GSMA Intelligence

Green is good for business: making the financial case in telecoms

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GSMA

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GSMA Intelligence

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Executive summary

This report focuses on making the financial case for going green in the telecoms sector. It provides analysis on the feed-through effects of green investments (particularly in the network and product design) on costs and revenues.

The financial case for going green is about lower costs and higher revenues. Sustainable products that help environmental outcomes and reduce costs will be central to successful commercial performance. Costs are a focal point, as energy is still a stubbornly high burden on profit and loss, at 20–40% of opex for the average operator. The shift to renewables will help reduce this – but it takes time, so energy efficiencies are a priority.

The green revenue story is less developed but equally important. This applies in the consumer segment (e.g. device-recycling schemes or bundling energy into mobile and/or broadband tariffs) and in the enterprise segment as part of digitisation programmes.

Cost savings: very real

The main motivation for energy-related cost savings is to mitigate the outlay and ongoing expenditure on 5G networks. 5G infrastructure continues to expand as operators in countries beyond the early adopters invest in new builds, primarily on non-standalone (NSA) architectures. This is expensive; 5G will account for 85–90% of operator capex to 2025. For the industry as a whole, this equates to around $1 trillion (20–25% of revenue).

The key opex line is power consumption because it links to all the energy-saving effects from capex investments in energy-efficient RAN and network equipment. For an average operator in a developed country with an EBITDA margin of 25%, GSMA Intelligence estimates opex savings of up to 4% when power costs are reduced by 20%. This translates to a flow-through effect that would increase EBITDA by around 3.8%, assuming revenue stays constant.

Energy efficiencies in the network are now coming from a range of sources, including RAN equipment with AI-enabled sleep states, lower air conditioning usage in data centres that deploy liquid cooling (or natural cooling), smarter site selection, and lithium-ion batteries. The substitution of fossil fuels for renewables is the other side of the same coin.

Consumer revenues: targeting the green dollar

There is a revenue uplift opportunity in at least three lines of business for the consumer segment:

- carbon-neutral (or net-zero) certified products
- device trade-in and the refurb market
- retail energy.

Some 30–60% of consumers claim they are willing to pay a premium for a mobile phone or home internet service if certified as carbon neutral. As an example, in the UK, contract ARPU is around £17 per month on average. Assuming 25% of contract customers paid a green premium of 5% and no uplift was applied to prepaid, it would generate a boost of around 1% to service revenue growth. This grows to 2.3% and 3.4% for rises of 10% and 15% respectively. This may sound low, but it needs to be considered in the context of a low-growth environment, and an expectation that the share of consumers willing to pay a premium for green tariffs will rise over time.

Device trade-in schemes can help blunt the effects of people taking longer to upgrade their smartphones. GSMA Intelligence survey data suggests consumers are now more willing to trade in an older device for a refurbished one, rather than waiting to upgrade to the latest and greatest model. The propensity to take a refurbished handset is lowest where the replacement time is longest (i.e. France, Germany, UK, Italy). This means there is a gap in the market for operators to offer competitive trade-in schemes in Europe, accelerating the path to 5G and the consequent ARPU premiums.

Enterprise revenues: reducing carbon, raising margins

The enterprise revenue premise is that 5G and other digital technologies sold by operators or their partners provide an energy-saving benefit in addition to a productivity uplift. GSMA Intelligence survey data indicates that improved energy efficiency is now viewed by companies as the second most important factor in moving to a zero-carbon business model – behind only renewables.

However, there is a clear opportunity to sell more services into companies in different industries. The use of cloud is the most established of the 5G and other digital technologies, at around 50–60% of companies in each industry surveyed. IoT deployments are lower but still healthy, driven by demand for monitoring and optimisation of operations. 5G is lower still at 25–35% of companies in manufacturing, health, banking and transportation. Forward intentions for 5G are stronger, with a further 40% testing or in the pilot stage, suggesting take-up will rise.

Industries need to lose carbon while combating lower margins. Taking four industries that together account for 80% of the global CO2 footprint, GSMA Intelligence estimates digital technology can enable 40% of the CO2 savings needed by 2030 to remain on track for net zero.

From an energy perspective, 5G, IoT, cloud and AI work in concert rather than in isolation. With 90% of companies that have already deployed an IoT solution citing energy efficiency as one of their justifications for doing so, there is a clear opportunity for operators to market the commercial and environmental benefits of their 5G enterprise product sets. The more cost savings can be cited as part of the 5G value proposition, the stronger sales will be.

About this research

This is the second of a three-part series from GSMA Intelligence in partnership with Huawei on the technological and business implications of sustainability in the telecoms industry. The research aims to give an evidence-based view of why going green makes business sense, and how this can be done effectively. The series comprises three reports covering:

- overall rationale and outlook
- the financial case
- the reputational and external relations case (to be published in H2 2023).

To bring new insights to the debate, GSMA Intelligence commissioned two surveys – one of consumers and one of enterprise sectors. The consumer survey covered 16 countries,[1] each with 500 respondents. The enterprise survey covered six vertical industries,[2] each with a sample of 100 respondents worldwide. Fieldwork was conducted during December 2022 and January 2023.

The survey data has been complemented with a mix of research, data analysis and insights from conversations with key industry stakeholders from operators, equipment vendors, regulators and financial analysts. The research therefore offers a well-rounded perspective on an issue central to how business is likely to operate over the coming decade. It also helps unpack regional nuances resulting from economic, political or climatic differences, so that companies can interpret the implications on a level relevant to their specific situation.

1 Argentina, Brazil, Egypt, France, Germany, Indonesia, Italy, Japan, Pakistan, Philippines, Saudi Arabia, South Africa, South Korea, Spain, Turkey and UK.
2 Telecoms, technology & cloud, manufacturing, healthcare, financial services, and transportation & logistics.

