GSMA

2022 Mobile Industry Impact Report: Sustainable Development Goals

September 2022

GSMA™

The GSMA is a global organisation unifying the mobile ecosystem to discover, develop and deliver innovation foundational to positive business environments and societal change. Our vision is to unlock the full power of connectivity so that people, industry and society thrive. Representing mobile operators and organisations across the mobile ecosystem and adjacent industries, the GSMA delivers for its members across three broad pillars: Industry Services and Solutions, Connectivity for Good and Outreach. This activity includes underpinning the technology and interoperability that make mobile work, advancing policy, tackling today's biggest societal challenges and providing the world's largest platform to convene the mobile ecosystem at the MWC and M360 series of events.

We invite you to find out more at **www.gsma.com.**

Follow the GSMA on Twitter: **@GSMA**

GSMA Intelligence

GSMA Intelligence is the definitive source of global mobile operator data, analysis and forecasts and the publisher of authoritative industry reports and research. Our data covers every operator group, network and MVNO in every country worldwide – from Afghanistan to Zimbabwe. It is the most accurate and complete set of industry metrics available, comprising tens of millions of individual data points, updated daily.

GSMA Intelligence is relied on by leading operators, vendors, regulators, financial institutions and third-party industry players to support strategic decision-making and long-term investment planning. The data is used as an industry reference point and is frequently cited by the media and by the industry itself.

Our team of analysts and experts produce regular thought-leading research reports across a range of industry topics.

www.gsmaintelligence.com

info@gsmaintelligence.com

Contents

Forewords

GSMA

Mats Granryd, Director General, GSMA

Six years ago, the mobile industry became the first industry to commit to the 17 UN Sustainable Development Goals (SDGs). With the targets for 2030 rapidly approaching, this annual report provides an update on how our industry is progressing against the SDGs and identifies the areas that warrant additional focus to deliver impact.

The past year has been a challenging one, with geo-political upheaval, rising inflation and the effects of the climate crisis affecting billions around the world. The COVID-19 pandemic slowed our progress toward the SDGs and, while global circumstances are challenging, it is crucial that we keep working towards the 2030 targets and building a better future for us all.

As connectivity lies at the heart of these efforts, this year our report has a strong focus on digital inclusion and looks at how we can accelerate the rate at which people are included in the digital economy.

Today, 96% of the world's population is covered by mobile broadband networks and more than half of the world is using mobile internet. However, the usage gap remains: 3.2 billion people live in areas covered by mobile broadband networks but do not use mobile internet. The pandemic really highlighted this divide, with millions of people left behind when they were unable to switch their business or education online.

Addressing the usage gap is now the biggest challenge in our shared efforts to close the digital divide. Closing this gap is not just a moral imperative; it also presents an important business opportunity to tap into a currently unreachable segment of customers as they come online.

As we work towards a better, more sustainable future, we also need to stay focused on the environment and our climate-related commitments. Across the world, mobile operators are playing a key role in lowering emissions. At the end of 2021, 66% of operators by connections and 82% of operators by revenue disclosed their climate impacts, while 34% of operators by connections and 44% by revenue had set carbon reduction requirements to be net zero by 2050. To accelerate this progress, supportive regulatory and policy environments to de-risk and attract investments in renewable energy are paramount.

Despite the multiple challenges, this year's report shows that the mobile industry increased its impact on all SDGs in 2021, with the biggest improvements recorded in our contribution to SDG 1: No Poverty, SDG 2: Zero Hunger and SDG 4: Quality Education. While growth remains below pre-pandemic levels, we are starting to regain our momentum and, in the coming year, I hope that we will see an acceleration in our impact on the SDGs.

If the past few years have taught us anything, it is that change and challenges are inevitable. Equally, we have seen the incredible resilience of the human spirit and the power of working together to overcome challenges. As the world adapts to and emerges from the many challenges we face, keeping the promise of the SDGs has never been more important. The road ahead is not an easy one but, as an industry, we remain committed to accelerating our progress towards achieving the SDGs and building a better, more sustainable future for us all.

Telefónica

José María Álvarez-Pallete López, Chairman and CEO of Telefónica and Chairman of the GSMA

Great mobile connectivity allowed the world to keep moving forward during the pandemic. Never has it been more apparent that digitalisation is a fundamental element of progress – progress which will be enabled by connecting the unconnected and bringing new and innovative solutions to power economies and communities. Our vision at the GSMA is to unlock the full power of connectivity so that people, industry and society thrive. Our three main pillars of action – Connectivity for Good, Industry Services and Solutions, and Outreach – are fully aligned with the UN SDGs.

We were one of the first industries to join the SDGs and, this year, we are releasing our seventh report on the sector's SDG Impact. In this edition, we focus on digital inclusion, which can take different forms both in highly developed markets and in developing economies, and we highlight our priority to ensure meaningful connectivity: connectivity that helps people, connectivity that is useful, connectivity that changes lives.

More than 4 billion people – over half of the world's population – are now using mobile internet. However, 3.8 billion people remain unconnected, so we must accelerate efforts to bridge the digital divide. We are also conscious of the 3.2 billion people who live in areas that are already covered by mobile broadband but are not using it (the usage gap). Connecting women, providing intergenerational digital skills and enabling SMEs to digitalise should also be very much priorities for our industry.

Considering the current energy and climate crisis, it is worth mentioning the huge role our industry plays in reducing energy consumption and emissions from other industries and everyday activities. The use of mobile technology and digitalisation enables a global reduction in greenhouse gas (GHG) emissions of almost 10 times greater than the global carbon footprint of the mobile industry itself. Our enablement effect could result in 40% of the emissions savings in the four industries that make up 80% of global emissions.

Today more than ever, we must accelerate the digital transition and the climate and energy transition as one and the same because without digitalisation there is no green transition. This requires mobile connectivity be supported from all points of view and by all stakeholders.

In the Decade of Action, recognising the role of the mobile sector for sustainable progress is critical to achieving a more equal, resilient and green society. Achieving the 2030 Agenda is deeply embedded into our business. We strive to operate responsibly and hope this report visualises this effort, ambition and contribution of the industry.

