with minimal energy impact.

"We are witnessing AI supporting sustainable innovations in agriculture, transportation and environmental monitoring, made possible through the connectivity provided by organisations like ours. We have focused on using AI to manage workloads on our mobile network and have now begun applying our learning to our fixed networks and data centres. Using AI to automate our network operations has the potential to reduce our total network energy consumption by around 10–15%. We have established some excellent practices and are seeing significant value. Now, it is about scaling these practices. I am excited about embedding AI into our DNA."

Nirali Patel,
VP Data & AI Strategy at Liberty Global

INVESTING IN DATA CENTRE EFFICIENCY

Data centres (DCs) are the backbone of the digital world, housing critical IT infrastructure that enable critical services such as email, network management, customer care, security and inventory for our business. DCs process massive amounts of information so businesses can deliver digital services on a global scale. However, DCs need to run 24/7 which comes with a high energy demand. In fact, according to the International Energy Agency, DCs and their transmission networks account for 3% of global electricity use — a number expected to double by 2030.

At Liberty Global, we are targeting enhanced DC efficiency in pursuit of energy, emissions and cost savings. During 2023, our efforts resulted in a 4% decrease in DC electricity consumption compared to 2022. This was in tandem with an estimated 11% increase[17] in customer data consumption, highlighting the value of reengineering DCs for the needs of the future, today.

CASE STUDY

Future-proofing our data centre strategy

At Liberty Global we continuously review and optimise our data centre operations to reduce cost and minimise impact on the environment. Advancing DC power use efficiency will become increasingly crucial as technologies — particularly AI — continue to develop. In 2019, Liberty Global initiated a project to retire old technologies and consolidate our DCs from seven sites to two state-of-the-art facilities.

Thus far, we decommissioned the majority of assets from legacy sites, sending older, low-performing technologies for recycling. We also adopted a Cloud First strategy which reduces on-premise capacity requirements by outsourcing some of our storage needs to leading cloud providers. As a result of this strategy, we have decreased DC energy consumption by 7,500 MWh annually in our biggest facility alone. The programme ensures our services are fit for purpose, meets our future growth requirements while reducing our energy footprint.

4%
reduction in data centre energy consumption in 2023.

17   Based on data traffic measured for Sunrise and Virgin Media Ireland.

CASE STUDY

Virgin Media Ireland: Renewably powered data centre

Virgin Media Ireland exemplifies a responsible DC approach, having taken concerted actions to create an energy independent site. Their largest DC in Dublin is powered by onsite solar panels in conjunction with a battery system. This allows the site to remove itself from grid reliance for at least three hours a day and perform power arbitrage[18]. By producing solar energy onsite, the DC also supports a higher mix of renewables in the grid. Where the DC needs to rely on the grid, we make sure to purchase 100% renewable electricity.
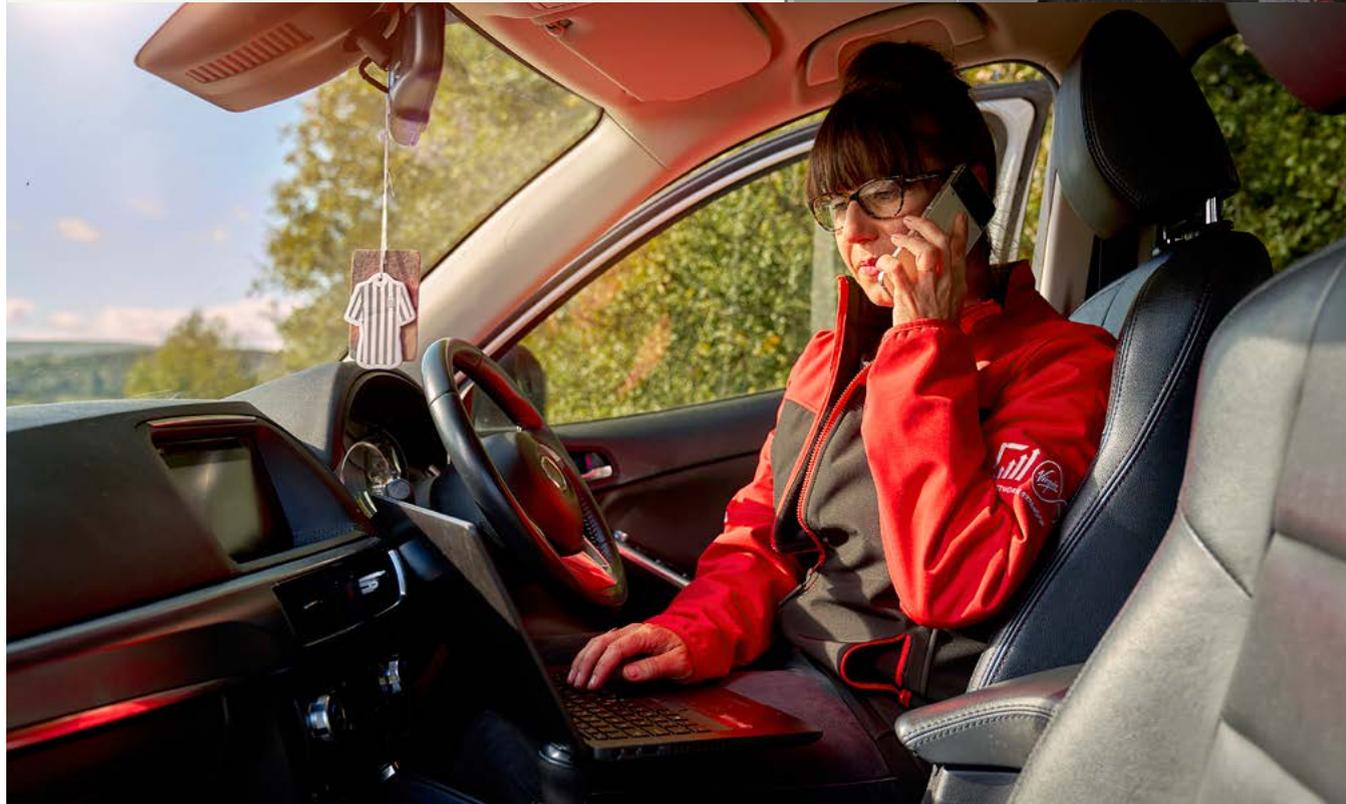
CASE STUDY

