



Decarbonising Work

ENDERS | ANALYSIS

Decarbonising work to combat climate change

Climate change is a core theme of this year's Media and Telecoms 2021 & Beyond Conference, linking to the UK's presidency of COP26 in 2021, the UN's 26th climate change conference. Sir David Attenborough addressed the UN Security Council in February 2021 on the peril of climate change, that is so much larger than the pandemic that has occupied headlines all year.¹

"If we continue on our current path, we will face the collapse of everything that gives us security: food production, access to fresh water, habitable ambient temperature, and ocean food chains... and if the natural world can no longer support the most basic of our needs, then most of the rest of civilisation will quickly break down."

Sir David Attenborough

Since 2015, the Paris Agreement frames mankind's collective effort to address climate change by reducing emissions of harmful greenhouse gases (GHG), to limit warming to well below 2°C above pre-industrial levels, aiming for 1.5°C. The UK is committed to achieve this target and seeks, alongside other nations, to reduce its GHG emissions to net zero by 2050. COP26 goals include accelerating net zero to 2030, where possible. The timing is uniquely propitious to advance on climate change because US President Joe Biden has re-joined the Paris Agreement and the multilateral effort towards net zero.

The UK, like other participants, will deliver net zero through mandatory carbon footprint² reduction activities, an important component of which are businesses. This report profiles the carbon footprints of companies in the TMT sector, which are light in the case of most media companies, and heavier for telcos, which build and run network infrastructure. We highlight best practices on reporting GHG emissions and steps to net zero—where Sky stands out as leader with its ambitious and deep approach, committed to net zero by 2030, fully two decades ahead of the UK. Globally, Google has ambitions to move to 24/7 carbon free energy use by 2030.

An easy win we advocate for the TMT sector is to adopt a hybrid model for work on the back of pandemic-related work-from-home (WFH) practices, reducing office estates and commuting, permanently cutting the footprint.

The pandemic shows working from home is economically feasible in the UK, thanks to telco networks, platforms and services, disproving employers' largely negative pre-existing views. WFH will also add value to office workers, about half of which support a hybrid model for the future.³ It liberates precious time from the commute, makes the office integral to value creation, and prevents carbon from being wasted. Over 80% of UK adults see climate change as an emergency requiring urgent action.⁴

Pandemic restrictions on mobility and WFH also highlighted the key dependency of the UK economy's resilience on its telco infrastructure, platforms and services. Demand for bandwidth crashed in the city centres and office estates favoured by telco investment, and was displaced to residential areas, where capacity is lower. Despite networks performing relatively well, accelerating upgrades will support the hybrid model we advocate, which will also drive innovation in the service layer.

¹ United Nations, [World risks 'collapse of everything' without strong climate action. Attenborough warns Security Council](#), 23 February 2021.

² Net zero accounts for all forms of GHG, including carbon dioxide. We use carbon as shorthand for emissions in this report as businesses report GHG gases as equivalent tonnes of carbon dioxide.

³ British Council of Offices (BCO), [Majority of workers plan a return to the office, but home working here to stay](#), October 2020.

⁴ BBC News, [Climate change: Biggest global poll supports 'global emergency'](#), January 2021.

Meeting net zero by 2050 is a huge challenge for the UK

Starting with the industrial revolution, human activity has led to an average warming of 1°C across the Earth's surface as the concentration of greenhouse gases in the atmosphere has risen; carbon dioxide levels are 45% higher than the pre-industrial period. The warming of the atmosphere has led to rising sea levels as ocean temperatures increase, melting polar ice and glaciers, and extreme weather events that are more intense and frequent. In the UK, the effects are already being felt. Greater fluctuations in river, coastal and surface water levels, making the dry periods drier with longer, hotter heatwaves and droughts, and the wet periods wetter leading to flooding as river and sea levels rise.

Tackling carbon emissions is a clear priority for the populations of countries all around the world: 71% of people in developed countries believe climate change is as serious a crisis as COVID-19, and 65% agree that governments must prioritise decarbonisation in the post-pandemic recovery.⁵

In December 2015, 195 countries signed the Paris Agreement, the first legally-binding global climate deal, which formally came into effect on 4 November 2020. The parties committed to limit warming to well below 2°C above pre-industrial levels. The aim is for 1.5°C, which alone would require an immediate peak in GHG emissions and a rapid decline, necessitating profound and unprecedented cross-sectoral transformation.⁶ A business-as-usual approach would lead to 3°C warming.

The US, as the single largest carbon emitter in mankind's history, is now on board. Former US President Trump made headlines when he announced the US withdrawal from the Paris Agreement in June 2017, but President Biden re-joined the agreement as one of his first actions in office.

The UK will host the 26th UN Climate Change Conference of the Parties (COP26)—the decision-making body of the UN Framework Convention on Climate Change—in Glasgow 1-12 November 2021 to accelerate action towards the goals of the Paris Agreement.

The UK has been at the forefront of setting decarbonisation targets amongst the G7.⁷ The Climate Change Act (2008) set the legally binding target to reduce GHG emissions by 80% compared to 1990 levels by 2050, and was amended in 2019 to commit to net zero by 2050.⁸ The Act also established the independent Climate Change Committee (CCC) to recommend emissions reduction targets for the UK (known as carbon budgets) and evaluate progress towards meeting them. So far, the UK has reduced its emissions by 43% since 1990⁹ and aims to cut this down to 68% by 2030.¹⁰

The UK aims to reduce emissions by 68% by 2030

Decarbonisation is not only crucial to slow down the negative feedback loops of a warming atmosphere, but brings huge benefits: new green industries come with new jobs; citizens benefit from less congestion and cleaner air leading to healthier lives; and biodiversity and cleaner water will restore our green spaces.¹¹ Ahead of COP26 the UK intends to finalise a comprehensive Net Zero Review report setting out the government's vision and strategy for 2050.¹²

⁵ Ipsos, [Earth Day 2020](#), April 2020.

⁶ IPCC, [Special Report: Global Warming of 1.5°C](#), 2018.

⁷ BEIS, [UK becomes first major economy to pass net zero emissions law](#), June 2019.

⁸ The net zero target requires that by 2050 any GHG emissions produced in the UK must be reduced as far as possible and any residual emissions must be offset (e.g., natural carbon sinks like forests or using technology like carbon capture and storage). Imports to the UK aren't covered, only emissions that take place on UK territory. Source: Climate Change Act 2008; BEIS, [UK becomes first major economy to pass net zero emissions law](#), June 2019.

⁹ This has been achieved by two conflicting mechanisms. (1) Goods produced abroad but consumed in the UK are not counted towards the UK carbon footprint, but the country in which it is produced. (2) The UK has made vast, positive steps towards decarbonising electricity, with the vast majority now produced by renewable energy sources like solar and wind.

¹⁰ BEIS, [The UK's Nationally Determined Contribution communication to the UNFCCC](#), December 2020.