United Nations Development Programme

Achim Steiner, Administrator, UNDP

In this age of uncertainty, our global community is lurching from crisis to crisis, trying to 'firefight' at an accelerating rate. The devastating socio-economic impacts of the COVID-19 pandemic are still reverberating across the world and an unprecedented cost-of-living crisis is forcing millions of people into poverty and hunger. At the same time, the impacts of climate change are hitting faster than expected while violent conflicts are now at their highest levels since 1946.

Digitalisation, especially mobile technology, will be key to breaking this global uncertainty complex as an empowering force for people and a means to improve the health of our faltering planet. Across the world, the United Nations (UN) is championing increasingly cost-effective digital platforms and innovation for development, along with the ecosystems that inspire and drive them. Precision agriculture is just one example. It combines multiple streams of data, including from mobile phones, drones and the Internet of Things, to help farmers make better decisions about what and where to plant. In Nigeria, where urbanisation and population growth intersect with food insecurity and climate change, a young woman innovator used these techniques to help farmers increase yields by 20% and reduce waste by 38%. The United Nations Development Programme (UNDP) has helped to scale-up this promising practice, which has now expanded to Kenya where it is benefiting more than 1,000 farmers.

Yet nearly two in every five people across the globe are still offline - the majority of whom live in developing countries - and unable to reap the new opportunities that are intrinsically linked to our new digital world. They are also unable to have their say in decisions that will affect their lives and livelihoods. Therefore, the UN, including key mechanisms like the Broadband Commission, are driving forward

efforts to increase access to affordable broadband internet. Digital inclusion is not only about infrastructure. As this report underlines, it is also about affordability and adoption, literacy and skills, safety and security, and environmental implications. In this respect, the UNDP is currently accompanying more than 30 developing countries to build inclusive digital ecosystems that will bring tangible benefits to citizens: everything from making it simpler to establish a new business to enhancing access to justice. These country-level efforts are supported by global initiatives like the EDISON Navigator, developed by the World Economic Forum, Boston Consulting Group and the UNDP, which serves as a one-stop-shop for policymakers with high-quality data, real-world case studies and best practices on digital inclusion. Crucially, governments, the private sector and local communities must also share technology and cutting-edge solutions as global public goods that can multiply our efforts in critical areas like climate action and environmental restoration.

It takes a village to raise a child and it takes cooperation between countries, communities and the private sector to achieve the Sustainable Development Goals (SDGs). This year's *Mobile Industry Impact Report*, with its focus on digital inclusion, lays out some key trends and elements that are critical to generating collective action by the mobile industry and beyond, including when it comes to mobilising critical funding and investment. Guided by the clear vision set out in the UN's Secretary-General's Roadmap for Digital Cooperation, the UN and key partners like the GSMA are working together to ensure that mobile and digital technologies advance progress across all 17 SDGs - helping to put signals of change into action towards a sustainable, inclusive and climate-resilient future for all.

01.
Introduction and key findings


アコム
レイク
アイフル
カラオケ&パーティー館
カラオケ&パーティー館
パチンコエスパス日拓
パチンコ
スパス
190円
(税別)
一軒目の居酒屋 一番店
この路地を右へ
ブランド買取専門店
1F
All-you-can-eat buffet for 2 hours
120分
しゃぶしゃぶ
"Shabu-Shabu
食べ放題!
牛・豚・国産鶏しゃぶしゃぶ
2,480yen
1,480
1,980
当ビル5F
TSAGIYA
金の蔵
2F
東京チカラめし
金の蔵
元祖焼き牛丼
チカラめし
とらそば
虎
いちそば
TORA-SOBA
OKO
All-You-Can
2,700
2,300

Recent global events have served as a major setback for the SDGs.

The COVID-19 pandemic has led to an increase in poverty rates and food insecurity, in addition to derailing improvements across education, gender equality and health. Progress on sustainable development is further threatened by rising levels of global conflict, which have led to a humanitarian crisis with consequences that reverberate around the world. During this difficult period, the SDGs continue to provide an important compass for "building forward better".[1]

Connectivity will be at the forefront of strategies to achieve the 2030 agenda, as highlighted by the events of the past two and half years. Those with access to fast, reliable and affordable internet were able to stay connected to friends and family, access education and health services, and work remotely. Meanwhile, those without access were most vulnerable to economic and social disruption – and they risk falling even further behind as the world emerges from the pandemic and online services become even more integral to society.

This seventh annual SDG impact report demonstrates the mobile industry's continued commitment to the SDGs, while identifying areas where the industry needs to improve or accelerate its actions to deliver on the Global Goals by 2030. This year's report focuses on digital inclusion and shows how this relates to sustainable development through four main pillars: inclusive access, inclusive planet, inclusive connectivity and inclusive business.

1 The Sustainable Development Goals Report, United Nations, 2022

Inclusive access

By the end of 2021, 95% of the world's population lived in areas covered by mobile internet. Moreover, 4.3 billion people (55% of the global population) were also using mobile internet. This includes more than 3.3 billion mobile internet subscribers in low- and middle-income countries (LMICs), where mobile is the primary, and in many cases only, form of internet access.

Inclusive planet

With mobile internet use rising, operators' primary output – data traffic – is increasing by double-digit rates each year, but operator emissions levels are being controlled and kept almost flat. This is due to two main factors: new networks such as 5G are more energy-efficient at moving data; and operators are investing in lower-carbon energy to power networks, such as onsite and market-based renewable electricity.

Inclusive connectivity

Being connected is only the first step. Unlocking the full transformative power of mobile requires the online experience to be affordable, relevant and secure. It also requires consumers to have the necessary skills to realise the full benefits of digital technology. These help individuals to access the full range of online activities, providing access to vital information and life-enhancing tools such as mobile financial services. This is aligned with the concept of universal and meaningful connectivity, defined as the possibility for everyone to enjoy a safe, satisfying, enriching, productive and affordable online experience.[2]

Inclusive business

Mobile operators have been instigating a broader cultural change that puts environmental, social and governance (ESG) issues at the core of corporate strategy. The day-to-day business of the mobile industry now includes efforts to connect the unconnected, minimise the carbon emissions associated with mobile networks and develop innovative services to advance digital equality. This is driving the mobile industry's contribution to the SDGs while also helping operators to build stronger relationships with stakeholders and create commercial value.