Liquid cooling with precision technology

In Winnersh, UK, we are testing new liquid cooling technology to reduce cooling energy demand. This precision technique reduces electricity use by up to 40% compared to traditional cooling technologies, is highly scalable and – because it does not rely on fans for cooling – significantly reduces onsite noise levels. It's a powerful solution that could hold the key to more sustainable cooling, enabling us to target greater energy efficiency even as we scale DC capacity to accommodate evolving digital technologies powered by AI.

While we are currently trialling liquid cooling on one contained unit in Winnersh, we anticipate increasing adoption across our sites in the near future as our technology vendors adopt liquid chip cooling.
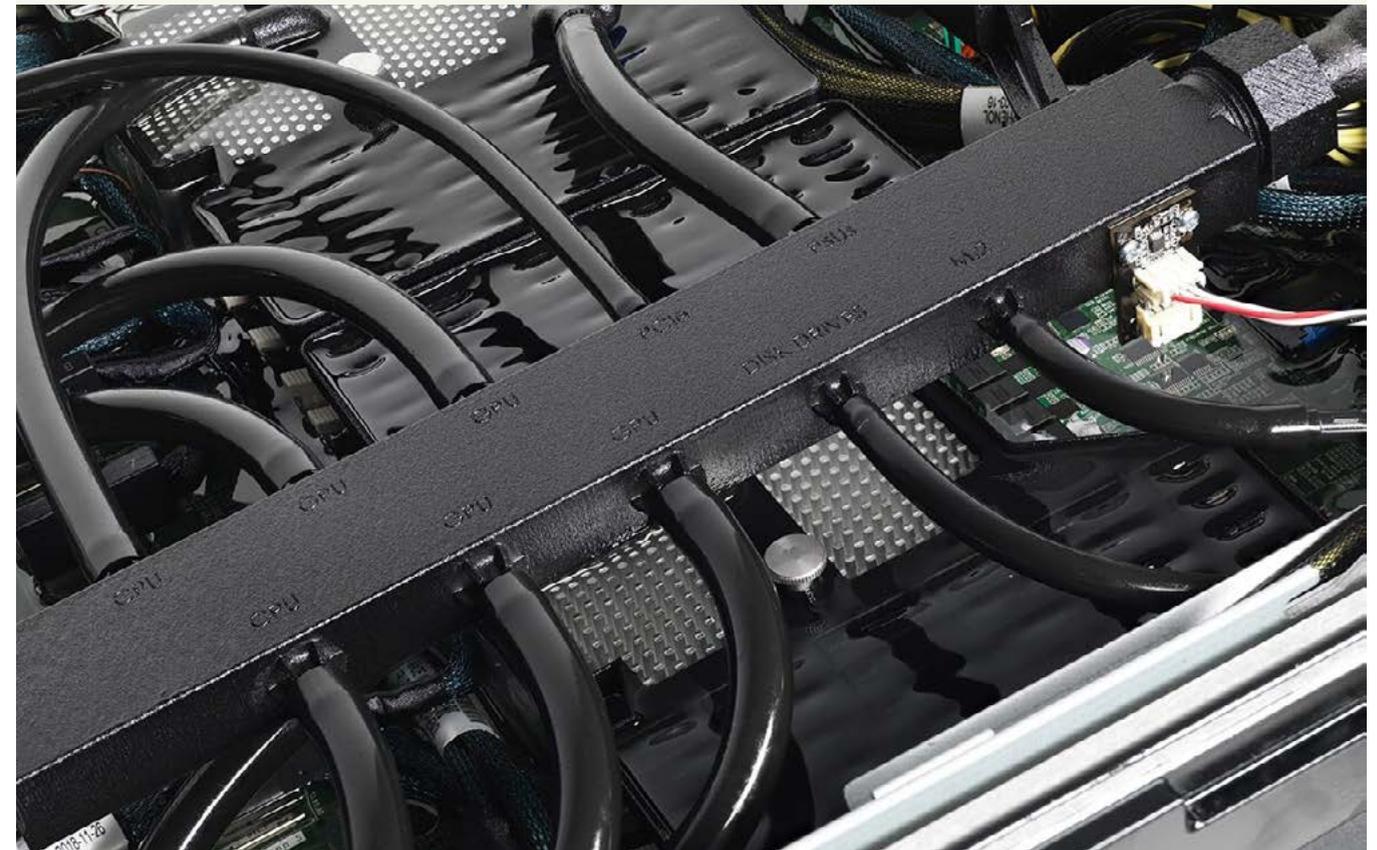
GLOBAL GREEN TRANSITION

As a global connectivity provider, we see great opportunity to support companies and industries access digital innovations to drive climate transition strategies. Over the past years, we've joined our ICT peers to explore how digital solutions contribute to a sustainable global society.