¹¹ Climate Change Committee, [Net Zero—The UK's contribution to stopping global warming](#), May 2019.

¹² HM Treasury, [Net Zero Review Interim report](#), December 2020.

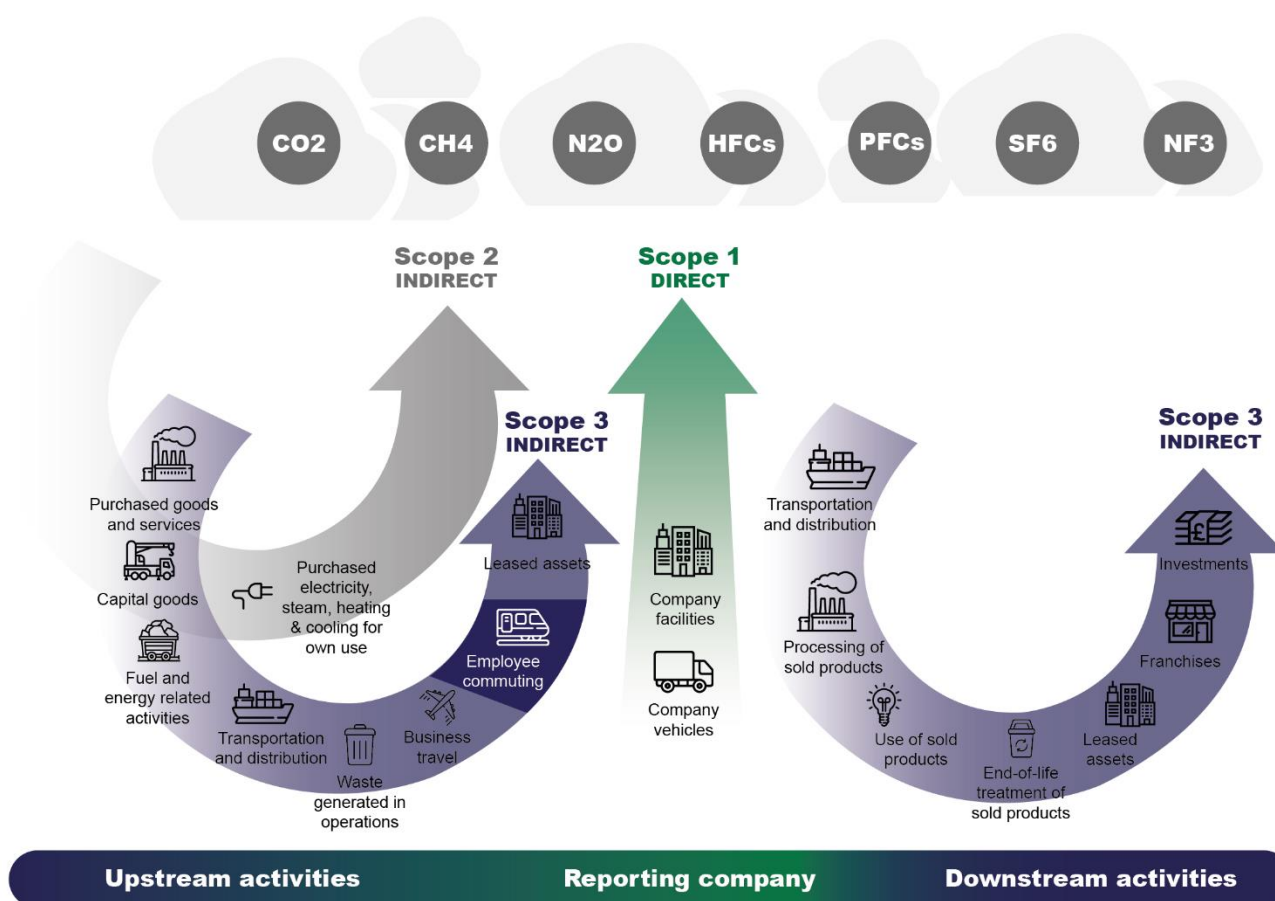
Reaching net zero requires all businesses to contribute

Meeting the UK government's ambitious targets requires a massive shift in 'business-as-usual' across every sector, both public and private. Businesses are affected by every aspect of the transition to net zero. The programme to cut emissions to meet the objectives of the Paris Agreement is seriously ambitious, and the signal sent to businesses is clear: the direction is towards low-carbon investment as quickly as is possible. Businesses can play a central role in innovating products and services, investing and financing lower carbon alternatives. This decade is particularly critical, or the 2050 target cannot be met.

Combined, industry and business account for around 25% of the UK's GHG emissions, and 50% of UK electricity use. Measuring and reporting these emissions is a crucial step to meeting net zero targets.

Some businesses¹³ are required to make detailed mandatory climate disclosures (see appendix); Streamlined Energy and Carbon Reporting (SECR) came into effect on 1 April 2019.¹⁴ Companies report GHG emissions that fall under one of three scopes (Figure 1). Quoted businesses are required to calculate scope 1 and 2 emissions, with scope 3 emissions left at their discretion.¹⁵

Figure 1: Scope 1, 2, and 3 emissions and sources



[Source: Enders Analysis, Climate Change Committee]

¹³ Quoted companies (UK incorporated and listed on LSE/EEA state/NYSE/Nasdaq), large LLPs, and large unquoted companies who meet at 2 or more of: turnover equal to or over £36m; balance sheet total equal to or over £18m; 250 or more employees. Companies incorporated outside the UK (including foreign parent companies of UK subsidiaries) are not required to report.

¹⁴ BEIS and DEFRA, [Environmental Reporting Guidelines: Including streamlined energy and carbon reporting guidance](#), March 2019.

¹⁵ The exception is for large unquoted companies and LLPs who must disclose energy use and related emissions from business travel in rental cars or employee-owned cars where they are responsible for purchasing the fuel.

The three scopes are:

- Scope 1—Direct GHG emissions from activities owned or controlled by the business into the atmosphere (e.g. company vehicles running on petrol/diesel)
- Scope 2—Energy indirect emissions from the purchase of electricity, heat, steam and cooling. These are indirect emissions that are a consequence of activities, but which occur upstream at sources the business does not own or control (e.g. energy purchased to power office lighting)
- Scope 3—Other indirect emissions that are a consequence of the business' actions, *which occur at sources which it does not own or control* and which are not classed as Scope 1 or 2 emissions. These can occur upstream or downstream (e.g. end-customer use of manufactured electronics)

As scope 3 reporting is not yet a requirement for most businesses, companies that do so will report higher carbon costs for their activities, and that is one barrier to adoption. Scope 3 engages the measurement of a company's upstream and downstream emissions, which is much harder than evaluating only internal use. Reducing scope 3 emissions requires companies to scrutinise suppliers and support them to adopt environmental practices or switch to greener alternatives.

Scope 3 emissions are often the largest source of emissions. Employee commuting is—due to the current pandemic's expansion of responsibility of employers—under employers' control in the UK. Employee commuting/WFH is where they should focus for an easy win.