1 Context: the sustainability pivot

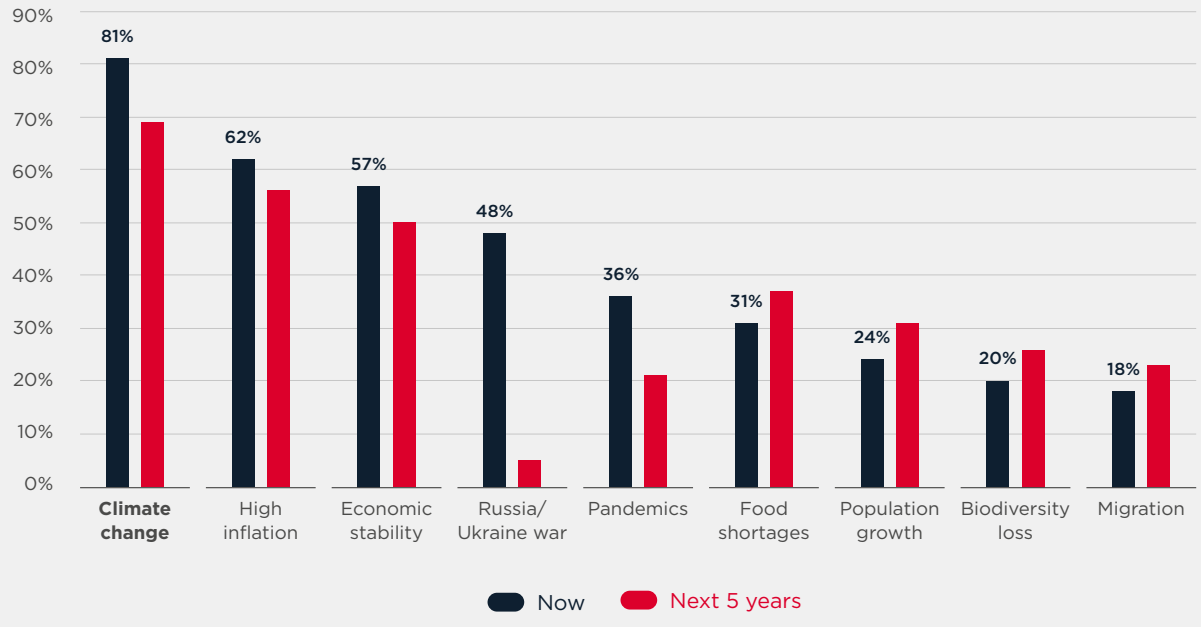
Efficiency and sustainability top the agenda

Climate change has historically been the principal driver of moves from telecoms operators (and other industries) to a more sustainable operating model. The Paris Accord of 2015 and its key pledge to limit global temperatures to a ceiling of 1.5°C above pre-industrial levels by the end of the 21st century remains the central objective for governments across the world. However, a key change since then has been more assertive involvement from companies in the private sector, which became particularly visible during COP conferences in Glasgow (2021) and most recently Sharm el-Sheikh. This includes committing to net-zero targets, reporting frameworks to track progress and, fundamentally, a reshaping of business practices towards a lower emissions environment.

The public at large view climate change as an existential issue. It is rated as the No.1 global challenge now and in five years' time (see Figure 1). Telecoms operators' network investment priorities now feature sustainability as a core tenet. GSMA Intelligence survey data supports this, with more than 80% of operators rating energy efficiency and sustainability as a top priority for mobile network transformation plans. This places sustainability ahead of traditional must haves such as security and new feature upgrades to network capabilities. Network equipment upgrades are a major part of investment, as the network accounts for 90% of operators' direct energy consumption. However, the sustainability pivot is holistic, including everything from embedding renewable energy supplies for office premises, to corporate travel policies, product portfolios and supplier procurement.

Figure 1 People see climate change as the most pressing global issue – now and in the future

Which of the following global challenges do you feel is most pressing for action?



Source: GSMA Intelligence based on Consumer Sustainability Attitudes Survey across 16 countries

2 The cost side

5G infrastructure is expensive, regardless of the payback

The main motivation for energy-related cost savings is to mitigate the outlay and ongoing expenditure on 5G networks. The same is true for migrating from legacy copper to fibre or cable broadband infrastructure.

5G infrastructure continues to expand, as operators in countries beyond the early adopters invest in new builds, primarily on non-standalone (NSA) architectures. This is expensive. GSMA Intelligence estimates that 5G will account for 85–90% of operator capex out to 2025. For the industry as a whole, this equates to around $1 trillion (or 20–25% of revenue). Some of the cost will be optimised through competition (including from open RAN vendors) but it should be viewed as largely fixed.

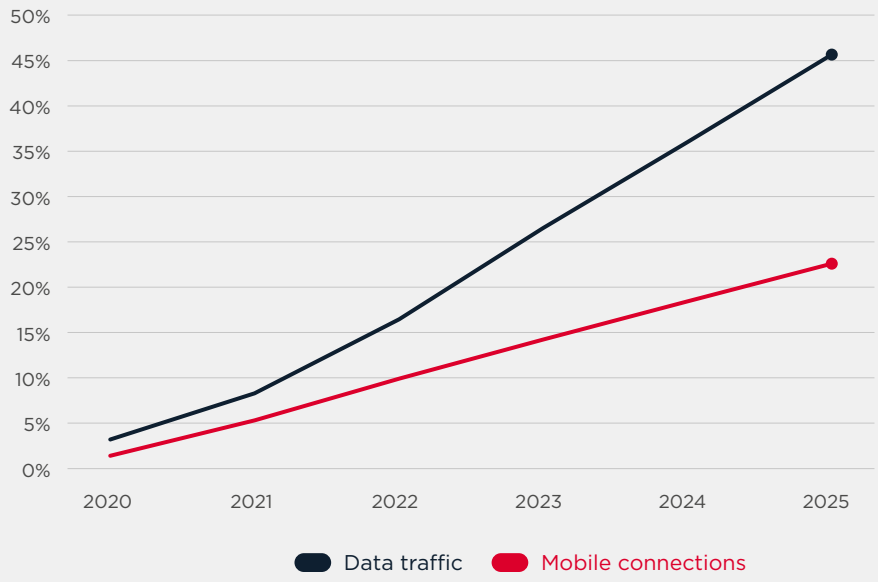
The payback period for infrastructure investments depends on the rate of incremental revenue growth – a long-running challenge. Since the late 2000s in the 3G era, revenue growth has generally been low, flat or negative in Europe, the US, Japan and other western countries, with an exception of only 2–3 years for 4G pricing premiums in the mid-2010s before they were competed away.

In theory, 5G holds more promise, particularly if meaningful incremental revenue can be gained from sales to enterprise verticals. 5G adoption should reach around 25% of total connections globally by 2025 (see Figure 2).

Increased use of data means 5G will account for nearly 50% of total mobile data traffic by 2025. Rising data traffic has been the main justification for raising tariffs (outside of inflation-linked increases) through 'more for more' offerings. In the 4G era (2015–2020), this worked because people were prepared to pay more to stream video and other high-bandwidth applications. However, such a use case is yet to materialise for 5G that could drive meaningful and sustained revenue growth. For the time being, market structure and regulation are still the main influencing factors for financial performance, with cost savings an ever-present goal.

Figure 2 5G will account for around 50% of data traffic by 2025 – double its share of total mobile connections

5G as a share of...