"Leaving no-one behind in the SDGs means leaving no-one offline. Connectivity can change people's reality in a very positive way. It is a unique and unprecedented development resource."

Dr Carlos M. Jarque, Executive Director, América Móvil;
International Relations and Government and Corporate Affairs, América Móvil

2 Global Connectivity Report 2022, ITU

Key findings

Inclusive access

Mobile adoption continued to increase in 2021 despite COVID-19's impact on livelihoods and economies around the world.

By the end of 2021...

5.4

billion people

(68% of the global population)

were using a mobile phone. This represented an increase of 200 million people since 2020. In addition, 4.3 billion people (55% of the global population) were using mobile internet, an increase of 280 million compared to 2020.

The number of people using mobile internet among the world's poorest 40% has increased by more than half a billion since 2015.

Mobile internet is used by...

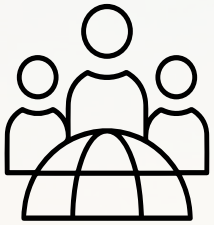
42%

of the world's poorest 40%

This is equivalent to 1.2 billion people and represents an increase of 560 million since 2015.[3]

The usage gap narrowed for the third year in a row.

But it still stands at...

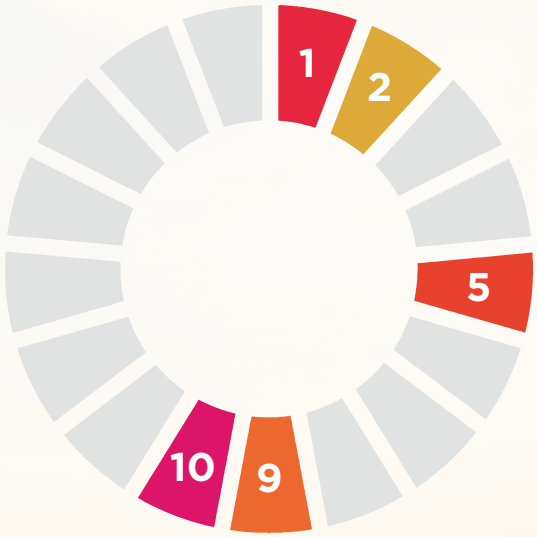


3.2

billion people

The mobile industry and its partners continue to tackle the reasons for the usage gap, which generally relate to a lack of affordability, knowledge, skills and relevance, in addition to safety and security concerns.

Key SDGs impacted:

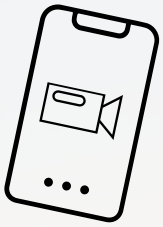


3 This calculation of mobile internet penetration takes into account the poorest 40% of population in each country.

Inclusive connectivity

Usage of mobile-enabled activities reached new heights in 2021 as mobile subscribers ventured further into online services.

3.5



billion people

(67% of mobile subscribers)

used their phones to make video calls in 2021. This represents an additional 330 million people since 2020, aiding remote work and other online activities.

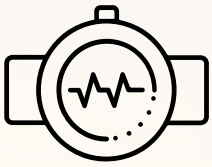
2.5

billion people

(48% of mobile subscribers)

used their phone to access educational information for themselves or their children, representing an increase of 410 million people since 2020.

2.1



billion people

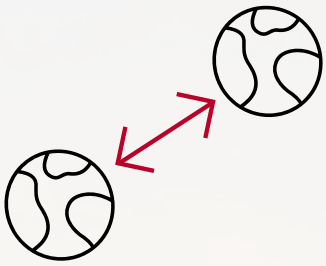
(41% of mobile subscribers)

used their phone to improve or monitor their health, representing an increase of 270 million people since 2020.

Usage of mobile-enabled services remained considerably lower in developing countries.

On average, the gap between the usage of mobile-enabled services in high-income countries and LMICs is

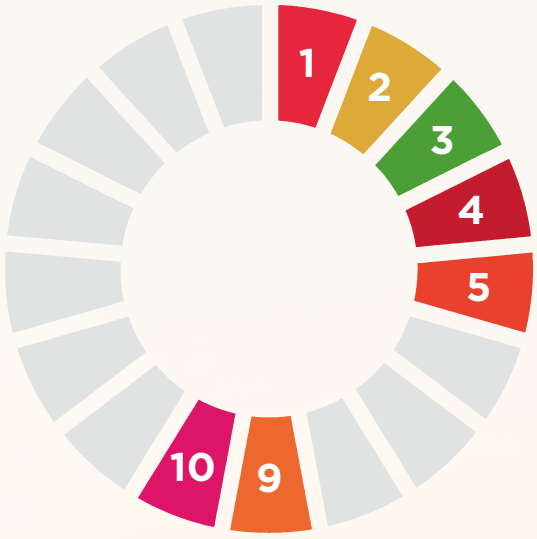
17



percentage points

This underlines the importance of operator efforts to introduce more locally relevant content and upgrade networks to enable access to services requiring a higher-quality connection.

Key SDGs impacted:



Inclusive planet

The mobile industry is making continued progress on disclosing climate impact data and setting targets for emissions reductions.

At the end of 2021...

66%
of operators by connections

82%
of operators by revenue

34%
of operators by connections

44%
of operators by revenue

disclosed their climate impacts

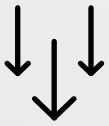
had set carbon reduction targets to be net zero by 2050

Enabling other industries

Mobile and digital technology could enable just under...