In January 2021, 35% of all UK employees¹⁶ were working from home, up from 31% in December (before national lockdown came into effect). The opportunity for homeworking is unequal: essential B2C activities such as health and education do typically rely on face-to-face contact, and non-essential face-to-face activities are restricted due to the pandemic. The high uptake of homeworking is related to the UK's heavy B2B service sector bias (IT, which does not require physical presence for the delivery of output), supported by decades of development of the telco infrastructure required to power WFH to a large degree. This makes the UK among the countries most well prepared for home working; in April, the International Labour Organisation (ILO) found that 31% of jobs in the UK could be done from home, compared to 29% for Germany and 28% for France.¹⁷

Although commuting is only a small contributor of scope 3 emissions across the entire economy, employee commuting looms relatively high in the carbon costs of B2B services, which do not typically incur upstream or downstream costs. Reducing employee commuting costs will lead to a downsizing of the premises that fall under scope 1 reporting.

Employee commuting looms relatively high in the carbon costs of B2B services

Climate change risks to investors

While there has been a marked rise in the number of companies promoting their Environmental, Social and Corporate Governance standards, there is a gap between companies' climate rhetoric and how they account for climate change risk. This concern has been gaining traction among large institutional investors: in November last year, 38 investors (managing more than \$9trn of assets) wrote to the chair of the audit committee of more than 30 of Europe's largest companies, including Anglo American, BMW, EDF and Lufthansa, urging them to incorporate climate risks in their financial statements as concerns grow that corporate accounts no longer reflect the long-term risks.

¹⁶ Data excludes the vast financial services sector, which has a higher-than-average uptake of WFH.

¹⁷ International Labour Organisation, [Working from Home: Estimating the worldwide potential](#), April 2020.

All businesses face risks from climate change, notably in terms of financial stability. Mark Carney, when he was Governor of the Bank of England, categorised these climate change risks as:¹⁸

- **Physical risks:** financial risks from weather-related events (droughts, floods, storms, etc.) pressuring the economy through protection of public assets, rising health costs and business disruption
- **Transition risks:** financial risks from the process of decarbonisation
- **Liability risks:** financial risks from the costs of third parties suffering damage or losses from the effects of climate change and seeking compensation from carbon extractors or emitters

Carney weighed up that the transition to a low-carbon economy would reduce physical risks in the longer term, but increase transition risks in the short-term.

All companies of a certain size are required to include a description of the principal risks and uncertainties facing the company in their strategic report, which should include climate change, if relevant.

Whilst mandatory requirements so far have been limited, the UK's Financial Stability Board's taskforce on Climate-related Disclosures (TCFD) is encouraging companies look carefully at the risks and opportunities of climate change to business strategy and opportunities. In addition, the CCC advocates businesses do the basics well across *all* scopes: measure, disclose, target, act and adjust.¹⁹ Offsets should be used only where unavoidable, with the aim to phase out direct emissions as it becomes possible. Businesses should also be cautious not to purely offshore carbon emissions, something the UK has been doing for a long time.

Climate disclosures will become mandatory for many large businesses by 2025

In its Green Finance Strategy last year, the Government set an expectation that all listed issuers and large assets owners would disclose in line with TCFD's recommendations by 2022.²⁰ A UK Taskforce (cross-Whitehall/cross-regulator) was established in 2019 to explore the most effective climate-related disclosures, and is now "charting a path towards mandatory TCFD-aligned climate-related disclosures to help accelerate progress... across non-financial and financial sectors of the UK economy over the coming years".²¹ The UK Taskforce set out a roadmap and timeline to 2025 of planned or potential regulatory actions or legislative businesses across seven main types of organisations.²² Initial steps have already been taken for some listed companies, banks and building societies; BEIS is now planning to consult on measures for UK-registered companies. The UK Taskforce strongly supports the IFRS Foundation's proposal to create a new, global Sustainability Standards Board.

All businesses should engage in audit

Businesses of all sizes benefit from auditing their carbon use by:

- Saving money and resources by identifying energy intensive practices
- Gaining a competitive advantage by reducing costs, and differentiating from competitors on climate change—seen as an urgent matter by 80% of the UK population
- Spurring innovation and providing leadership in a movement that is heading in one direction
- Improving supply chain resilience by reducing reliance on volatile resource markets

¹⁸ Bank of England, [Breaking the tragedy of the horizon—climate change and financial stability—speech by Mark Carney](#), September 2015.

¹⁹ Climate Change Committee, [The role of business in delivering the UK's Net Zero ambition](#), December 2020.

²⁰ HM Treasury, [A Roadmap towards mandatory climate-related disclosures](#), November 2020.

²¹ Ibid.

²² Listed commercial companies, UK-registered companies, banks and building societies, insurance companies, asset managers, life insurers and FCA-regulated pension schemes, and occupational pension schemes. There will be some overlap between companies in the proposed timeline.

The UK's six million businesses will differ dramatically on their approach to delivering net zero. Factors include: size; the importance of energy costs to the overall business model; and exposure to international business competition. Business and industry account for 25% of UK territorial emissions, with just under half from SMEs, most of which are not covered by mandatory carbon reporting rules.²³

To reduce their carbon footprint, SMEs require support and guidance, which is best supplied by the financial providers that have an intimate understanding of SMEs' day-to-day business operations.

Supporting the green transition of the UK's SME base is a central plank of NatWest's carbon strategy. NatWest Group CEO Alison Rose has described tackling climate change as "a core part of NatWest's strategy" with the goal of "funding the economy for really sustainable future growth" including plans to halve the impact of its financing activity by 2030.^{24,25} As part of this climate strategy NatWest has reserved 25% of places in its Entrepreneur accelerator hubs for businesses supporting environmental activities. The bank delivered £12 billion of sustainable financing in 2020 including funding energy efficient technologies and low carbon vehicles.

NatWest is also working to reduce its own emissions. As the financial sponsor of the COP26 summit, NatWest's operations achieved net zero last year, and the bank will quantify its total climate impact and define sector-level targets by 2022, with climate progress impacting executive pay. NatWest's climate ethos differentiates it from competitors by aligning employee concerns with corporate practice.

TMT businesses and net zero

TMT businesses are taking the lead in committing to net zero and to improving transparency on GHG emissions. This matters. **It is not just that TMT businesses can achieve these goals more easily than those in some other industries. It is that communication industry enterprises have a responsibility to lead.** Other industries do not have the power to distil, explain, campaign, cajole, encourage as news media, the advertising sector and tech platforms can, and all this only works if they do so from a position of authority.

Based on reports issued by a selection of TMT companies that operate primarily in the UK, Figure 2 shows the number of tonnes of greenhouses emitted, presented as equivalent tonnes of carbon dioxide (tCO_{2e}), for every £1m in revenue generated.²⁶ The overall trajectory is encouraging: over the last three years, these companies' intensity ratios have fallen at a CAGR of 14.5%.