Liberty Global is a founding member of the European Green Digital Coalition (EGDC) — a group of companies dedicated to maximising the emission-reducing potential of digital solutions.

Throughout 2023, the EGDC continued to develop and launch new methodologies to measure the net climate impact of digital solutions. By doing so, the coalition can help unite European businesses, local authorities and financial institutions around a single source of truth for developing and deploying digital innovations with a net positive climate impact.

EUROPEAN GREEN
DIGITAL COALITION

PROGRESS

WE GROW RESPONSIBLY

Liberty Global is a company of innovation, growth and change. We shape and cultivate progress – and do so on the foundation of governance that ensures ethical, transparent and responsible practices. Our priorities are inclusive, sustainable and responsible across our value chain to ensure a common ethos of accountability and trust.

GOVERNANCE

With the launch of our People Planet Progress strategy and increased climate-based reporting and disclosure requirements, we have reinforced the company's governance of ESG matters with both leadership and Board involvement.

Our strategy and related ESG risks and initiatives are overseen by an executive-led People Planet Progress Council and a DE&I Council. These councils meet throughout the year to provide guidance on ESG efforts and to ensure our actions align with overall business objectives.

A Board-led People Planet Progress Committee also provides expertise and guidance of our ESG activities including alignment of such activities with long-term business goals and stakeholder expectations. Our Audit Committee has oversight of the company's ESG reporting.

ENCOURAGING A SHARED COMMITMENT

2023 was Liberty Global's second year in linking ESG performance targets to the company's bonus plan. The targets covered both social impact and sustainability metrics and applied to all Liberty Global employees eligible to participate in the bonus plan, including executive and senior leadership. Since 2022, the company has leveraged the tie-in to remuneration to demonstrate its commitment to sustainability and social progress, and the importance of our collective success.

RESPONSIBLE POLICIES

Underpinning our governance approach are policies and practices that guide ethical, responsible and transparent conduct.

Data privacy

As a connectivity company, we are committed to doing business in a way that respects customer and employee privacy. Wherever we collect and handle personal data, we do so appropriately and securely, in line with applicable laws and regulations. These efforts are overseen by our Digital Confidence team.

Ethical AI governance

AI is a rapidly evolving technology with the potential to transform many aspects of our lives. We are committed to using AI in a way that is beneficial, responsible and ethical. Our internal AI policy and our Ethical AI Committee provides a framework and practises for doing so and ensures that all our AI systems are aligned with our values which is overseen by out Ethical AI Committee. Our goal is to use AI in a way that benefits our customers, employees and shareholders, while adhering to our values and ethical principles.

Human rights

Everyone deserves to live and work secure in the knowledge that their basic human rights are respected. We maintain a commitment to respecting human rights throughout our value chain, including eliminating slavery and human trafficking in our supply chain and operations. Our Code of Conduct and Anti-discrimination, harassment and bullying policy outline our expectations and we also publish an annual Modern Slavery Act Statement in line with the UK's Modern Slavery Act.

Supply chain

We seek to ensure our standards are upheld by those we partner with. We work closely with our suppliers to drive responsible procurement practices, guided by the Liberty Global Procurement Responsible Supplier Code of Conduct. We also maintain a defined approach to assessing supplier performance, including EcoVadis assessments for our top risk and spend suppliers.

REPORTING ANY CONCERNS

We encourage anyone who has concerns about unethical behaviour across our business or operations to speak up, without fear of retaliation. We also have a third-party-managed whistleblowing facility for any complaints and concerns about Code of Conduct breaches.

EMPLOYEE ENGAGEMENT

Our employees are central to advancing our People Planet Progress strategy. They are the cornerstone of the expertise, passion and energy that drives forward our sustainability and social impact agenda. Success for People Planet Progress means our people are informed, activated and supported.

Launched the

SustainEd

series to educate employees on key sustainability topics.

Our people care about the future of our planet and the wellbeing of society. Throughout our business, our colleagues bring the ideas, plans and collective action that inspire and enable us to deliver more sustainably and with greater social care.

OUR EMPLOYEE INITIATIVES

Our Better Future ERG was created to raise Liberty Global colleagues' awareness of key sustainability topics, while encouraging community and social impact through volunteering. Our newest colleague body, the Youth Council, is actively working on practicable green initiatives for cross-business implementation — with particular emphasis on sustainable commuting and travel.

As part of our People Planet Progress strategy, we actively encourage regular engagements with our colleagues on sentiment and insights across ESG matters, through listening and ideation sessions.

Read more about Better Future and our Youth Council.

ADVANCING A SUSTAINABILITY MINDSET

In addition to gaining perspectives, we also provide opportunities for Liberty Global employees to advance their sustainability knowledge and social impact mindset. In 2023, we launched our all-employee educational series, SustainEd. Through this initiative, we are equipping employees with the understanding they need to contribute to progress against our People Planet Progress strategy.

So far, we have hosted sessions on topics such as climate science fundamentals and volunteering and Community Impact. During each, we invited leading experts across a variety of People Planet Progress topics.

SPOTLIGHT

Experts in our SustainEd series

In 2023, we were honoured to host renowned climate scientists for our company-wide education series — SustainEd. Our opening session focused on environmental concerns with Professor Mike Berners-Lee, who shared insights into the science of calculating carbon footprints. Next we hosted a session with Professor Dr Johan Rockström centred around his expertise on planetary boundaries. We strongly believe that sessions like these help to foster a shared understanding of climate science.