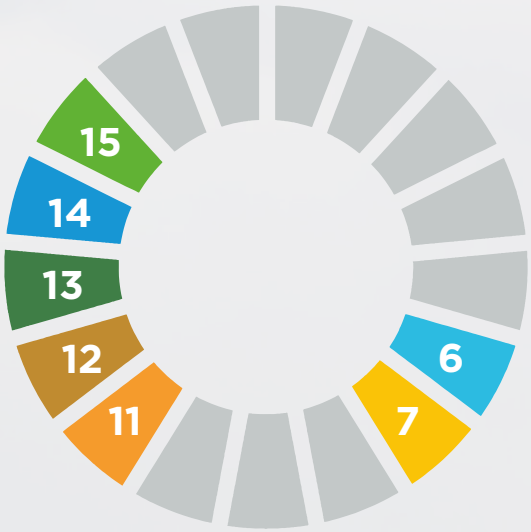
40%

of the required CO_2 reductions needed by 2030



within the top four largest-emitting industries. These four industries – manufacturing, power and energy, transport and buildings – account for 80% of global emissions.

Key SDGs impacted:



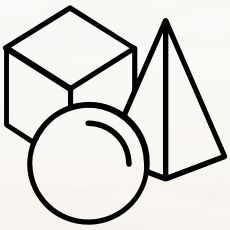
Inclusive business

With stakeholders getting smarter and more discerning when it comes to ESG claims, an effective and consistent approach to measuring and communicating performance is more important than ever.

The GSMA has recently launched...

ESG metrics for mobile

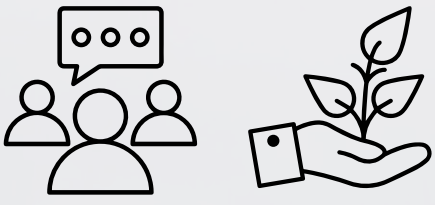
a first-of-its-kind mobile-sector ESG reporting framework featuring...



10 industry-specific KPIs

The sector-specific ESG data metrics will deliver a more consistent, comparable and decision-useful view of the industry's most material impacts and drivers of value, allowing for more effective and meaningful communication between operators and their stakeholders.

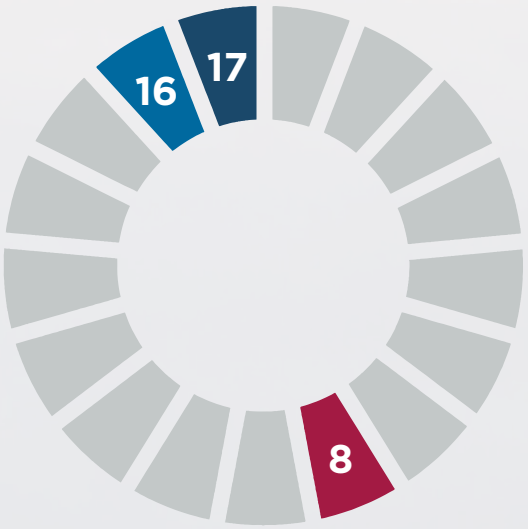
There has been strong growth in the issuance of sustainability bonds in the mobile sector. This highlights that operators are increasingly securing funding based on achieving...