Source: GSMA Intelligence

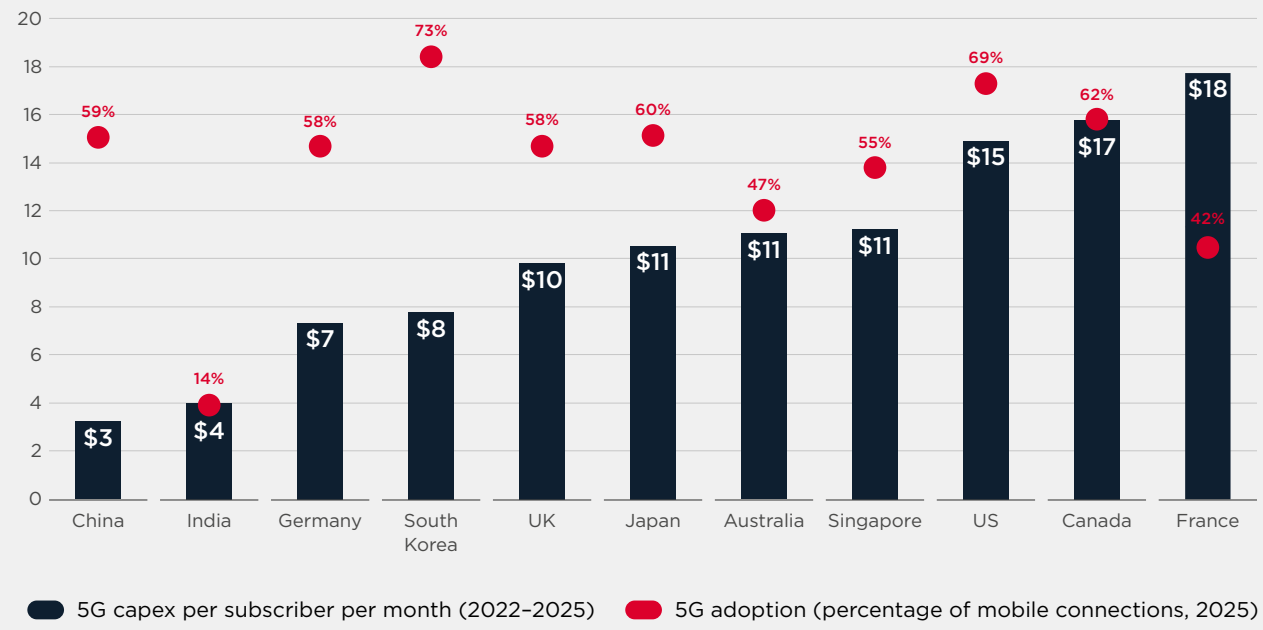
The question of how much capital is required to roll out and operate a 5G network is, of course, important. But it is also crucial to understand the size of that investment relative to the subscriber base it serves – the capex efficiency. The goal is to operate as efficiently as possible, meaning a low capex-to-revenue ratio and high revenue growth. This is not always possible, particularly in competitive markets that necessitate high investment just to keep up.

Figure 3 summarises the calculations across a selection of leading countries:

- Operators in most European countries, along with the US and Canada, will spend between $10 and $20 per month per 5G customer between 2022 and 2025.
- Operators in China and India are at the opposite end of the spectrum at less than $5 – but for different reasons. China is at a late stage in its infrastructure deployment with a large 5G subscriber base, while India is at the beginning.

Capex efficiency (as a share of projected ARPU) ratios are more consistent. Contract ARPU rates in the US, Germany and Australia are approximately $50, $18 and $32 respectively. This implies that operators in these countries will be spending 30–40% of the revenue from 5G subscribers each month on capex. This will fall over time as the fixed costs are spread across a larger subscriber base. However, it underscores the fact that 5G is expensive and cost efficiencies from energy and other sustainability efforts will remain paramount.

Figure 3 How much capex is needed per 5G customer?



Source: GSMA Intelligence

Optimising the operator cost structure

To make the financial case for going green at an accelerated pace, GSMA Intelligence has simulated the effect on the overall cost base of making various technology investments. This includes investments targeting capex and opex, broken down into five sub-categories:

- **network infrastructure** – core elements of a mobile network, including RAN equipment (e.g. antennas, baseband), passive elements (e.g. sites, cooling), backhaul and service installations
- **network components** – supporting software, including for the core, radio and services
- **operations** – the 'glue' of the network, including billing (OSS/BSS), network management/ automation and sales
- **spectrum** (out of scope)
- **finance** (out of scope).

The share allocations for each of these components are shown in Table 1.

Table 1: Typical cost structure of a mobile operator

	Capex	Opex	Share of total costs*
Network infrastructure	30–35%	40–45%	38%
Network components	30–35%	13–17%	22%
Operations	25–30%	40–45%	36%
Spectrum	3–5%	0%	2%
Finance	3–5%	0%	2%
Total (cost line)	100%	100%	

*Assumes mid-point of each cost line and multiplies by the weight that capex (40%) and opex (60%) represent as a share of total costs.
Note: figures expressed as ranges based on reported data and our own estimates. The actual figures for a given operator may differ from these averages.
Source: GSMA Intelligence

We have divided the investment categories – and projected cost savings – into capex and opex separately in the subsequent analysis for illustrative purposes. In reality, many of the investments have overlapping effects so should not be seen in isolation. For example, by investing in more efficient radios or baseband units, power consumption can be reduced and long-run opex reduced by lengthening the lifecycle of the equipment.

The savings are shown as a heatmap in each category to more easily identify the areas where the largest effects are possible. Given a finite supply of investment capex and ongoing opex, prioritising based on 'the greatest bang for your buck' is a sensible approach.

Capex: easy wins and slow burns

The capex story is based on investing in more energy-efficient network equipment, which feeds through to lower energy consumption and longer lifespans – 'smart' capex. There are also capex efficiencies from smarter site selection (helped by AI) and reducing the network densification associated with high-band (millimetre wave) spectrum used in, for example, city centres or suburban areas for FWA. Figure 4 outlines the impact of reducing different cost lines on overall capex.

The highest impact areas come where a given cost line is a larger component of capex, with RAN antennas and the core components topping the list.

If, for example, antenna costs fall 10% (e.g. through better site selection), this would feed through to a reduction of around 1.6% in overall capex, all else being equal. The magnitude rises the larger the fall. Core components have an even larger reduction potential of up to 5.6% in overall capex savings. This is driven by more efficient data centres (either owned or through hyperscaler capacity leasing) as a result of innovations in cooling, compute processing and dynamic workload shifting.

In most cases, there are also additive effects when the more efficient equipment feeds through to energy costs. These are captured as part of opex (Figure 5).