Professor Mike Berners-Lee

Dr Johan Rockström
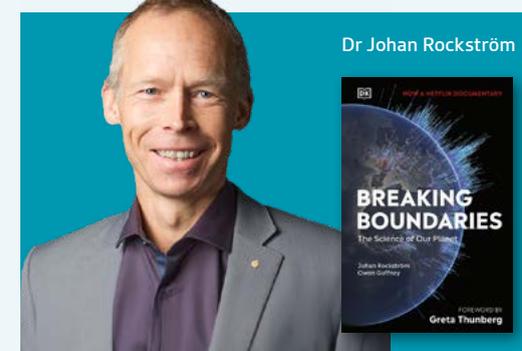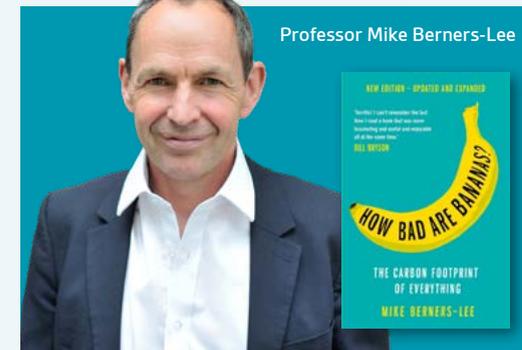
"Our sustainability agenda is essential for us, our purpose and engaging our next generation. You want to work for a company that is doing the right thing for the environment and society."

Manuel Kohnstamm,
SVP and Chief Corporate Affairs Officer

RISK MANAGEMENT AND PERFORMANCE

We are enhancing our focus to monitor and to manage our climate-based and other sustainability risks to future-proof our business. With greater capability and deeper knowledge of climate risks and business implications, we are able to ensure better mitigation plans and actions. Similarly, we engage with globally recognised indices to track our progress on ESG matters, and gain insights to inform strategic plans and improvements.

OUR BENCHMARK PERFORMANCE

We actively participate in internationally recognised benchmarking exercises to drive transparency into, and accountability for, our efforts to progress ESG topics. By doing so, we also gather valuable insights into key and rising issues and where there are areas for enhancement, helping us work towards long-term improvements.

CDP

CDP represents a gold standard in environmental reporting and detailed data disclosure. We submit an annual climate change response to CDP, and in 2023 received a score of B (up from C in 2022).

Corporate Sustainability Assessment (CSA)

The S&P Global CSA assesses sustainability considerations expected to have an impact on company growth, profitability, capital efficiency and risk exposure. In 2023, Liberty Global received an overall score of 45 in the CSA, performing at the 73rd percentile in the telecommunications sector. Across the three areas assessed, we achieved scores above the industry mean.

Business for Societal Impact (B4SI)

B4SI is the global standard for measuring and managing social impact. We are an active member of the B4SI network to learn best practices and benchmark our social efforts.

CLIMATE CHANGE AND BIODIVERSITY RISK MANAGEMENT

Throughout 2023, we continued assessing climate-related risks and opportunities in line with the Task Force on Climate-related Financial Disclosures (TCFD) and Task Force on Nature-related Financial Disclosures (TNFD) to better understand the impact of climate change on our business, as well as our impact on biodiversity.

TCFD

The TCFD framework provides guidelines for organisations to disclose information about climate-related risks and opportunities. It focuses on helping organisations disclose information about their governance, strategy and risk management practices.

Our organisation is committed to building on our existing climate risk management and disclosure practice to comply with the TCFD framework. For this purpose, we are finalising our analysis for some of our key climate-related risks and their financial-related impacts in a separate report.

TNFD

The TNFD is a global initiative that encourages businesses to assess, report and act on their nature-related dependencies, impacts, risks and opportunities. The TNFD aims to integrate nature into decision-making processes, supporting a shift in global financial flows towards nature-positive outcomes aligned with the Global Biodiversity Framework.
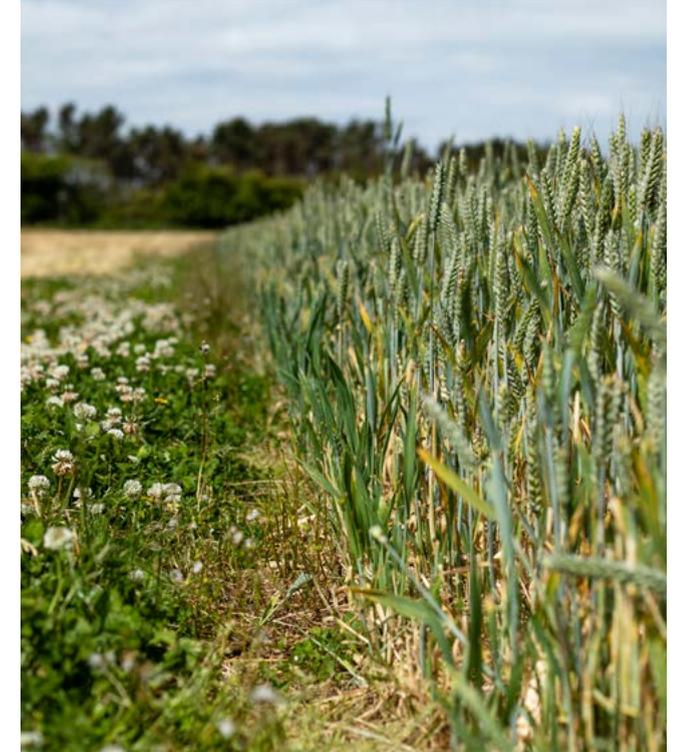
In 2023, we began to review the TNFD framework to develop a better understanding of our organisation's impact on nature and biodiversity. As part of this effort, we have been closely examining the environmental impact of our products, as well as the footprint of our network installations. The goal is to identify areas where we can mitigate our impact and better understand our organisation's dependence and impact on the natural ecosystem. We are aiming to issue a separate report to disclose our insights into our impact on nature and biodiversity.