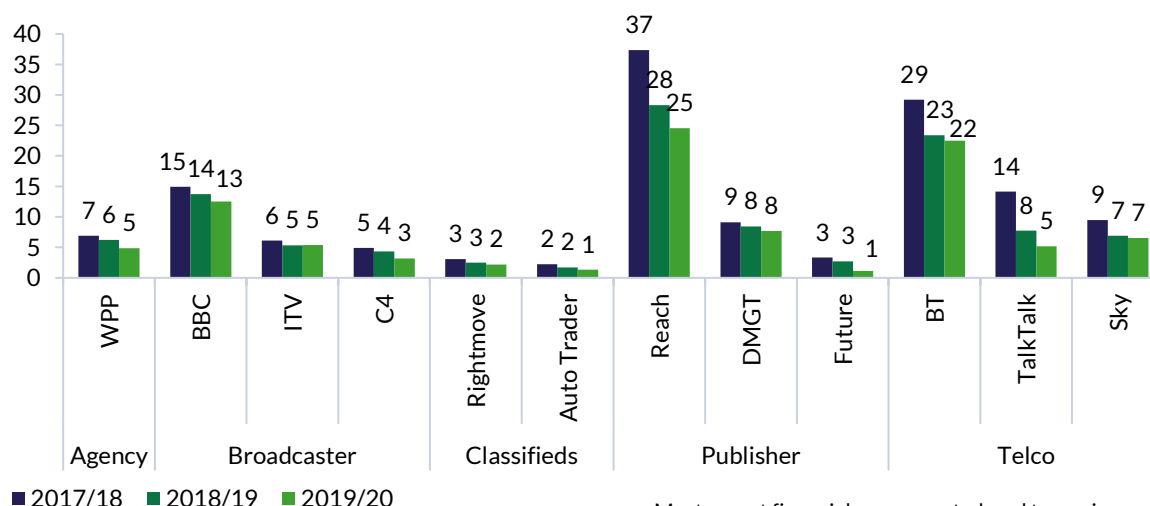
²³ University of Cambridge, [Small and medium enterprises \(SMEs\) are vital to UK decarbonisation—how do we meaningfully engage them?](#), October 2020.

²⁴ In February, NatWest announced it would prohibit project financing for fracking as well as oil and gas exploration, on top of phasing out coal from its portfolio. See NatWest Group plc, [Climate-related disclosures report 2020](#), February 2021.

²⁵ Bloomberg, [NatWest Group CEO Rose on Recovery Efforts, Sustainability](#), January 2021.

²⁶ We note that within their annual report disclosures, many of these companies choose to report on slightly different metrics that may closely more tally to the source of these emissions: Rightmove reports on tonnes of carbon per FTE; while Reach plc reports on the basis emissions per millions of pages printed. For the sake of comparability, we have chosen to use revenue as our denominator in our intensity ratio.

Figure 2: UK TMT carbon intensity ratio, Scopes 1+2 (tCO₂e)/revenue (£m)



Most recent financial year reported, and two prior years.
Total global revenues and global emissions are used to reflect the entirety of the business's operations.
[Source: Enders Analysis, company reports]

WPP, the world's largest agency holding group, has committed to net zero by 2025 and has a relatively low use of carbon in producing what are mainly services. Some of these carbon costs are reducible: the Advertising Association (AA), which is coordinating the industry's response to the climate emergency, found that 58% of UK IPA-member agency emissions come from business travel, with flights as the largest contributor.²⁷

The UK's major broadcasters have all pledged to reach net zero by 2030.²⁸ Broadcasters operating studios incur the carbon costs of transport, studio space and accommodation. The BBC's high carbon intensity ratio compared to Channel 4's is attributable to the BBC's sizeable property portfolio (somewhere in the region of 355,000m²) and its own production wing.²⁹ The BBC is taking steps to address this—Cardiff Central Square, its new building in Wales, was awarded 'BREEAM Outstanding' status for its design and construction. In contrast, we suspect that Channel 4's commissions fall into its scope 3 emissions, which it should be in a position to include in its next annual report.

As well as aligning their goals, the broadcasters are also collaborating on tracking the carbon impact of AV production (Figure 3). A major sustainability initiative from the broadcasters is albert, the UK television industry's free online carbon calculator. Created by the BBC in 2011, albert is now managed by BAFTA's albert consortium, which is composed of 17 of the UK's largest broadcasters, streaming services, and producers, including the BBC, ITV, Sky, Netflix, NBC Universal and Endemol Shine.

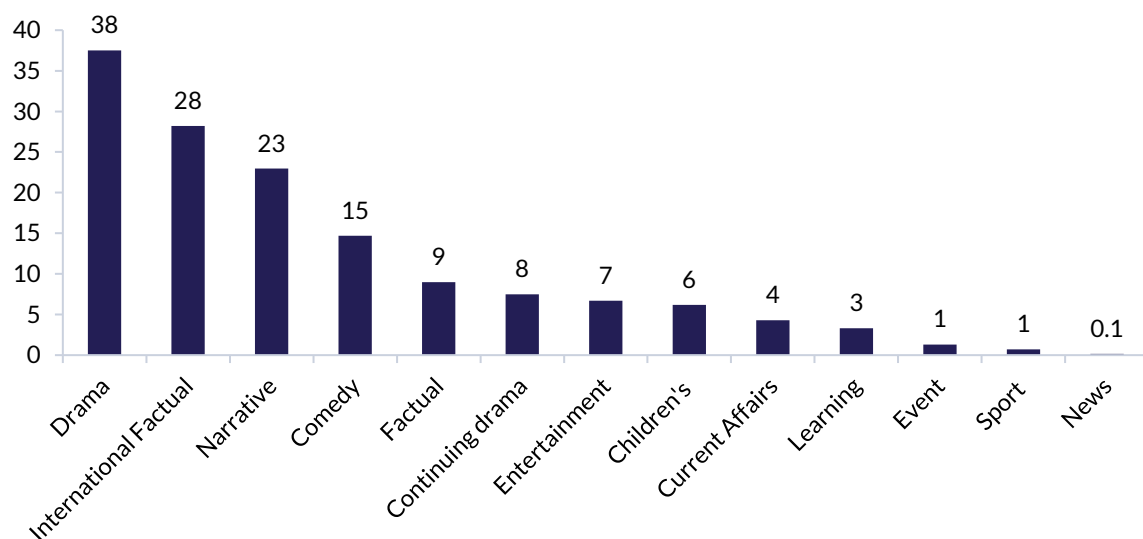
albert's presence in UK broadcasters' programming is rising fast. The number of programmes produced by ITV with an albert certification rose from 4 in 2016 to 73 in 2019; BBC-certified productions rose from 26 in 2015/16 to 127 in 2019/20. Premier League and EFL matches shown live on Sky Sports will all be certified 3-star albert sustainable productions from the beginning of the 2020/21 season.