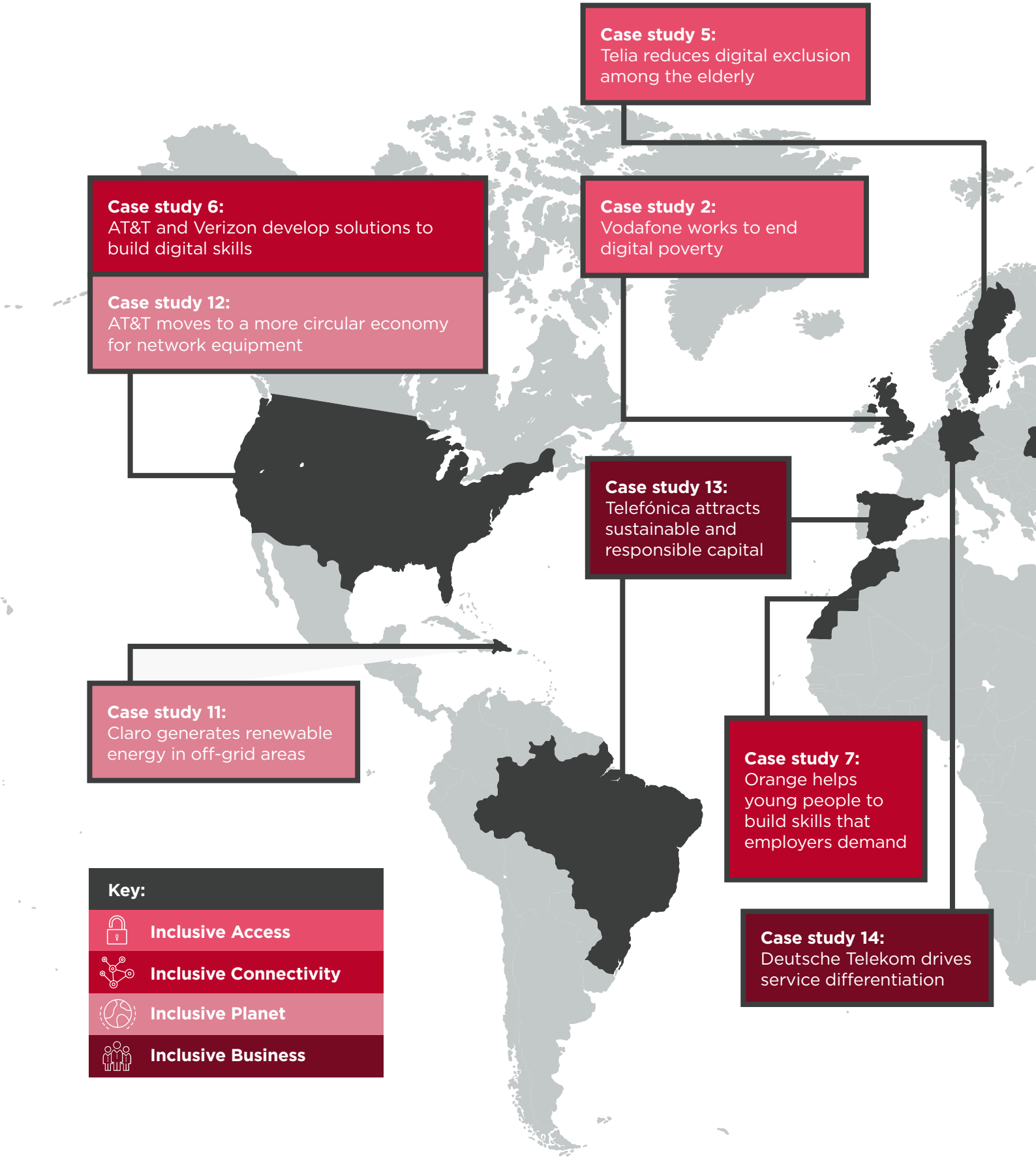
social and environmental

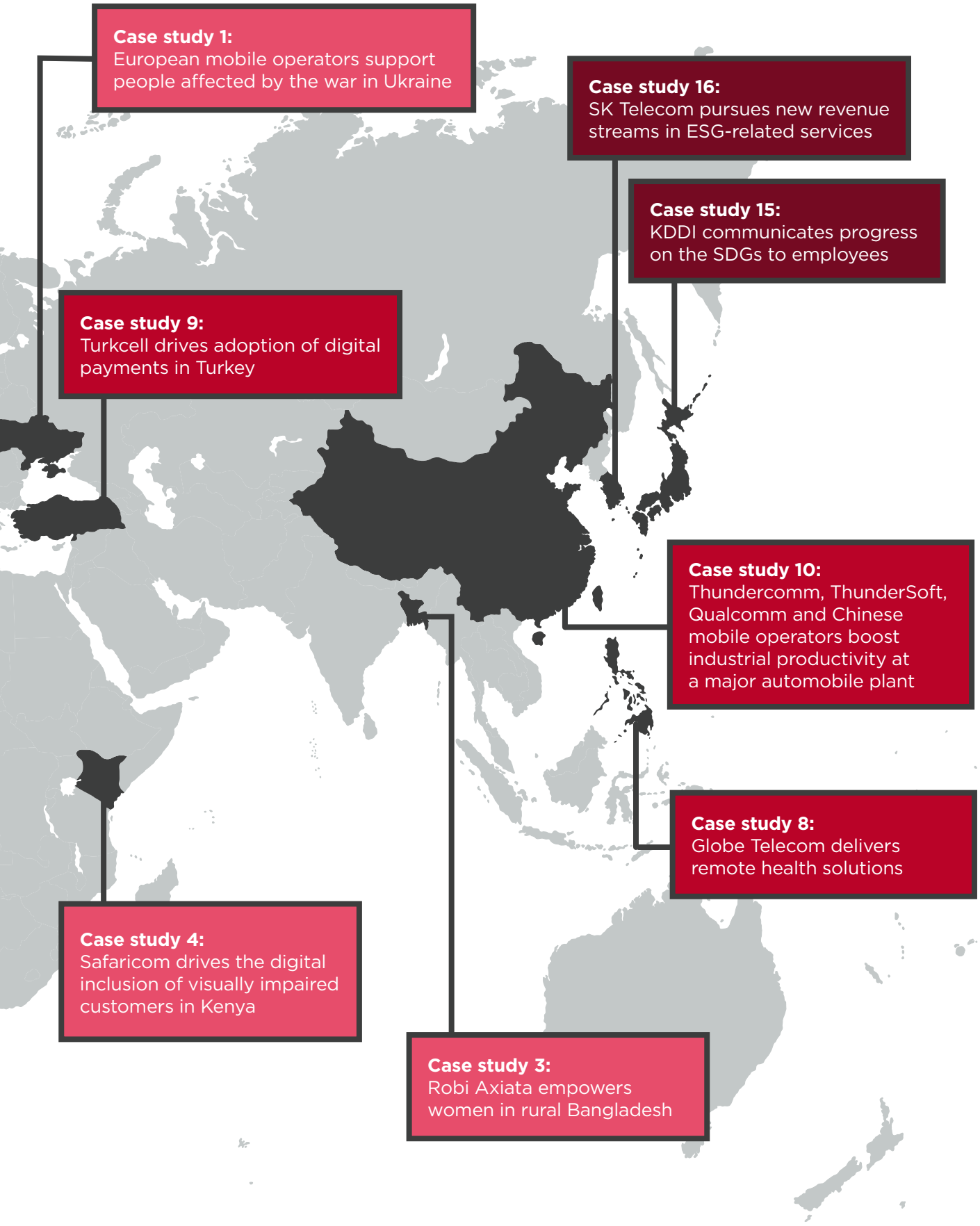
targets, rather than purely financial ones.

Key SDGs impacted:



Case study map




Case study 1:
European mobile operators support people affected by the war in Ukraine
Case study 16:
SK Telecom pursues new revenue streams in ESG-related services
Case study 15:
KDDI communicates progress on the SDGs to employees
Case study 9:
Turkcell drives adoption of digital payments in Turkey
Case study 10:
Thundercomm, ThunderSoft, Qualcomm and Chinese mobile operators boost industrial productivity at a major automobile plant
Case study 8:
Globe Telecom delivers remote health solutions
Case study 4:
Safaricom drives the digital inclusion of visually impaired customers in Kenya
Case study 3:
Robi Axiata empowers women in rural Bangladesh

02.
Overview of the mobile industry's impact on the SDGs

COVID-19 and conflict hinder progress on sustainable development

Although progress on the SDGs has been too slow and unequal across countries and goals, research from the United Nations Sustainable Development Solutions Network (UNSDN) shows progress was made globally on the SDGs between 2015 and 2019.[4] However, since then, progress has been halted by the COVID-19 pandemic. The health crisis has led to an increase in poverty rates and food insecurity, in addition to derailing improvements across education, gender equality and health. Findings from the most recent UN SDG report highlight some of the impacts (see below).[5]

› An additional

75 to 95 million

people will live in **extreme poverty** in 2022 compared with pre-pandemic levels.