STRATEGIC PARTNERSHIPS

As a global organisation, we understand the value of scale to amplify impact and accelerate progress. In 2023, we bolstered our People Planet Progress priorities with strategic, expert partners to enable us to affect global issues, contribute to our industry's sustainability goals, and drive impact beyond our own agenda.

United Nations Global Compact (UNGC)

In 2023, we joined the UNGC, a voluntary initiative based on CEO commitments to implement universal sustainability principles. Through our membership, we are better placed to support the SDGs and other key initiatives.

EcoVadis

Our EcoVadis membership allows us to annually assess the sustainability performance of our value chain partners.

Sustainable Markets Initiative (SMI)

Launched in 2020, the SMI accelerates a global transition towards a sustainable future by convening industry leaders, financial services and governments to innovate. During 2023, we joined the organisation's Technology, Media and Telecom (TMT) Task Force to support sector alignment for sustainable transition, as well as resilience and mitigation efforts.

Joint Alliance for CSR (JAC)

JAC verifies, assesses and promotes corporate social responsibility (CSR) implementation across ICT-focused multinational suppliers' manufacturing facilities. Led by our Procurement team, we joined JAC in 2023 to help promote sustainability in the international telecoms supply chain by sharing best practices and insights from onsite audits of supply chain partners.

European Green Digital Coalition (EGDC)

We have been a founding member of the EGDC since 2021, promoting the use of digital technologies as a key enabler of climate action.

As we move forward on our People Planet Progress journey, we will continue to focus on industry partnerships that help us achieve our goals. At the same time, we recognise our opportunity to expand impact beyond our own business and sector and will continue to actively contribute to help advance global progress.

APPENDIX

OUR DATA

INTRODUCTORY EXPLANATIONS TO OUR REPORTED FIGURES

We continually assess our ESG reporting to ensure that it is relevant and meaningful to our stakeholders. We have restated certain of our previously reported figures for 2019 through 2022 to ensure comparability across periods. The specific restatements and periods impacted are explained in the footnotes. Please see the 'Prior-period restatements' section following the data tables.

Certain of our reported amounts as denoted with an asterisk (*) are within KPMG LLP's independent limited assurance scope. Please see the KPMG Independent Limited Assurance Report on our website for further information.

Community investments

We measure the impact of our community investment programmes using the globally recognised B4SI model (formerly known as London Benchmarking Group). This methodology records the inputs, outputs and positive community impacts of our investments in cash, time and in-kind contributions. During 2023, our total community contribution was $5.5 million*, of which $2.9 million was in the form of cash donations.

	Measure	2023	2022	2021	2020	2019
Total community investments	Million USD	5.5*	6.2	5.0	8.4	4.1
Cash	%	53%	64%	58%	39%	67%
Time	%	9%	5%	5%	1%	4%
In-kind	%	38%	31%	37%	60%	29%
Employee volunteering time	hours	15,551	9,269	6,656	3,527	4,568

Total workforce and breakdown by employee category

	Measure		2023			2022			2021			2020			2019
Workforce including outsourced employees (Headcount, year end)															
Employees	Number		9,803			10,087			9,790			8,180			8,123
Outsourced employees	Number		3,302			3,683			3,323			5,550			5,707
Total	**Number**		**13,105**			**13,770**			**13,113**			**13,730**			**13,830**
Employees by region and gender (headcount, year end)		Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
North America	Number	57	40	97	65	44	109	63	51	114	60	58	118	60	63	123
Europe	Number	6,032	3,674	9,706	6,397	3,581	9,978	6,318	3,358	9,676	5,187	2,875	8,062	5,196	2,804	8,000
Total	**Number**	**6,089**	**3,714**	**9,803**	**6,462**	**3,625**	**10,087**	**6,381**	**3,409**	**9,790**	**5,247**	**2,933**	**8,180**	**5,256**	**2,867**	**8,123**
	%	**62%**	**38%**		**64%**	**36%**		**65%**	**35%**		**64%**	**36%**		**65%**	**35%**	
Employees by contract type (headcount, year end)																
Employees on permanent contracts	Number		9,443			9,547			9,282			7,833			7,701
Employees on temporary contracts	Number		360			540			508			347			422
Employees by employment type (headcount, year end)																
Employees in full-time employment	Number		9,106			9,344			8,768			7,679			7,570
Employees in part-time employment	Number		697			743			1,022			501			553

Total workforce and breakdown by employee category — continued

	Measure	2023	2022	2021	2020	2019
Employees by age group (headcount, year end)						
Employees under 30 years old	Number	1,760	1,769	1,693	1,398	1,603
	%	18%	18%	17%	17%	20%
Employees 30–50 years old	Number	6,105	6,346	6,341	5,383	5,243
	%	62%	63%	65%	66%	64%
Employees over 50 years old	Number	1,938	1,972	1,756	1,399	1,277
	%	20%	19%	18%	17%	16%
Women in management						
% of management positions filled by women	%	29%	29%	27%	28%	27%
% of executive positions filled by women	%	22%	28%	15%	8%	14%
Employee training						
Average training hours (Hours per FTE)	Number	9.40	6.62	5.99	4.75	11.84
Average training investment (Currency per FTE)	USD	689.40	709.93	522.79	674.89	716.37
Occupational health & safety						
Injury rate (per 200,000 hours worked)	Number	0.97	1.04	0.56	0.74	1.36
Occupational disease rate (per 200,000 hours worked)	Number	0.19	0.16	0.70	0.37	0.54
Lost day rate (per 200,000 hours worked)	Number	11.47	9.06	8.98	18.44	7.92
Absentee rate (% of total workdays)	%	6%	6%	4%	5%	6%
Work-related fatalities	Number	—	—	—	—	—