Figure 4: Potential capex savings from network efficiencies

	% of cost line	Impact on overall capex from reducing the cost line by...				
		2%	5%	10%	15%	20%
Capex – network infrastructure						
Antenna systems	50%	-0.3%	-0.8%	-1.6%	-2.4%	-3.3%
Environmental	20%	-0.1%	-0.3%	-0.7%	-1.0%	-1.3%
Shelter	5%	0.0%	-0.1%	-0.2%	-0.2%	-0.3%
Site access	5%	0.0%	-0.1%	-0.2%	-0.2%	-0.3%
Backhaul and transmission	10%	-0.1%	-0.2%	-0.3%	-0.5%	-0.7%
Service (installations)	10%	-0.1%	-0.2%	-0.3%	-0.5%	-0.7%
Capex – network components						
Radio	9%	-0.1%	-0.1%	-0.3%	-0.4%	-0.6%
Backhaul	1%	0.0%	0.0%	0.0%	0.0%	-0.1%
Core	86%	-0.6%	-1.4%	-2.8%	-4.2%	-5.6%
Services	4%	0.0%	-0.1%	-0.1%	-0.2%	-0.3%

Note: data represents the net savings on overall capex for a typical mobile operator when a cost line is reduced by a given magnitude. For example, if antenna costs fall 2%, overall capex would drop by approximately 0.3% (all else being equal).

Source: GSMA Intelligence

Opex: targeting the energy cost line

The key opex line is power consumption because it links to all the energy-saving effects from capex investments in energy-efficient RAN and network equipment. Energy efficiencies in the network are now coming from a range of sources including RAN equipment with AI-enabled sleep states, lower air conditioning usage in data centres that use liquid cooling (or natural cooling, which can also be used for the RAN), smarter site selection, and lithium-ion batteries. The substitution of fossil fuels for renewables is the other side of the same coin.

Using the same cost structure as for the capex calculations, Figure 5 shows the effects on opex in various categories. Note that this cost structure is for an operator in a developed country with the majority of its customer base in an urban environment. The splits would differ for operators in countries with more rural dispersion and a higher share of base station sites off grid, requiring diesel.

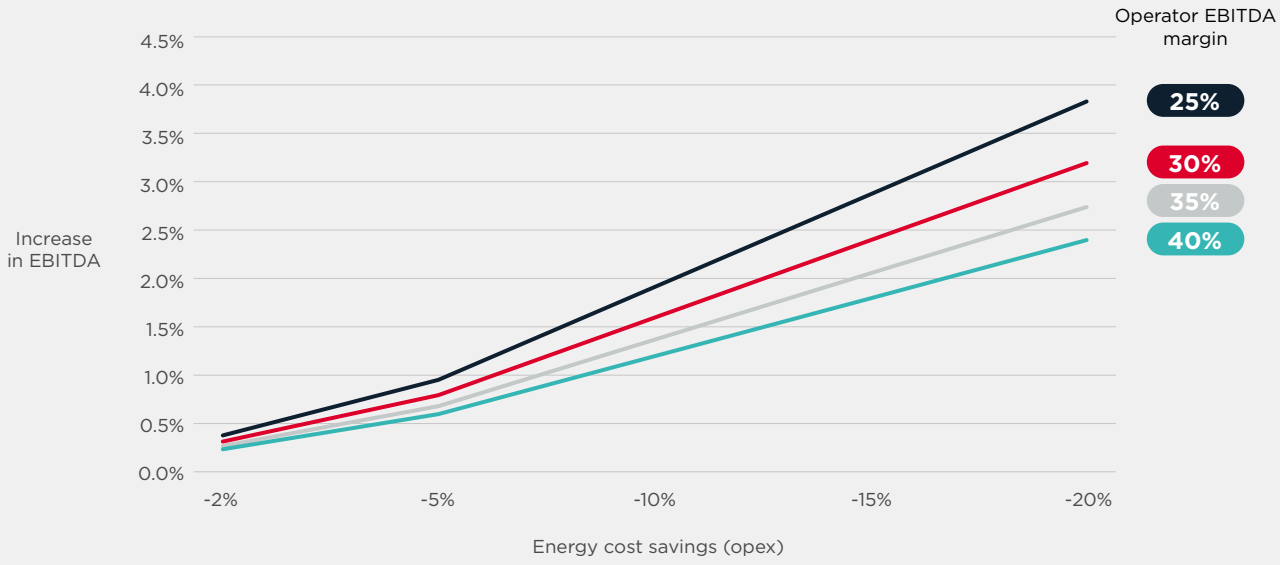
Figure 5: Potential opex savings from network efficiencies

	% of cost line	Impact on overall opex from reducing the cost line by...				
		2%	5%	10%	15%	20%
Opex – network infrastructure						
Antenna system leases	10%	-0.1%	-0.2%	-0.4%	-0.6%	-0.9%
Shelter leases	10%	-0.1%	-0.2%	-0.4%	-0.6%	-0.9%
Power consumption	45%	-0.4%	-1.0%	-1.9%	-2.9%	-3.8%
Backhaul and transmission leases	20%	-0.2%	-0.4%	-0.9%	-1.3%	-1.7%
Service (optimisation and maintenance)	15%	-0.1%	-0.3%	-0.6%	-1.0%	-1.3%
Opex – network components						
Radio licences, per sector	42%	-0.1%	-0.3%	-0.6%	-0.9%	-1.3%
Microwave licences, per link	14%	0.0%	-0.1%	-0.2%	-0.3%	-0.4%
Core licences, per subscriber	36%	-0.1%	-0.3%	-0.5%	-0.8%	-1.1%
Service licences, per subscriber	8%	0.0%	-0.1%	-0.1%	-0.2%	-0.2%

Source: GSMA Intelligence

The flow-through to EBITDA is shown in Figure 6. For an operator with a 25% EBITDA margin, energy cost savings of 2% (a low multiple) translate to a rise in margin of around 0.5%. The impact grows to 1.9% for a 10% energy reduction and 3.7% for a 20% reduction. The numbers are lower the higher the EBITDA margin but are still significant. These projections are indicative for the order of magnitude rather than being precise forecasts of what a specific operator can expect, which will inevitably depend on size, coverage footprint, energy usage profile and other factors. Nevertheless, lowering energy costs (efficiencies and renewables) has a significant impact on profits.

Figure 6 The flow-through effect of energy savings on EBITDA (holding revenue constant)



Source: GSMA Intelligence

The transition to renewables

The transition to renewables is the other side of the same coin in reducing costs and emissions. It is hard to model the cost gains of renewables, as this type of energy supplies only a minority of overall energy consumption in the telecoms sector (10–20%). This will change, in some cases quickly, over the coming 2–3 years as access to renewables from the national grid becomes more available.

Power purchase agreements (PPAs) represent another growing opportunity to access renewables. These involve operators investing capital in a local renewable energy installation – typically solar or wind – in return for medium-/long-term access at a pre-determined price. This has the effect of securing supply and mitigating exposure to volatility in the global wholesale energy markets. Examples include the following:

- **Telenor** has a 10-year agreement to source wind power from Hydro Rein – a Norwegian energy provider. The agreement is for 330 GWh of power to Telenor in its home market annually, which amounts to 86% of its Norwegian operation's current power consumption.
- **BT** has multiple PPAs in place. The most recent agreement involves The Renewables Infrastructure Group (TRIG) for wind energy from Scotland over 10 years.
- **Verizon** also has multiple PPAs in place. Most recently, it signed new agreements for an aggregate supply of up to 410 megawatts of capacity. Verizon is targeting 50% of electricity usage to come from renewables by 2025.