› In 2021

2.3 billion people

(over 30% of the world's population)

were moderately or severely food-insecure, lacking regular access to adequate food. This represents an increase of almost **320 million** people in the course of just one year.

› While the COVID-19 pandemic lockdowns led to a temporary reduction of CO_2 emissions in 2020, global energy-related

CO_2 emissions rose by 6%

as demand for coal, oil and gas rebounded with the economy in 2021.

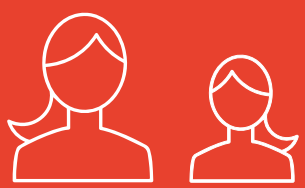
› An estimated **147 million** children missed more than **half** of their in-person instruction over the past two years.

This generation of children could lose a combined total of

$17 trillion

in lifetime earnings in present value.

› **Women and girls** remain disproportionately **affected by the pandemic,** struggling with lost jobs and livelihoods, derailed education, increased burdens of unpaid care work and domestic violence.



4 Sustainable Development Report 2022, UNSDSN, June 2022
5 The Sustainable Development Goals Report, United Nations, 2022

Recovery from the COVID-19 pandemic has been unequal. In high-income countries, high levels of government spending and the fast rollout of vaccines helped to stabilise economic activity in 2021 and into 2022. However, governments in low-income countries have been constrained by their more limited access to both financing and vaccines, stunting COVID-19 recovery efforts.

The recovery is also being impacted by the war in Ukraine, a humanitarian crisis with consequences reverberating around the world. The conflict is expected to contribute to a significant slowdown of economic growth in 2022 and beyond. Rising energy prices and disruptions of food supply chains are already having a global impact, with vulnerable populations most affected.[6]

The conflict, at times, pits the three major dimensions of sustainable development (economic, social and environmental) against one another. For example, some governments are weighing up the switch to fossil fuels to reduce dependence on Russian gas.[7] This can help fulfil ethical goals and dampen the impact of the 'cost of living' crisis; however, it might also cause carbon emissions to rise in the short term.

It is important that these multiple and interlinked crises impacting sustainable development do not lead to a prolonged reversal in SDG progress. Countries must focus on a digital, green and inclusive recovery underpinned by high-speed and high-performance networks.

However, as more activities move online, unconnected populations will be at greater risk of exclusion from life-enhancing services. This underlines the importance of accelerating progress towards universal access to digital infrastructure and meaningful connectivity to drive social inclusion, economic recovery and future crisis resilience.

6 "How War in Ukraine Is Reverberating Across World's Regions", IMF, March 2022
7 "Germany's fossil fuel reserves could cover part of Russian gas shortage", Energy Monitor, June 2022

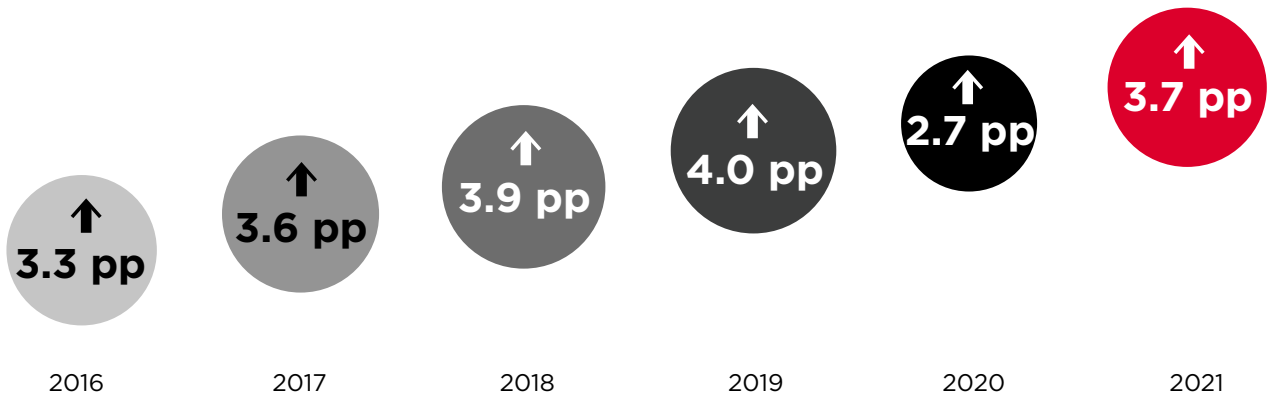
The mobile industry was able to accelerate its impact on the SDGs in 2021 – but growth remains below pre-pandemic levels

The mobile industry increased its impact on all SDGs in 2021, with the average year-on-year increase accelerating compared with 2020. The average SDG impact score across the 17 SDGs reached 53, up from 49 in 2020 and 32 in 2015, meaning the mobile industry is achieving 53% of what it could potentially contribute to the SDGs. Other highlights include the following:

- There are now 11 SDGs where mobile's contribution is over 50, compared to six in 2020 and none in 2015.
- The mobile industry continues to achieve its highest impact on SDG 9: Industry, Innovation and Infrastructure, driven by the reach of mobile networks and take-up of mobile internet services.
- The biggest improvements were recorded in the industry's contribution to SDG 1: No Poverty, SDG 2: Zero Hunger and SDG 4: Quality Education. This is due to the increasing proportion of people using mobile for activities such as accessing government services, applying and searching for jobs and obtaining educational information for themselves or their children. There was also an improvement in the affordability of mobile data and devices. This comes after affordability worsened in 2020 because of the decline in per capita income due to the pandemic.

While it is important to recognise the mobile industry's accelerated progress on the SDGs in 2021, it is worth noting that the industry is not on track to maximise its contribution to the goals by 2030. Growth in the average SDG mobile impact score remains below pre-pandemic levels, highlighting the need for renewed efforts in bringing the benefits of mobile connectivity to everyone.