²⁷ Advertising Association, [Ad Net Zero Report](#), 2020.

²⁸ BBC, ITV, C4, Sky, and STV.

²⁹ The was the BBC's aim for its estate size in 2020, per its 2018/19.

Figure 3: Carbon footprint per hour of programming by genre, 2019 (tCO₂e/hr)



For similar/overlapping categories e.g location vs studio based narrative, we have taken the average tCO₂e/hr.
[Source: Enders Analysis, albert]

Among the companies reported in Figure 2, Auto Trader has the lowest ratio of carbon use to revenue it generates because it is a digital platform in the classified space, serving dealers with tools. Rightmove is similarly a digital platform for the property market, resulting in low carbon costs.

Among content publishers, those whose revenues are tilted to digital have lower carbon costs than those tilted to print, which requires the printing of newspapers, with the associated energy costs. This explains why Future's carbon costs are low relative to revenue; it is increasingly skewed to digital and in particular ecommerce. By contrast, DMGT is a more traditional news publisher still exposed to the carbon costs of newspapers, despite shifting the revenue mix to digital. Higher carbon costs still are incurred by Reach, which produces and prints a broad swathe of titles across the UK at six printing sites, and the fact that a significant proportion of its revenues are still generated through print (79%). Reach's total electricity consumption fell 8% in 2019 and its scope 1 & 2 tCO₂e per millions of pages printed is 53% lower than it was only two years ago.

Sky, BT and Google best practices

Sky with no limits

Sky has been at the forefront of corporations taking action on climate change, since becoming the first media company in the world to become carbon neutral³⁰ in 2006, and to commit to becoming Net Zero Carbon by 2030. Sky is now also one of the Principal Partners for the COP26 summit.³¹

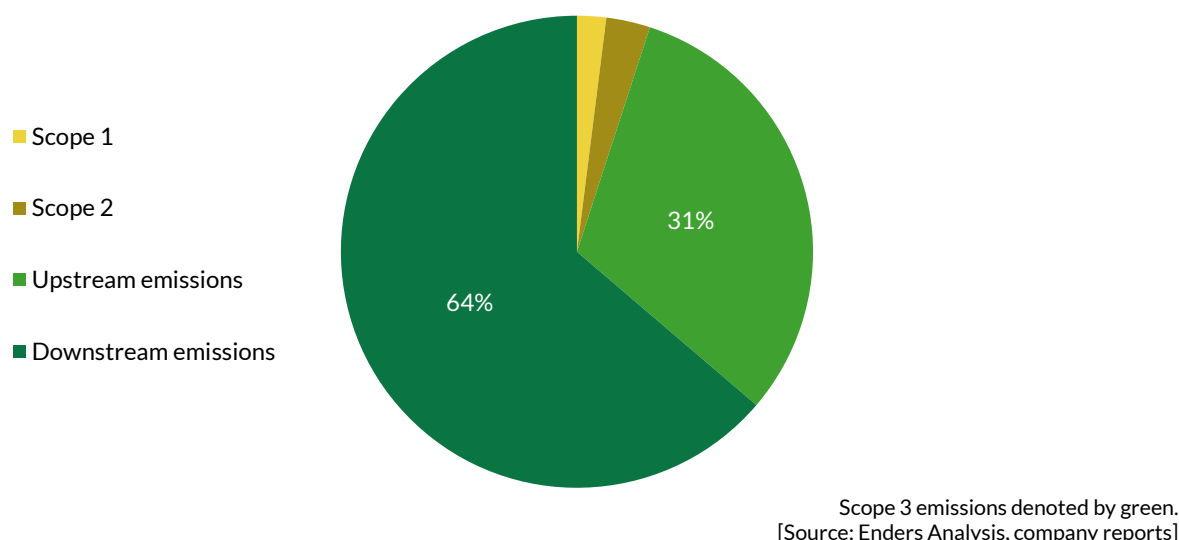
Since 2009/10, Sky has halved its operational intensity across the group, with 100% of all energy use coming from renewable electricity or district heating, and in February 2020, Sky announced it was aiming for net zero carbon by 2030. To achieve this Sky plans to cut the emissions across its supply chain, operations and products by a minimum of 50% and will offset the remaining emissions by planting trees, mangroves and seagrass.

³⁰ Carbon neutrality can be achieved either by eliminating all emissions or achieving net zero carbon emissions with offsets and removals.

³¹ COP26, [Partnerships and Support](#), 2021.

The vast majority of Sky's carbon footprint (64%) is part of its scope 3 emissions: its customers' energy usage of its products—set top boxes, apps, Now TV sticks, broadband routers and Sky mobiles—in their homes (Figure 4). Sky is working to reduce emissions from its tech products in customer homes by at least 50% by 2030—a reduction of 626,182 tCO_{2e}.³² Sky plans to do this by improving the efficiency of existing and future products (such as Sky Q boxes) and by retaining ownership of the equipment.

Figure 4: Sky plc's carbon emissions by scope (%)



The other major sources (30%) of Sky's emissions are upstream from its supply chain. Sky works with 11,000 suppliers across the various aspects of the business. Sky has been a member of the Carbon Disclosure Project's (CDP) Supply Chain Programme since its inception (and now reports to CDP through its parent company ComcastNBCUniversal), and has supported its suppliers to reduce and offset their emissions, beginning with the most carbon intensive. For example, Zinwell, one of its manufacturing partners, installed large-scale solar panels to power its factory in Shenzhen, China, providing c.50% of the electricity used to make Sky's products. The CDP estimates that major buyers could see a price hike of \$120bn USD in the next five years, thanks to environmental risks in their supply chain. Leaders who manage environmental risk through supply chain collaboration will not only be more competitive today, but will be more resilient for the economic risks of tomorrow.³³

In line with its previous industry-wide initiatives (having joined albert at its inception in 2011), Sky is one of nine sponsors of DIMPACT—a project launched last year in collaboration with the University of Bristol to create an online carbon calculator to map the carbon footprint of the delivery networks, data centres, web infrastructure and user devices that are used to deliver content and services.³⁴

Like many other businesses following the pandemic, Sky is looking at a range of hybrid models of working—following the steps of Vodafone who announced a move away from "obsolete offices"³⁵— and a next step will be measuring the energy and associated carbon emissions from different employee scenarios relating to an increase in home working.

³² Calculation based on 2019 reported tCO_{2e} of use of sold products, [Sky Bigger Picture Impact Report 2019](#), p56. When calculating customer carbon footprint, they include all the products they provide to their customers. Sky do not include the use of other products—TV sets, broadband and mobile devices—which have not been provided by Sky, in line with the GHG protocol.

³³ CDP, [Transparency to transformation: a chain reaction](#). CDP Global Supply Chain Report 2020, February 2021.

³⁴ University of Bristol, [Major streaming companies join pioneering initiative to monitor media industry's digital carbon footprint](#), February 2021.