There are also examples of vendors working with operators and tower companies to deploy on-site solar power, particularly for off-grid sites in Africa and Southeast Asia.

3 The revenue side

Going for green growth

The revenue side centres on being able to embed sustainability into the heart of product design and marketing. This applies in the consumer and enterprise segments.

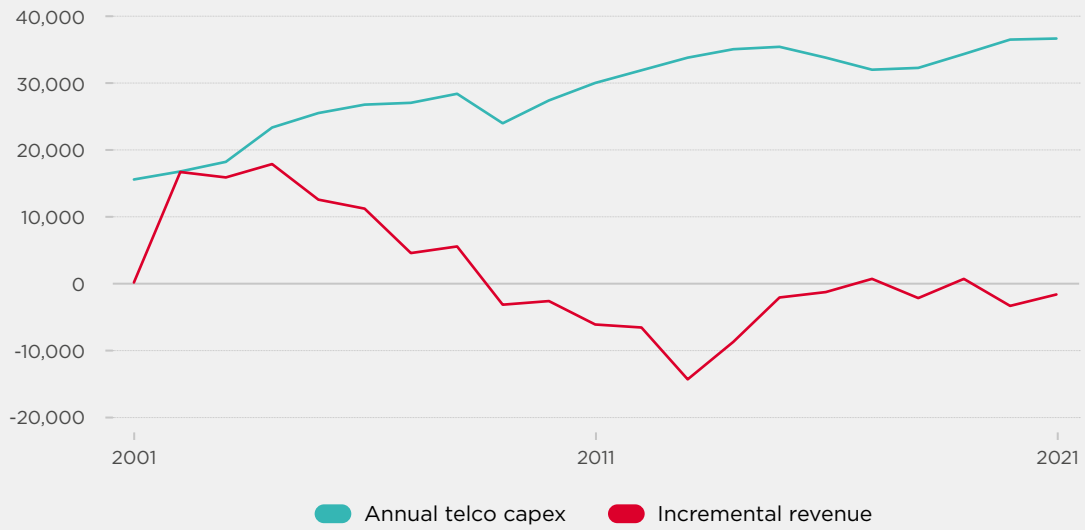
The long-running growth story challenge is clearly evident. The telecoms sector requires infrastructure capex as the cost of doing business. In Europe, for example, this amounts to $35–40 billion per year. The cycle of investment in networks typically lasts around 10 years, with peaks and troughs for the 3G, 4G and now 5G investment eras. Revenue growth has, unfortunately, been meagre post saturation in the mid-2000s, unable to rely on volume-led growth as mobile penetration ramped up throughout the population. Incremental revenues – the change in annual revenue each year – have therefore trended downwards over an extended period.

The pandemic provided a further barrier, taking around 4–8 pp off growth in high-income economies. Though Covid-19 is (hopefully) a thing of the past, the current macro environment remains challenging, particularly as inflation feeds through to lower levels of discretionary income and inevitable bargain hunting constraining premium tariffs and rewarding value offers.

Operators are therefore still searching for a restart/reset to the growth story. The extent to which such growth can realistically come from 5G upsells and enterprise or consumer services (e.g. fintech) will depend on the country. However, the sustainability pivot and advent of 'green growth' should be consistent across geographies.

Figure 7 The perennial challenge in telecoms of compensating for infrastructure investment with revenue growth

$ million, Europe



Source: GSMA Intelligence

Consumer segment

The consumer case potentially spans all product areas. This analysis examines three parts:

- carbon-neutral (or net-zero) certified products
- device trade-ins and the refurb market
- retail energy.

Carbon-neutral (or net-zero) certified products

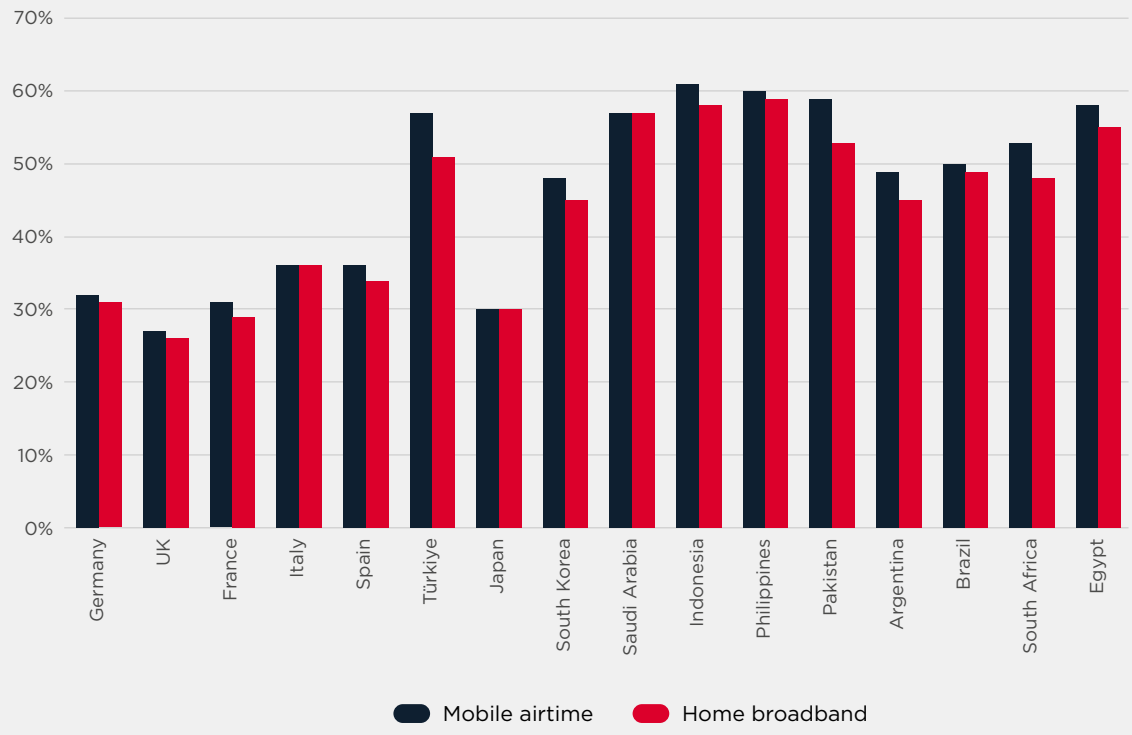
This refers to the certification of products and services as having a carbon-neutral status. Carbon neutral is defined as any CO2 emissions associated with the manufacture, transport, sale, use and end-of-life treatment for a product being offset by activities to reduce an equivalent amount of CO2, often purchased in the form of carbon credits. Offsets are typically purchased as credits or are directly funded activities such as planting trees.