Figure 1 | Average SDG score improvement each year



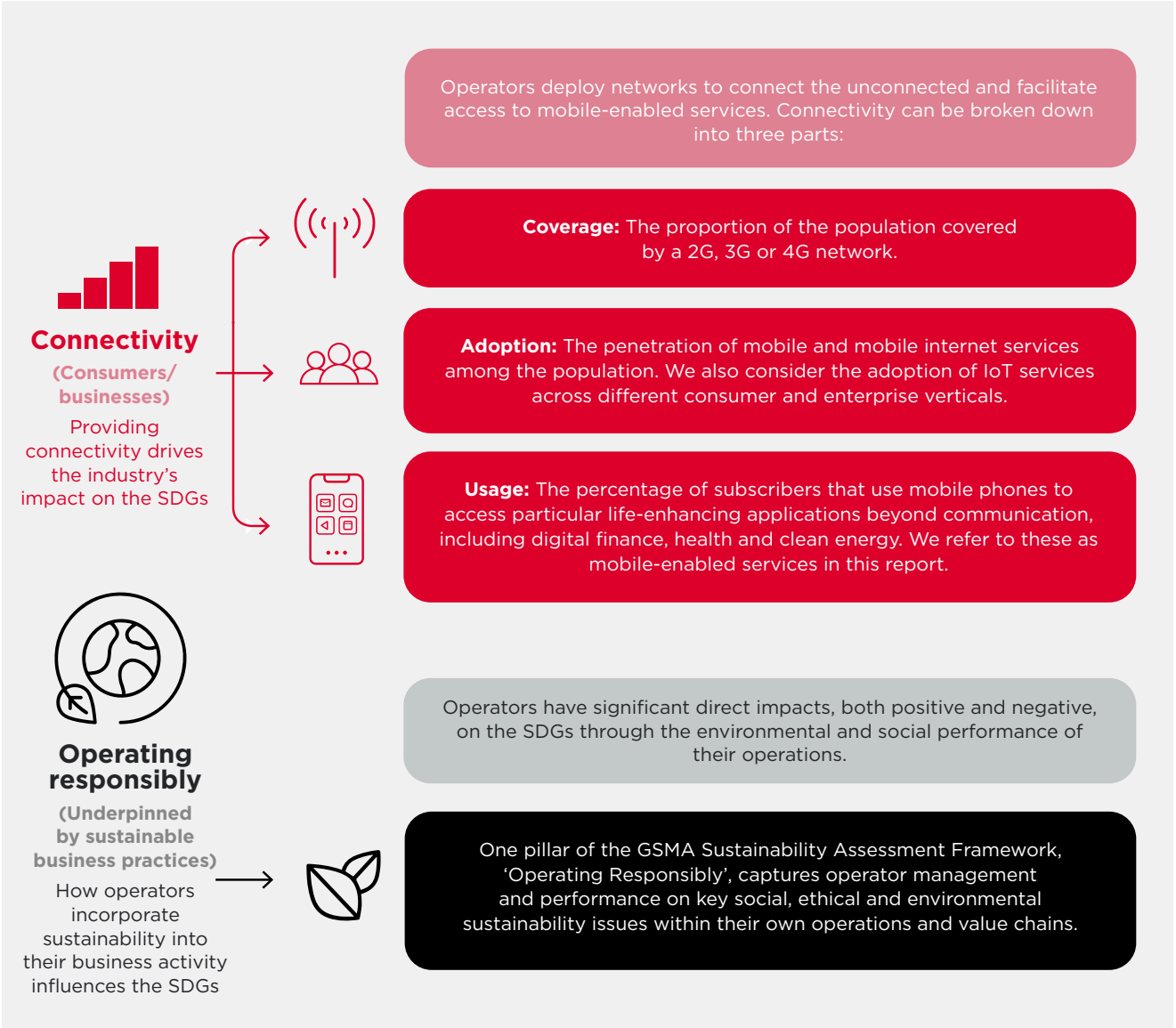
Source: GSMA Intelligence

Figure 2 | SDG mobile impact scores

Source: GSMA Intelligence

Measuring SDG impact

This report applies the same methodology used in previous Mobile Industry Impact reports to measure the impact of the mobile industry across all 17 SDGs. For each SDG, an 'impact score' is calculated out of 100. A score of zero means the industry is having no impact at all, while a score of 100 means the industry is doing everything possible to contribute to that SDG. The impact scores are underpinned by two enablers: connectivity and sustainable business practices. A more detailed description is provided in the SDG Impact Methodology document.[8]



8 See www.gsma.com/betterfuture/2021sdgimpactreport

03.

Inclusive access: connecting everyone to mobile internet

Mobile is driving digital inclusion and is the primary way most people access the internet across LMICs.

This delivers significant economic benefits, reduces poverty and transforms lives by providing people with access to a range of life-enhancing services. However, despite the growing importance of connectivity, billions of people around the world are yet to be connected. The unconnected population are disproportionately poorer, less educated, rural, female and persons with disabilities.

Nache Gudejanat iShimwe

Mobile money user and business owner
Uganda

Nache is from a rural village in Uganda and, while growing up, faced considerable challenges in accessing the resources she needed for an education. She used mobile, and mobile money in particular, to empower herself and access life-changing opportunities, enabling her to start her own business. Nache is one of many stories of women in low- and middle-income countries who have been empowered by mobile and have used it to improve their lives.

“As I was growing up, things got hard, because I needed clothes, course works and handouts. I couldn’t ask my parents as they didn’t have enough. I had to empower myself. […] When I got the mobile money loan, I started making juice, I started getting some profits, then I paid it back, so I got the loan again. I expanded my business. […] I am really grateful for their business because I can pay using my savings or I can pay using my deposit on the mobile money platform. […] I can help myself in a way that my parents can’t help me, I can help my siblings, I can help my friends.”

The evolution of global mobile internet connectivity

Operators' investments in network infrastructure have helped to shrink the coverage gap[9] for mobile broadband networks from 1.4 billion people in 2015 to 400 million people in 2021. To further reduce the coverage gap, mobile operators and their partners continue to pursue innovations in network technology and business models.