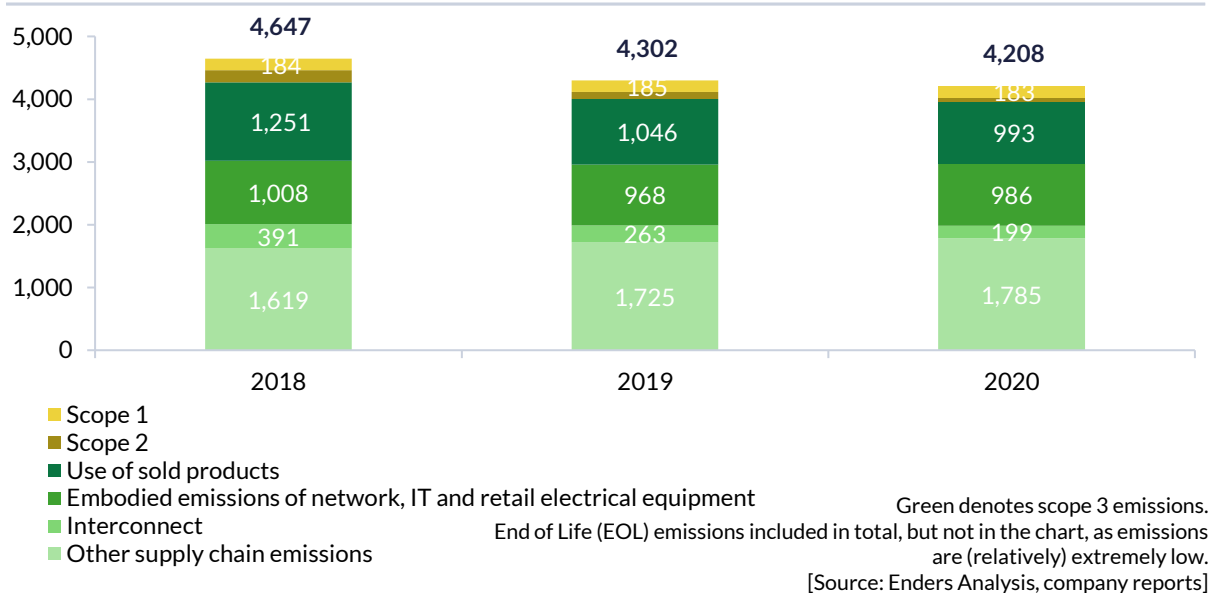
³⁵ The Times, [Covid made the old-style office obsolete, so we built a new, more flexible model](#), January 2021. Vodafone had a carbon intensity ratio of 46.7 tCO_{2e} per £1m of revenue in FY20, down from 69.6 tCO_{2e} in 2016, reducing its emissions by a CAGR of 9% during that time frame. As Vodafone's reporting currency is EUR, the average EUR/GBP rate for the fiscal year has been applied.

BT's towering ambition

BT aims to be net zero in carbon emissions by 2045. It also intends to reduce its carbon intensity by 87% on its 2016/17 levels by end of March 2031, and reduce its supply chain emissions by 42% in the same timeframe. BT has reduced its scope 1 and 2 emissions by 42% since 2016/17.

Around two-thirds of BT's scope 1 emissions are from its fleet of 34k vehicles (Figure 5). It is working to transition from diesel and petrol fuelled vehicles to ones that run on electricity or alternative fuels and has outlined plans to electrify up to 28k of its vehicles by 2030. There are barriers to an entirely electric fleet (such as a limited supply of electric vans and chargers), and in 2020 BT set up the UK Electric Fleets Coalition with The Climate Group which successfully advocated for the phase out of diesel and petrol vehicles by 2030, and highlighted the importance of corporate EV take-up and policies to support the 2030 target.

Figure 5: BT GHG emissions, 2018-2020 (tCO₂e)



BT uses nearly 1% of the electricity supplied by the UK grid, and in November 2020 completed a switch globally to 100% renewably sourced electricity. This has reduced its scope 2 emissions, now 88% lower than they were in 2008. BT encourages its suppliers to make a similar switch: so far 181 of its larger suppliers have done so.

In the financial year 2019/20 the company invested £45.3m to reduce energy usage in its buildings, achieving an in-year reduction of 2.3% in energy consumption. Since 2009, BT's energy programmes have saved the business £343m. As part of its Better Workplace programme, it is consolidating its office footprint from over 300 to 30 locations, selecting new premises and redesigning a number of its existing locations. Throughout the process BT is ensuring that new and redesigned offices meet its net zero ambitions: using electric heating instead of natural gas and harvesting rainwater where possible. It is also looking at hybrid working post-pandemic, which will reduce emissions from employee commuting.

The majority of BT's carbon footprint (69%) is from its supply chain, which it is tackling. It has begun building a clause into its commercial contracts with suppliers, which states that suppliers must provide proof that they have made carbon savings as one of the deliverables of the contract—so far 12, including Nokia, have signed up. BT has also encouraged suppliers to report to the CDP (formerly Carbon Disclosure Project)—52% of its suppliers by total spend now do so. Initiatives like these have allowed it to reduce its supply chain emissions by 8% on 2016/17 levels. BT has also encouraged its suppliers to have similar conversations with *their* suppliers, leading to a greater chain of companies taking steps to reduce their carbon footprint.

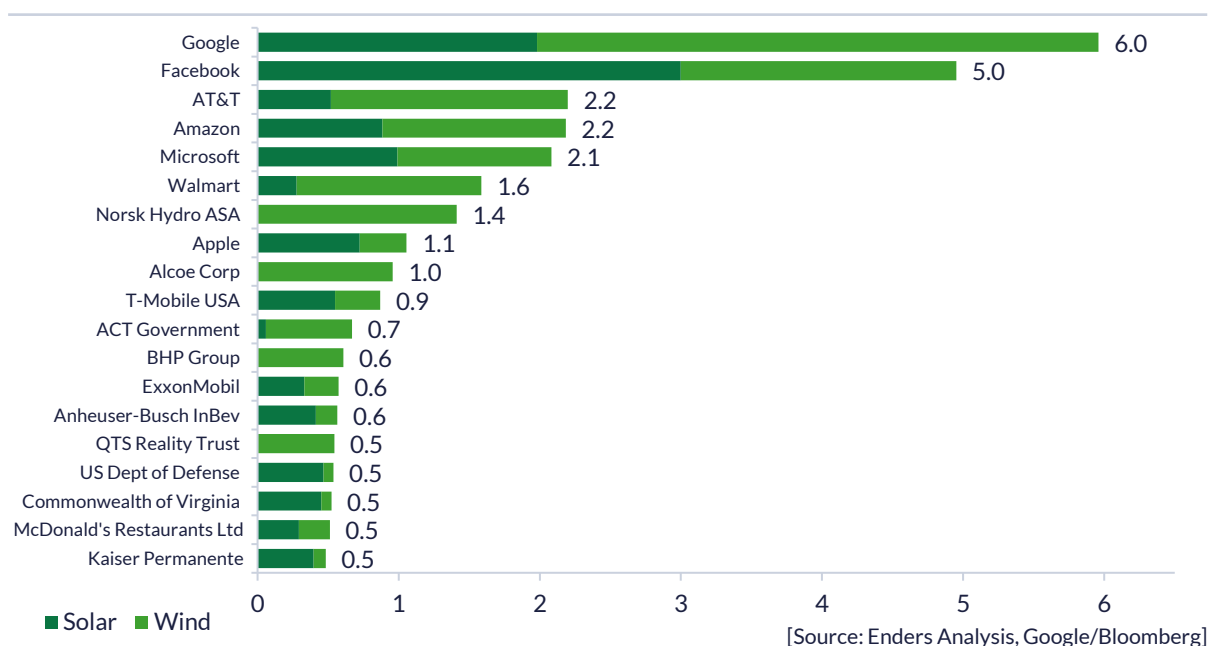
BT is also working to help its customers use its products and services to reduce their emissions. It set itself the goal of helping its customers save three times the amount of carbon BT itself emits in a year—it achieved this in 2020, a year ahead of schedule. BT estimates it saved customers 13m tonnes of CO₂ emissions in 2019/20 by using its solutions to: limit the need for travel, reduce energy use, and reduce materials used for manufacturing. BT includes a clause in its consumer contracts, stating that customers must send back any products when they leave BT, so that it can be recycled or refurbished.