Carbon neutral is not the same as net zero, which is the complete absence of CO2 emissions associated with a product or service. Net zero is the ultimate goal of the Paris Accord, with most commitments pledged to be fulfilled by 2050, if not before. For this reason, we see most product certifications in telecoms (and beyond) proceeding in a phased manner, starting with carbon neutral before transitioning to net zero.

Consumers want to align with green-minded brands and products. But will they pay for them? And how can a given green status be assured as trustworthy? Figure 8 shows that 30–60% of consumers in surveyed countries say they are willing to pay a premium for mobile phone or home internet service if certified as carbon neutral. It also reveals consumers in countries with a greater exposure to the effects of climate change are more willing to pay a premium (e.g. South Africa and Philippines).

Figure 8 The value of carbon neutral

Percentage of consumers who would pay a premium for carbon-neutral status



Source: GSMA Intelligence based on Consumer Sustainability Attitudes Survey across 16 countries

The uplift value will vary by country. As an example, in the UK, the average contract ARPU is around £17 per month. Assuming 25% of contract customers paid a green premium of 5% (from survey data, reducing down to be conservative) and no uplift is applied to prepaid, it would generate a boost of around 1% to service revenue (see Table 2). This rises to 2.3% and 3.4% for uplifts of 10% and 15% respectively. This may sound low, but it needs to be considered in the context of a low-growth environment, and an expectation that consumer willingness to pay more for green tariffs will rise over time (firstly in countries where the effects of climate change are more apparent).

Table 2: Offering carbon-neutral service could boost mobile service revenues by 1–3%

UK example

Carbon-neutral price uplift (contract subscribers only)	**5%**	**10%**	**15%**
Contract subscribers paying premium (million)	16.3	16.3	16.3
Contract ARPU post premium (£ per month)	17.85	18.70	19.55
Contract revenue (£ million)	13,426	13,592	13,757
Prepaid revenue (£ million)	1,380	1,380	1,380
Total mobile service revenue (£ million)	14,806	14,972	15,137
Uplift to mobile service revenue	**1.1%**	**2.3%**	**3.4%**

Source: GSMA Intelligence based on Consumer Sustainability Attitudes Survey across 16 countries

Making the service carbon neutral is the major challenge. For this reason, there are only a few examples of carbon-neutral products or providers, and most are niche. Examples include Honest Mobile and Fairphone. Vodafone, Telefónica, Deutsche Telekom and Orange have all pledged to reach net zero on Scope 1, 2 and 3 emissions by 2040. Although this is almost 20 years away, we would expect use of offsetting to continue until then, opening up the possibility for carbon-neutral product certification and marketing. However, assurance that a given product – such as a 5G data tariff – was run on a network powered by 100% renewable energy would also command consumer respect and potentially price premiums.

The Eco Rating initiative is a bridge to a more comprehensive classification system. It is a primarily European scheme sponsored by several major operators (e.g. Vodafone, Orange, Telefónica and Telecom Italia, as well as One New Zealand) and most device makers (though not Apple). Consumers can see the ratings assigned to different smartphones along with a breakdown of categories such as recyclability, energy efficiency and durability. The scheme is positive but does not feature heavily in marketing material, so awareness among consumers is relatively low.

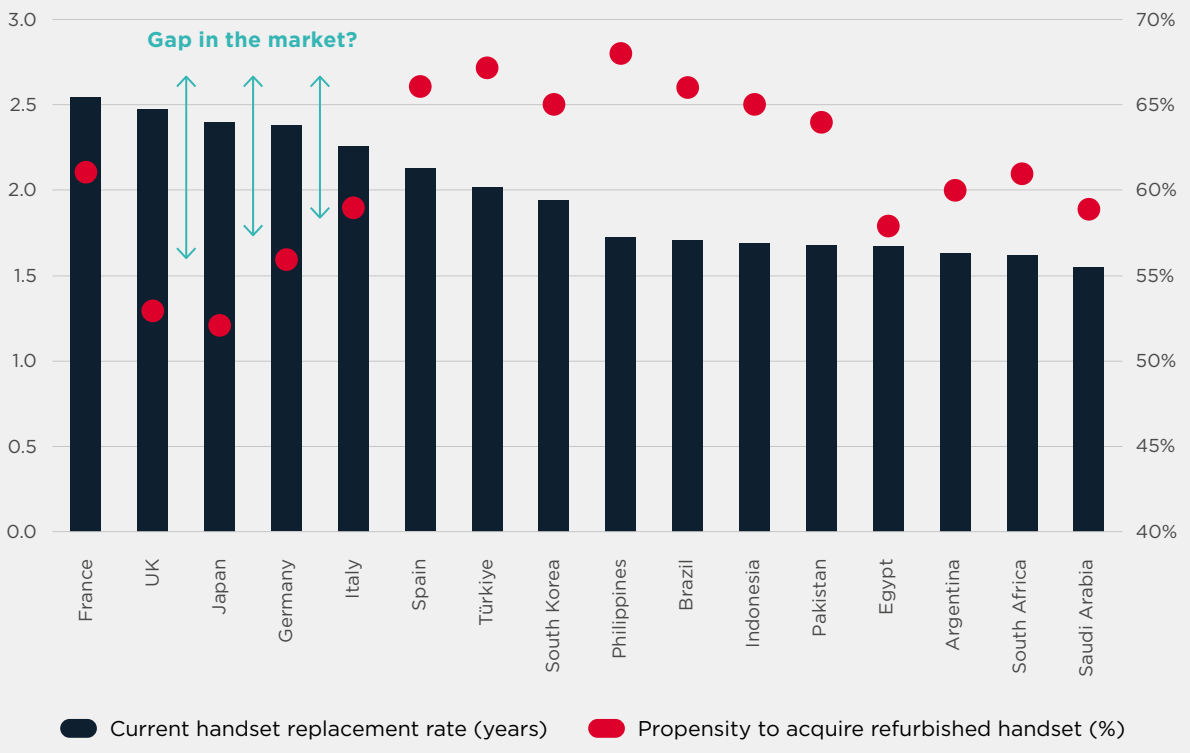
Device trade-in and the refurb market

The device trade-in market has existed for many years but represents a minority of sales overall. Only around 10–15% of handsets are recycled in the UK and Europe, for example – far below levels for other household items such as sofas, desks and beds. Device trade-in schemes have the potential to blunt the effects of people taking longer to upgrade their smartphones (the handset replacement rate). GSMA Intelligence calculations suggest the average consumer now takes 2–3 years to replace their handset in Europe and North America (see Figure 9). This has fallen from a rate of 3–4 years during the pandemic but is still above what it was in the 4G era (approximately two years on average). With longer replacement cycles, operators have less pricing leverage on the upgrade, so in-contract rises are the main means of increasing ARPU. However, these are under regulatory scrutiny in several countries.