Total workforce and breakdown by employee category — continued

	Measure	2023			2022			2021			2020			2019		
New employee hires and employee turnover																
New employee hires by region and gender (headcount, year end)		Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
North America	Number	4	2	6	6	4	10	7	11	18	8	11	19	7	4	11
Europe	Number	934	647	1,581	1,060	772	1,832	823	530	1,353	631	376	1,007	771	488	1,259
Total	**Number**	**938**	**649**	**1,587**	**1,066**	**776**	**1,842**	**830**	**541**	**1,371**	**639**	**387**	**1,026**	**778**	**492**	**1,270**
Rate of new hires (Percentage)	%			16%			18%			14%			13%			16%
New employee hires by age group (headcount, % of total)																
Employees under 30 years old	Number			619			795			475			372			625
	%			39%			43%			35%			36%			49%
Employees 30–50 years old	Number			795			930			421			572			580
	%			50%			51%			30%			56%			46%
Employees over 50 years old	Number			173			117			475			82			65
	%			11%			6%			35%			8%			5%
Employee turnover by region (number of leavers, turnover rate by age)		Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
North America	Number	12	6	18	5	10	15	7	15	22	7	15	22	11	7	18
Europe	Number	1,282	587	1,869	899	552	1,451	821	492	1,313	680	360	1,040	737	491	1,228
Total	**Number**	**1,294**	**593**	**1,887**	**904**	**562**	**1,466**	**828**	**507**	**1,335**	**687**	**375**	**1,062**	**748**	**498**	**1,246**
Rate of Employee Turnover	%			19%			15%			14%			13%			15%

Total workforce and breakdown by employee category — continued

	Measure	2023		2022		2021		2020		2019	
Employee turnover by age group (number of leavers, turnover rate by age)											
Employees under 30 years old	Number	425		417		446		245		382	
	%	23%		28%		34%		23%		31%	
Employees 30—50 years old	Number	1,112		877		804		676		725	
	%	59%		60%		60%		64%		58%	
Employees over 50 years old	Number	350		172		85		141		139	
	%	18%		12%		6%		13%		11%	
Employee performance reviews											
Employees reviewed	%	30%		32%		33%		57%		93%	
Employee performance reviews — by gender & employee category		Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
% of appraisal — exec management	%	13%	5%	19%	16%	52%	50%	92%	100%	100%	100%
% of appraisal — senior management	%	24%	9%	23%	12%	95%	94%	97%	92%	100%	100%
% of appraisal — managers/supervisors	%	28%	15%	18%	13%	57%	63%	56%	100%	99%	98%
% of appraisal — non-management	%	41%	28%	47%	31%	23%	32%	50%	53%	84%	100%

Energy consumption

	Measure	2023	2022	2021	2020	2019
Non-renewable fuels						
Diesel (static & mobile)	Gigawatt-hours	24.81	28.69	25.61	25.98	38.48
Petrol	Gigawatt-hours	10.89	10.04	5.16	4.81	5.62
Petrol/diesel blend (from hybrid vehicles)	Gigawatt-hours	0.21	0.11	1.34	0.96	1.12
Natural gas	Gigawatt-hours	9.46	11.28	12.76	15.55	16.35
Gas oil	Gigawatt-hours	0.03	0.12	2.28	3.00	0.98
Fuel oil	Gigawatt-hours	0.46	0.49	0.55	0.55	0.64
Jet fuel	Gigawatt-hours	9.11	10.15	8.05	4.65	4.59
CNG	Gigawatt-hours	–	–	–	–	0.01
Total non-renewable fuels	**Gigawatt-hours**	**54.97**	**60.88**	**55.75**	**55.50**	**67.79**
Sustainable fuels						
Jet biofuel	Gigawatt-hours	1.27	0.26	–	–	–
HVO heating oil	Gigawatt-hours	0.24	0.01	–	–	–
Total sustainable fuels	**Gigawatt-hours**	**1.51**	**0.27**	**–**	**–**	**–**
Total fuel consumption	**Gigawatt-hours**	**56.48**	**61.15**	**55.75**	**55.50**	**67.79**

Energy consumption — continued

	Measure	2023	2022	2021	2020	2019
Electricity						
Non-renewable electricity purchased	Gigawatt-hours	32.28	31.70	34.65	105.39	256.73
Renewable electricity purchased (0% emissions)	Gigawatt-hours	378.22	375.95	362.40	273.01	112.72
Onsite renewable electricity produced and consumed	Gigawatt-hours	0.52	0.55	0.54	0.23	0.21
Total electricity consumed	**Gigawatt-hours**	**411.02**	**408.20**	**397.59**	**378.63**	**369.66**
Percentage renewable electricity	Percentage	92%	92%	91%	72%	30%
Heating & cooling	Gigawatt-hours	4.97	6.26	2.12	0.19	0.19
Total energy consumption[19]	**Gigawatt-hours**	**472.47***	**475.61**	**455.46**	**434.32**	**437.64**
Electricity sold (from onsite renewables)	Gigawatt-hours	0.02	0.02	0.06	0.06	0.06

19   Represents the total energy consumption within our direct operational control from sustainable and non-renewable fuel, renewable and non-renewable electricity, and heating and cooling.