Google's push to renewables

Google was the first tech company to become carbon neutral in 2007, and the first tech company to match their energy use with 100% renewable energy in 2017—and every year since.

Fast forward to 2020 and Google stands apart as the world's largest annual corporate purchaser of renewable solar and wind energy, with 5.97 GW of energy currently under contract (Figure 6). Google is such a significant buyer of energy that it has the power to reconfigure the buying process. In 2019, the company started organising auctions across territories where solar and wind energy producers bid for Google contracts. Winning bids of these auctions have roughly a 20% discount on the opening price. Going forwards, Google aims to be carbon-free for all its energy usage 24/7 by 2030.³⁶

Figure 6: Corporate renewable energy purchased globally as of January 2020 (GW)



Last September, Google claimed that it has compensated for all its emissions since it was founded in 1998 through the purchase of carbon capture offsets, typically: landfill gas capture; agricultural methane capture; afforestation projects. Offsetting can be a controversial practice if it masks heavy emissions.

Perhaps aware of this, Google has a due diligence procedure when reviewing carbon offset projects:

- Reviewing the documentation from the offset seller and from third-party sources, including reviewing emissions data, permits and site testing results
- Visiting the project site and meeting people in charge of day-to-day operations
- Reviewing the verification reports if a project has already been verified

³⁶ Google has outlined in a white paper how it intends to reach this goal. Google, [24/7 by 2030: Realizing a carbon-free future](#), September 2020.

Data centres are a key component of Google's sustainability efforts. In 2016 Google announced that by applying UK subsidiary Deepmind's machine learning technology to its data centre operations it had achieved a 30-40% cut in energy usage. Now DeepMind and Google Cloud are making this Cloud technology solution available globally for use by airports, shopping centres, hospitals, data centres and other commercial buildings and industrial facilities. As well as working with businesses and governments, Google is innovating its core products (such as displaying carbon intensity of flight options on Google Flights) to help people make more sustainable choices, aiming to impact 1 billion people by 2022.

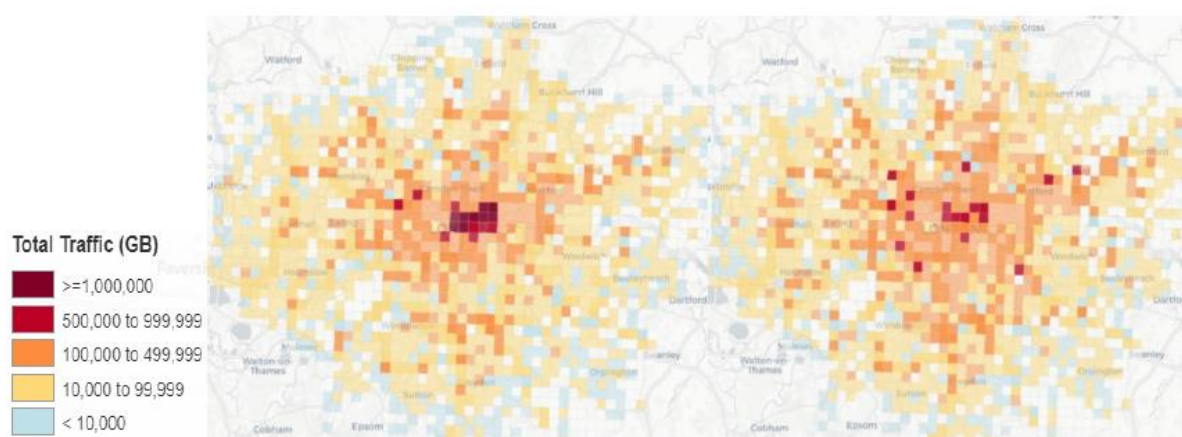
Building out telco networks will support WFH

When working from home started in late March, there was concern that fixed networks would struggle to take the strain of the extra demand for data. However, working from home does not require much data so, while fixed networks did see a significant increase in demand for data off-peak, it still did not reach the levels of pre-pandemic peak demand. Therefore, networks were able to accommodate home-workers relatively easily, with similar reliability to that they were used to seeing in the evenings.

While networks have coped for the most part, they have not been able to entirely stand up to the demands of working from home, with speed and reliability both concerns. A recent YouGov survey, commissioned by O2, found that 36% of respondents said they regularly switched to mobile data to stay online³⁷—this could be a result of a number of issues, including problems with Wi-Fi, and is not necessarily a result of an insufficient broadband service.

While mobile networks have broadly coped, the operators have run into capacity issues in some areas. Capacity is currently focussed in urban areas as this is where data demand was concentrated. However, as a large proportion of the workforce is now at home during the day, data demand has migrated into the suburbs (Figure 7). This means that some suburban areas are now experiencing capacity shortages, causing slower speeds and lower reliability for users. This is a particular issue if home-workers are going to rely on mobile data for work for some or all of the time.

Figure 7: Variations in MNO data traffic distribution in London



Left map shows February 2020, right map shows June 2020.
[Source: Ofcom Connected Nations 2020]

³⁷ O2, [Working from Phone: Over a third of Brits working from home are switching to mobile data to stay online in lockdown](#), February 2021.

Existing infrastructure initiatives will aid a more permanent transition

While telecoms providers are broadly coping with the demands of working from home, and are offering products, including second lines, Wi-Fi coverage extenders, and mobile failovers, to make the experience more robust, none of the solutions on offer are perfect. The UK's telecoms infrastructure needs to be developed—both to support flexible working and prepare the networks and the working population for another potential crisis of this nature. This requirement has, somewhat fortunately, come at a time when a number of infrastructure improvements are already being rolled out: full fibre, Virgin Media's gigabit upgrade, 5G, and the shared rural network (SRN) will all be instrumental in aiding a more permanent transition to resilient flexible working.