GSMA Intelligence survey data suggests consumers are now more willing to trade in an older device for a refurbished one, rather than waiting to upgrade to the latest and greatest model. The numbers vary between 50% and 70%, with Europe at the low end and emerging markets at the high end. The propensity to take a refurbished handset is lowest where the replacement time is longest and the trade-in value of an old handset is lowest (i.e. France, Germany and Italy, as well as Indonesia and Brazil). This means there is a gap in the market for operators to offer competitive trade-in schemes in Europe. Operators appear to be responding. For example, Orange has the 'Re' scheme for device trade-ins across its European footprint. Vodafone offers trade-in schemes in multiple European markets; the UK, for example, has a 'Trade in Tool' with customers able to use the funds as part of airtime credit, savings on a monthly plan, or as a direct payment into a bank account. EE offers a similar scheme (with a dedicated website), as do a host of other operators in other European countries.

Trade-in schemes are also an offset factor to the growing use of SIM-only tariffs (10–15%, or higher) in the top five European countries. In Africa, India, Southeast Asia and Latin America, trade-ins can encourage upgrades to 4G or, in some cases, 5G sooner than would otherwise have been the case, providing meaningful ARPU uplifts.

Figure 9 Refurbs and trade-ins can help blunt the impact of long replacement cycles for devices



Source: GSMA Intelligence based on Consumer Sustainability Attitudes Survey across 16 countries

Retail energy

The sale of retail energy (i.e. home energy tariffs sold directly to consumers) typically works by including it as an add-on to a tariff that includes any/all of mobile, broadband and pay-TV services. The margins are low but it offers revenue upside from a larger bundle and churn benefits, as customers with more products under one roof have higher retention rates (even if triple play – taking mobile, broadband and pay TV on one bill – still only accounts for 15–25% of the customer base in most higher income countries). Operators have the advantage of a large customer base and distribution network to handle additional product sales. Renewable energy is seen as the top product category consumers would pay a premium for (52%), providing an open opportunity.

Vodafone and Movistar have both introduced this product category in Spain. The Movistar example involves a partnership with Repsol, a Spanish energy company, to offer residential and business customers the equipment for self-generation and use of solar energy. The service is called Solar360 and offers consumer financing and an app for service control.

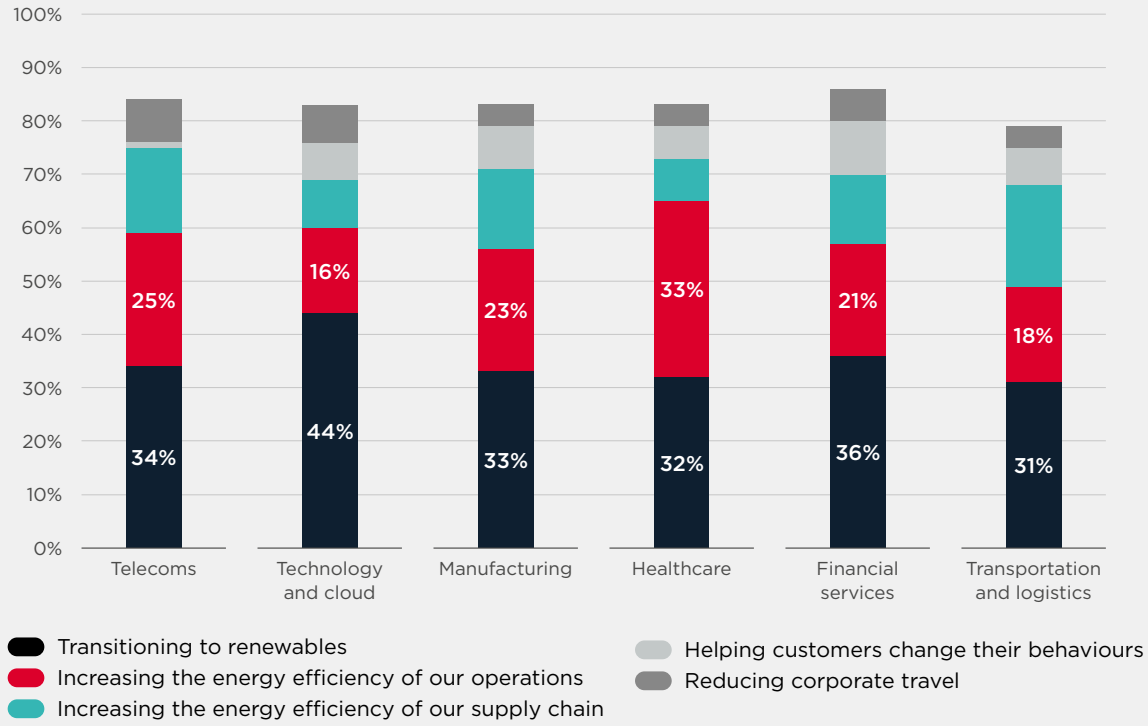
Telstra began offering an energy product in 2022, but has since stopped taking new customers (for the time being). Most telco-offered energy services would be sourced wholesale from mainstream energy companies, which is the margin constraint. There is also the future prospect of operators developing their own energy reserves through on-site solar and wind installations, but the investment costs associated with the required infrastructure are likely to keep this model small in scale.

Electric vehicle (EV) charging is a related area. Most of the activity so far has been in providing connectivity to charging stations, with the electricity supplied by specialist providers. T-Mobile's Comfort Charge system in Germany is one example; it covers approximately 150 charge points across the country. BT has invested in similar technology in the UK. Meanwhile, Proximus, in Belgium, has announced plans to create 15,000 charge points through the refurbishment of existing street cabinets and other sites.

Enterprise segment

The enterprise revenue premise is that mobile connectivity (particularly 5G) and other digital technologies sold by operators or their partners provide an energy-saving benefit in addition to a productivity uplift. This double benefit has not always been conveyed – in large part because the energy savings from, for instance, IoT installations have not been adequately measured. This is now changing. GSMA Intelligence survey data indicates that improved energy efficiency is now viewed by companies as the second most important factor (23% on average across the six industries surveyed) in moving to a zero-carbon business model, only behind renewables (35%), with other factors (such as changing behaviours and corporate travel) lower down the ranking.

Figure 10 What do companies view as the No.1 way of getting to a zero-carbon business model?