GHG emissions

	Measure	2023	2022	2021	2020	2019
Total GHG emissions						
Scope 1 emissions (direct)[20]	metric tonnes CO_2e	15,144*	16,314	14,834	13,010	18,086
Scope 2 market-based emissions (indirect)	metric tonnes CO_2e	9,284*	9,507	9,781	15,657	16,066
Scope 2 location-based emissions (indirect)	metric tonnes CO_2e	46,684*	50,623	50,683	59,105	54,404
Scope 3 emissions (indirect)	metric tonnes CO_2e	43,509*	48,547	49,360	61,635	66,536
Total Scope 1, 2 & 3 market-based emissions	metric tonnes CO_2e	67,937	74,368	73,975	90,302	100,688
Total Scope 1, 2 & 3 location-based emissions	metric tonnes CO_2e	105,337	115,484	114,877	133,750	139,026
Total Scope 1 & 2 market-based emissions per million USD of revenue	metric tonnes CO_2e/ million USD of revenue	3.34*	3.47	3.26	3.95	4.68
Scope 3 GHG emissions by category						
Waste (category 5)[21]	metric tonnes CO_2e	252	111	282	498	438
Business travel (category 6)[22]	metric tonnes CO_2e	9,780	6,406	2,585	5,088	11,410
Investments (category 15)[23]	metric tonnes CO_2e	33,477	42,030	46,493	56,049	54,688
Total reported Scope 3 emissions (indirect)	**metric tonnes CO_2e**	**43,509***	**48,547**	**49,360**	**61,635**	**66,536**

20 The decrease in Scope 1 emissions in 2023 compared to 2022 is primarily attributable to the reduction in mobile and static combustion relating to increased use of sustainable and renewable fuels.

21 Includes emissions from both wastewater and solid waste, which includes the impact of recycling customer premises equipment.

22 Includes emissions from business air and land travel, including the use of employee-owned vehicles for business purposes, flights taken by employees and travel in rental cars, taxis and public transportation. The increase in travel emissions in 2023 compared to 2022 is attributed to an increase in short-haul flights and in-person meetings and conferences.

23 Includes our proportional share of the Scope 1 and 2 market-based emissions from VMO2, VodafoneZiggo and the. The decline in investment emissions in 2023 compared to 2022 is attributable to decarbonisation efforts made by VMO2 and VodafoneZiggo.

Waste and water

Waste by type and disposal method and water consumption	Measure	2023	2022	2021	2020	2019
Total waste generated — reuse	metric tonnes	307	49	418	270	439
Total waste generated — recycling (excluding composting, including CPE)	metric tonnes	1,771	1,401	1,388	1,232	1,744
Total waste generated — incineration	metric tonnes	309	399	390	541	923
Total waste generated — landfill	metric tonnes	397	147	553	519	261
Total waste generated — composting	metric tonnes	42	10	14	154	216
Total waste generated[24]	**metric tonnes**	**2,826**	**2,006**	**2,763**	**2,716**	**3,583**
% of waste recycled & reused	%	74%	72%	65%	55%	61%
Total water consumption	**1,000 m³**	**60**	**47**	**35**	**44**	**67**

24   The 2023 total waste generated increased by 41% compared to the previous year, mainly driven by improved assumptions and estimations of our landfill and recycling waste generated at Telenet, and an increase in reuse waste mainly driven by office furniture donated by our centralised and corporate functions and Telenet.

Prior-period restatements

Amounts for the 2019−2022 periods have been restated for the following changes to our organisational and operational boundaries in line with our environmental reporting criteria:

a. In October 2022, we acquired Caviar Group NV (Caviar Group) in Belgium and began including its actual energy consumption and emissions from 2023 onward. We have restated our 2019−2022 energy consumption and emissions to include an estimate of the energy consumption and emissions associated with Caviar Group. In addition, we have also restated our total Scope 1 and 2 market-based emissions per USD million of revenue for 2019−2022 to reflect the inclusion of Caviar Group.

b. We have restated our Scope 3 emissions for 2019−2022 to reflect our economic ownership share of the Scope 1 and 2 market-based emissions of the AtlasEdge JV (formed in September 2021) due to continuing refinements of our organisational and operational boundaries, as prior year considered to be not material.

GHG emissions have also been restated for the following:

a. Our 2022 Scope 2 location-based emissions were reduced by 2,676 metric tons CO_2e due to updating our emissions factor from a worldwide rate to a more accurate local rate, consistent with the rate applied in 2019−2021.

b. Our 2022 Scope 3 emissions were increased by a net 2,366 metric tons CO_2e primarily due to aligning the emissions from leased assets reported by certain of our investments to our methodology. Adjustments related to 2019−2021 emissions determined to be not material.

Further details on Liberty Global's environmental reporting criteria are available on our website.

The tables on this page provide a comparison between the energy consumption and GHG emissions information previously reported and the restated amounts in the current report, reflecting the changes noted above.