A number of network builders, including Openreach, are currently in the process of rolling out full fibre, which has a number of advantages for home working:

- **Faster speeds:** commercial full fibre packages currently offer a maximum speed of 1Gbps. This is more than sufficient for multiple home-workers in one household
- **Higher reliability:** full fibre is also a more reliable service than copper. It is less susceptible to faults at the cabinet, and is not affected by rain or electrical interference, as copper lines can be, meaning it offers more dependable speeds
- **Dedicated connections:** with full fibre it is possible to add a full second dedicated connection on the same physical fibre pair (while adding a new copper line requires digging)

While full fibre is currently only available to 18% of homes,³⁸ it is being rolled out at pace, with Openreach committed to covering around two-thirds of premises by the mid to late 2020s. Openreach has indicated that it could accelerate and expand its rollout plans with the correct government and regulatory support. It is possible that increased public interest in full fibre for working from home will incentivise the government to reduce the barriers to a faster full fibre rollout, both physical (such as easier access to tower blocks) and commercial (such as lower business rates on fibre assets).

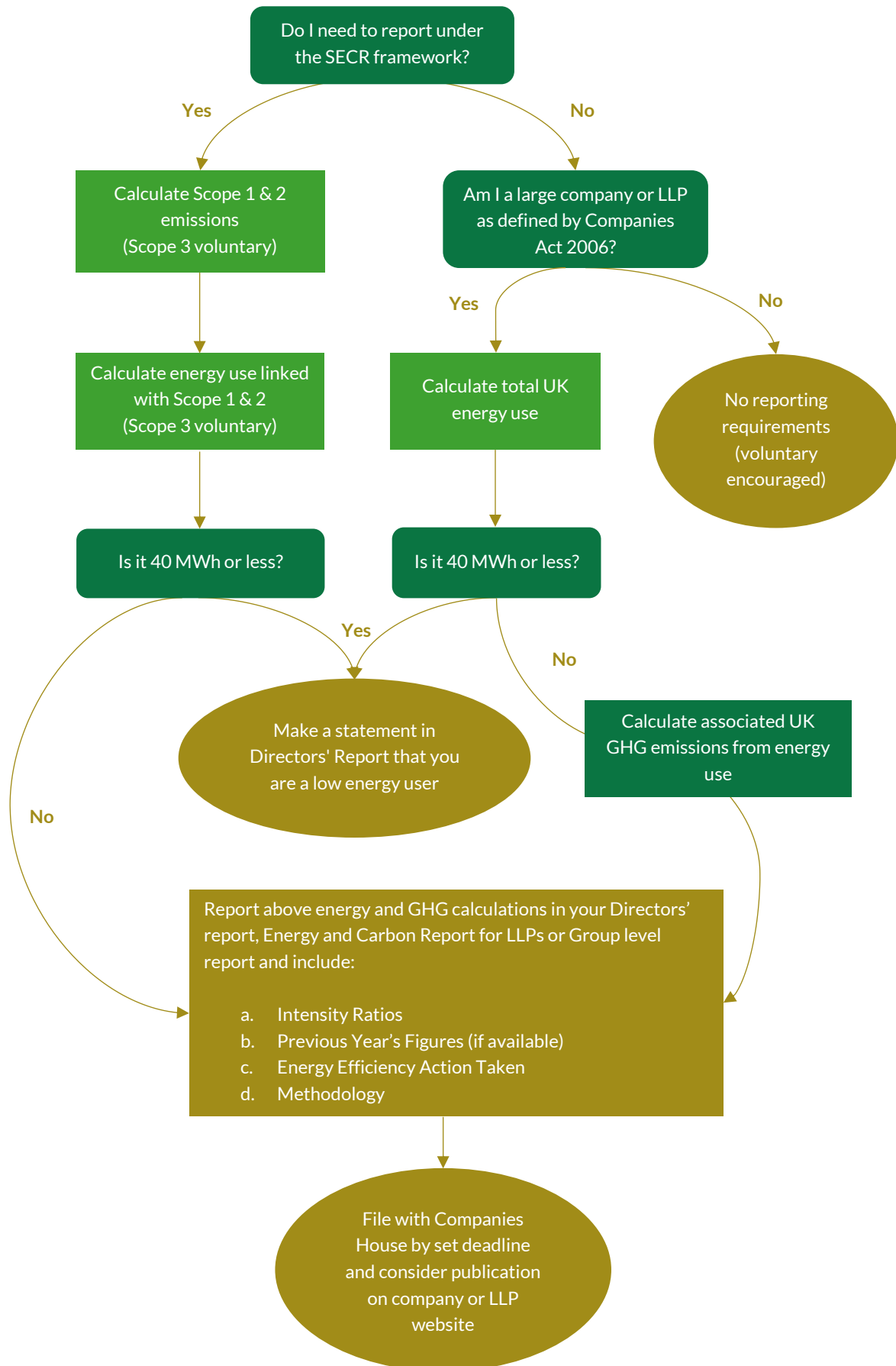
In mobile, operators will need to address the change in capacity requirements that has come with widespread remote working. Currently the operators have two ways of expanding their capacity: building new base stations, or building out 5G. We do not expect operators to do the former, given it is very expensive, but they may adjust their 5G rollout plans to address current problem areas. So far, 5G rollout has focussed on urban areas, which are not currently seeing their usual levels of traffic, so the operators have room to prioritise the residential areas which are now capacity constrained. Doing this, assuming sufficient take up of 5G handsets in the area, would help to alleviate capacity and speed issues.

In rural areas, basic 4G coverage is more of a problem. Ofcom estimates that just 46% of rural premises have indoor 4G coverage from all four operators.³⁹ If employees in rural areas wish to: use mobile data in place of fixed broadband (for example if they cannot get a decent fixed line speed); take a mobile failover from their broadband provider; or have the option of using their mobile data as a back up to their fixed connection, then comprehensive 4G coverage is critical. This is particularly the case if someone wishes to take their mobile data contract from a different MNO to the one providing their mobile failover option, which would provide the most resilience against network downtime but requires 4G coverage from at least two operators. The SRN will solve this issue through encouraging infrastructure sharing in areas where some but not all operators have coverage, and by investing £500m to build new sites in areas where none have coverage. Combined, the operators are expected to extend coverage to another 280,000 premises through the SRN. Improving 4G coverage in this way will ensure that the vast majority of workers have a number of reliable ways to get online, improving the overall resilience of telecoms services for remote working.

³⁸ Ofcom, [Connected Nations 2020](#), December 2020.

³⁹ Ibid.

Appendix: Flowchart for reporting under SECR



[Source: Enders Analysis, BEIS]

About Enders Analysis

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