Source: GSMA Intelligence based on Enterprise Sustainability Attitudes Survey across six industries

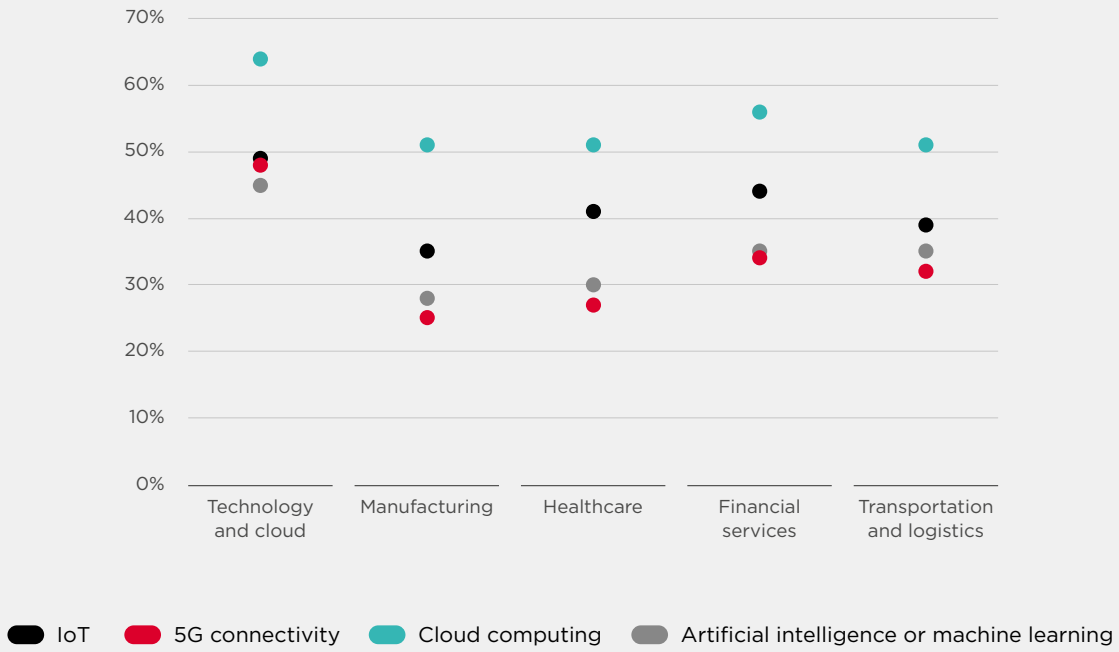
The enablement effect – sometimes called 'handprint' – is also critical in this discussion. Enablement refers to the impact that mobile (e.g. 5G, cellular IoT) and digital technology (e.g. cloud) has on reducing carbon emissions of enterprise clients, which is disproportionately higher than the emissions from operators themselves. GSMA Intelligence calculations, supported by examples from commercial deployments, suggest the impact is significant. Taking four industries that together account for 80% of the global CO2 footprint (manufacturing, power, transportation and buildings), digital technology can account for 40% of the CO2 savings needed by 2030 to remain on track for net zero.

However, there is a clear opportunity to sell more into companies in different industries. See Figure 11. The use of cloud is most established, at 50–60% of companies in each industry surveyed. This is not surprising given the migration of ever-higher-volume enterprise workloads to the datacentres of Microsoft, Amazon, Google and Alibaba. IoT deployments are slightly lower but still healthy, driven by demand for monitoring and optimisation of operations. 5G is lower at 25–35% of companies in manufacturing, health, financial services and transportation.

The 'glass half empty' view of these numbers is that 5G is under-penetrated in the enterprise. Even when stripping out countries where 5G networks have not yet scaled (or do not exist at all), enterprise take-up is still limited. However, forward intentions are stronger, with a further 40% testing or in pilots, suggesting take-up will rise. Positively, these technologies work in concert, rather than in isolation. With 90% of companies that have already deployed an IoT solution citing energy efficiency as a justification for doing so, there is a clear opportunity for operators to market the commercial and environmental benefits of their 5G enterprise product sets.

Figure 11 Cloud technology is most pervasive, with others less so

Share of enterprises with tech deployed

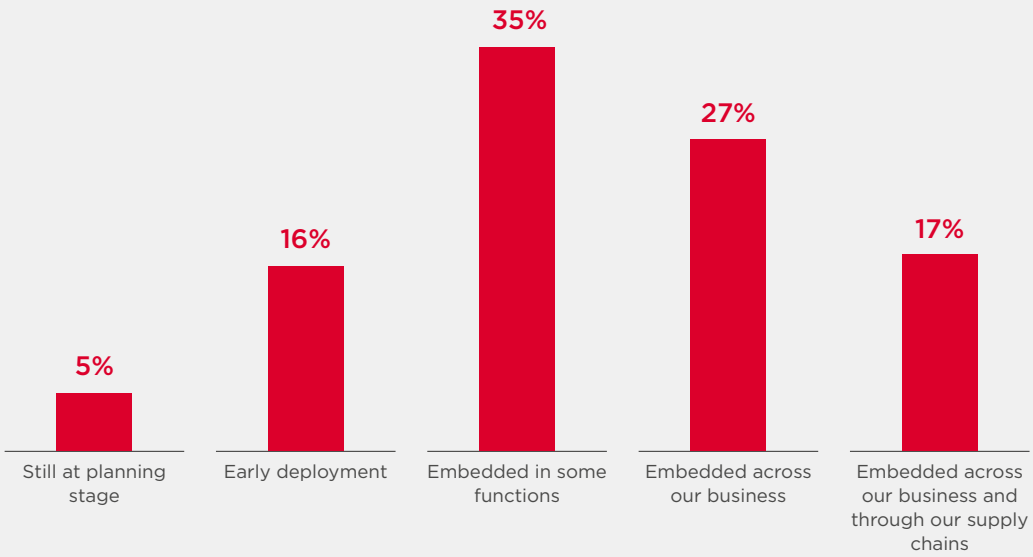


Source: GSMA Intelligence based on Enterprise Sustainability Attitudes Survey across six industries

When companies are asked how far along they are on their digital transformation agendas, around 55% have partially deployed or remain in the planning stage (see Figure 12). The rest claim to have embedded digitisation across their business (and some even in the supply chain), but we believe the share to be lower in practice. When combined with the motives for reducing energy consumption (cost reductions being most common) and the ongoing economic uncertainty, the selling point for 5G and broader managed services packages including IoT is evident. Time will close on this as enterprise IT budgets are invested, and competition/co-opetition from cloud companies will undoubtedly continue.

Figure 12 How far along is your company on its digital transformation journey?

Percentage of respondents



Source: GSMA Intelligence based on Enterprise Sustainability Attitudes Survey across six industries

This report is the second in a three-part series. The final report will focus on the reputational benefits of going green, including how telecoms operators are viewed by their employees, customers, suppliers, investors and regulators. The report will be released in the second half of 2023, with the complete series available to download on the GSMA Intelligence website.

The goal of the series is to provide clear, impartial and evidence-based arguments to the telecoms industry and broader ecosystem on the business value of going green at an accelerated pace. While climate change presents a pressing need for reform and change in much of modern life, it also presents an opportunity to change the way business is done for better. Whether and how this happens can be shaped by industry, not just government policy. The rest of the 2020s is the most important time to act.

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