Energy consumption in GWh								
	As reported	As restated	As reported	As restated	As reported	As restated	As reported	As restated
	Year-ended December 31, 2022		Year-ended December 31, 2021		Year-ended December 31, 2020		Year-ended December 31, 2019	
Total fuel consumption	60.17	61.15	54.76	55.75	54.51	55.50	66.81	67.79
Total electricity consumption	407.75	408.20	397.15	397.59	378.19	378.63	369.22	369.66
Heating & cooling	6.26	6.26	2.12	2.12	0.19	0.19	0.19	0.19
Total energy consumption	474.18	475.61	454.02	455.45	432.89	434.32	436.22	437.64

GHG emissions in MtCO$_2$e								
	As reported	As restated	As reported	As restated	As reported	As restated	As reported	As restated
	Year-ended December 31, 2022		Year-ended December 31, 2021		Year-ended December 31, 2020		Year-ended December 31, 2019	
Scope 1 emissions	16,121	16,314	14,643	14,834	12,817	13,010	17,895	18,086
Scope 2 market-based emissions	9,507	9,507	9,781	9,781	15,657	15,657	16,066	16,066
Scope 2 location-based emissions	53,226	50,623	50,610	50,683	59,016	59,105	54,328	54,404
Total Scope 1 & 2 market-based emissions	25,628	25,821	24,424	24,615	28,474	28,667	33,961	34,152
Total Scope 1 & 2 location-based emissions	69,347	66,936	65,253	65,518	71,833	72,114	72,223	72,490
Scope 3 emissions	44,514	48,547	47,706	49,360	59,974	61,635	64,868	66,536
Total Scope 1, 2 & 3 market-based emissions	70,142	74,368	72,130	73,975	88,448	90,302	98,829	100,688
Total Scope 1, 2 & 3 location-based emissions	113,861	115,484	112,959	114,877	131,807	133,750	137,091	139,026
Total Scope 1 & Scope 2 market-based emissions per USD million of revenue	3.50	3.47	3.30	3.26	3.97	3.95	4.72	4.68

SUSTAINABILITY-LINKED LOANS

Sustainability-linked loans (SLLs) aim to facilitate the key role that credit markets can play in encouraging borrowers to contribute to sustainability. The economic characteristics of SLLs vary depending on the borrower's performance against predetermined sustainability objectives across ESG metrics. At Liberty Global, we consider SLLs a meaningful way to demonstrate our sustainability commitments to stakeholders and drive our performance both transparently and responsibly. Below is a summary of the SLL performance for our Sunrise and Virgin Media Ireland operations. Items denoted with a symbol (Δ or ◊) are within KPMG LLP's independent limited assurance scope.

Energy efficiency

We measure the energy efficiency of our networks by calculating the amount of electricity used by networks[25] to transport[26] customer data[27]. An improvement in efficiency is defined by a year-on-year stabilisation or decrease in electricity consumption, while the data consumption of our customers continues to increase. We improve efficiency through capital investments, energy-saving initiatives, cooling innovations and deployment of AI to save energy in our networks.

• **Sunrise**
  In 2023, Sunrise achieved a measured electricity intensity of 35.20◊ kWh/TB, which represents a 17.1% improvement in energy efficiency compared to 2022.

• **Virgin Media Ireland**
  In 2023, Virgin Media Ireland achieved a measured electricity intensity of 9.44Δ kWh/TB, which represents a 2.6% improvement in energy efficiency compared to 2022.

Renewable electricity

We monitor the amount of renewable electricity[28] generated or purchased by our operations in an effort to reach our 100% renewable electricity target for the entire Group.

• **Sunrise**
  In 2023, Sunrise acquired 100%◊ renewable electricity.

Carbon emissions

As part of our SBTi commitments and net zero plans, we also monitor the emissions in our operations. For Virgin Media Ireland, the absolute emissions in Scope 1 and 2 location-based[29] emissions is linked to the SLL.

• **Virgin Media Ireland**
  In 2023, Virgin Media Ireland increased their Scope 1 and 2 location-based emissions to 11,143,806Δ kg CO_2e, which represents an 16.2% increase compared to 2022. The increase is primarily driven by a 19% increase in the local electricity emission factor, while electricity consumption remained flat compared to 2022.

External assurance

We engaged KPMG LLP to undertake independent limited assurance, reporting to Liberty Global, using the assurance standards ISAE (UK) 3000 and ISAE 3410, for the selected energy consumption, GHG emissions and terabytes of data usage that have been highlighted above with a Δ or ◊. KPMG LLP's full statements are available on our website at www.libertyglobal.com/impact. KPMG LLP has provided a conclusion over this selected data. The level of assurance provided for a limited assurance engagement is substantially lower than for a reasonable assurance engagement.

In order to reach their conclusion, KPMG LLP performed a range of procedures, including interviews with management, examination of reporting systems, online meetings with each of our operating companies and specific data testing with our corporate offices. A summary of the work that they performed is included within their assurance conclusion. Non-financial performance information, GHG quantification and data usage in particular are subject to more inherent limitations than financial information. It is important to read the GHG emissions and intensity information in the context of the full KPMG LLP limited assurance statement and our reporting criteria as set out in our updated Environmental Reporting Criteria available at www.libertyglobal.com/impact.

25 Total electricity used to run our networks, including renewable electricity produced and consumed in our networks, but excluding electricity consumed in non-network facilities (for example, offices or shops) and excluding electricity consumed for customer data transported through leased lines for which electricity is not recharged by the lessor.

26 Reflects both internet protocol (IP) based data traffic from fixed broadband services (such as web browsing, IP TV streaming, voice services) and data traffic from mobile services (such as voice calls, text messages, and internet connections for 4G and 5G technologies; and text messages and data services for 3G technology).

27 Reflects customer data per terabyte (TB) of data traffic generated.

28 Renewable electricity percentage includes the following: a. renewable electricity generated onsite; b. renewable electricity purchased directly from producers or suppliers; and/or c. grid electricity blend consumed for which the operation has acquired an accreditation, certificate or any other measure from a regulatory body for renewable electricity produced.

29 Calculated based on the average emissions intensity of the grid on which the energy consumption occurred (using grid-average emission factor data).