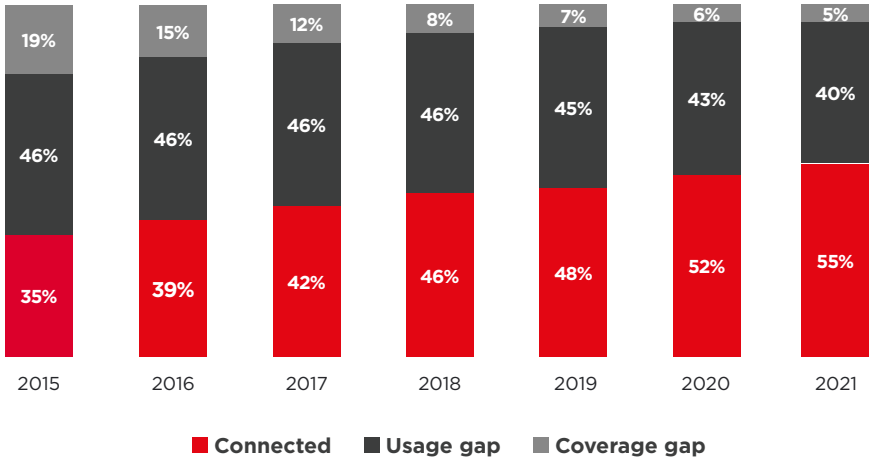
For example, there have been many commercially developed innovations for base station solutions that provide lower-cost 'light towers', such as Huawei's RuralStar and Nokia's Kuha, or solutions from new vendors such as Vanu and NuRAN Wireless. Some vendors or network integrators offer revenue sharing or 'network-as-a-service' models where they finance and operate the infrastructure and lease the added coverage or capacity to mobile operators. Such models encourage infrastructure sharing and enable third-party investment in rural connectivity.[10]

Aerial technologies, such as satellites, could also play a role, particularly when providing backhaul solutions in remote areas where microwave or fibre is not viable. There has been a recent wave of partnerships between operators and satellite companies across high-income markets and LMICs. For example, Verizon is collaborating with Amazon's Project Kuiper to deliver backhaul solutions across remote communities in the US,[11] while Vodacom and Eutelsat have signed an agreement to bring connectivity to underserved regions of Tanzania.[12]

While there has been a steady reduction in the coverage gap[13] since 2016 at a global level, the adoption of mobile internet services has not kept pace with the expansion of network coverage. By the end of 2021, 4.3 billion people (55% of the global population) were using mobile internet, an increase of 280 million compared to 2020. Consequently, the usage gap stood at 3.2 billion people in 2021.

LMICs account for 93% of the world's unconnected population and 98% of the uncovered population. Sub-Saharan Africa is the region with the largest usage gap (61%) and coverage gap (17%).

Figure 3 | The coverage and usage gap



Base: Total population

Note: Totals may not add up due to rounding

Unique subscriber data is sourced from GSMA Intelligence, combining data reported by mobile operators with the annual GSMA Intelligence Consumers in Focus Survey. Coverage data is sourced from GSMA Intelligence, combining data reported by mobile operators and national regulatory authorities. Population data is sourced from the World Bank.

Source: GSMA Intelligence

9 The 'coverage gap' refers to those living outside of areas covered by mobile broadband networks.
10 Using Geospatial Analysis to Overhaul Connectivity Policies, World Bank, February 2022
11 'Verizon joins forces with Amazon on satellite play', Mobile World Live, October 2021
12 'Eutelsat and Vodacom to deliver connectivity to unserved regions of Tanzania', Capacity Media, December 2021
13 The 'usage gap' refers to those who live in areas covered by mobile broadband networks but remain unconnected.

The reasons for the usage gap are multifaceted and vary by region, but they generally relate to a lack of affordability, knowledge, skills and relevance, in addition to safety and security concerns. Below are examples of initiatives taken by operators and their partners to address the usage gap:

› **Affordability**
Affordability remains heavily impacted by sector-specific taxes. To support smartphone adoption, operators have developed more affordable devices. For example, in India, Reliance Jio unveiled a mass-market smartphone, jointly developed with Google, with financing options to make it accessible for a wider range of consumers.[14]

› **Skills**
Operators have promoted digital skills and education across all parts of society. For instance, the BT Skills for Tomorrow portal provides a range of training courses, resources and activities to give parents and children more confidence in using digital technology. The initiative aims to get 25 million people equipped with the skills they need by 2026.[15]

MTN launched its flagship digital literacy programme, MTN Data Smart, in 2019, which is based on the GSMA's Mobile Internet Skills Training Toolkit (MISTT)[16] and uses a hybrid approach that includes remote delivery methods alongside traditional face-to-face training.[17] In 2021, the operator trained 24 million people across 12 countries through this initiative.[18]

› **Relevance**
Operators have introduced relevant content, services and products that meet users' needs and capabilities, such as Globe Telecom's digital health services and Turkcell's Paycell solution (see Chapter 4 for more details).

› **Safety**
Operators have educated parents and children on the risks associated with spending time online, such as cyberbullying, cybercrime, harmful content and privacy infringements. Examples include MTN's Help Children Be Children campaign[19] and Telenor's interactive training programme on cyberbullying (Bruk Hue).[20]

14 'Jio unveils budget smartphone', Mobile World Live, November 2021
15 'BT to help 25 million people make the most of life in the digital world by 2026', BT, May 2021
16 MISTT is a set of resources for mobile operators, NGOs, development organisations and governments that want to provide training to improve people's basic knowledge and understanding of mobile internet.
17 For more information, see MTN Data Smart: Increasing mobile internet access and use through digital skills training (www.gsma.com/mobilefordevelopment/resources/mtn-data-smart-case-study), GSMA, 2021
18 Sustainability Report for the year ended 31 December 2021, MTN
19 MTN Group FY 21 Sustainability Report
20 Telenor SDG Impact Assessment Report 2020

Accelerating mobile internet adoption among underserved population groups

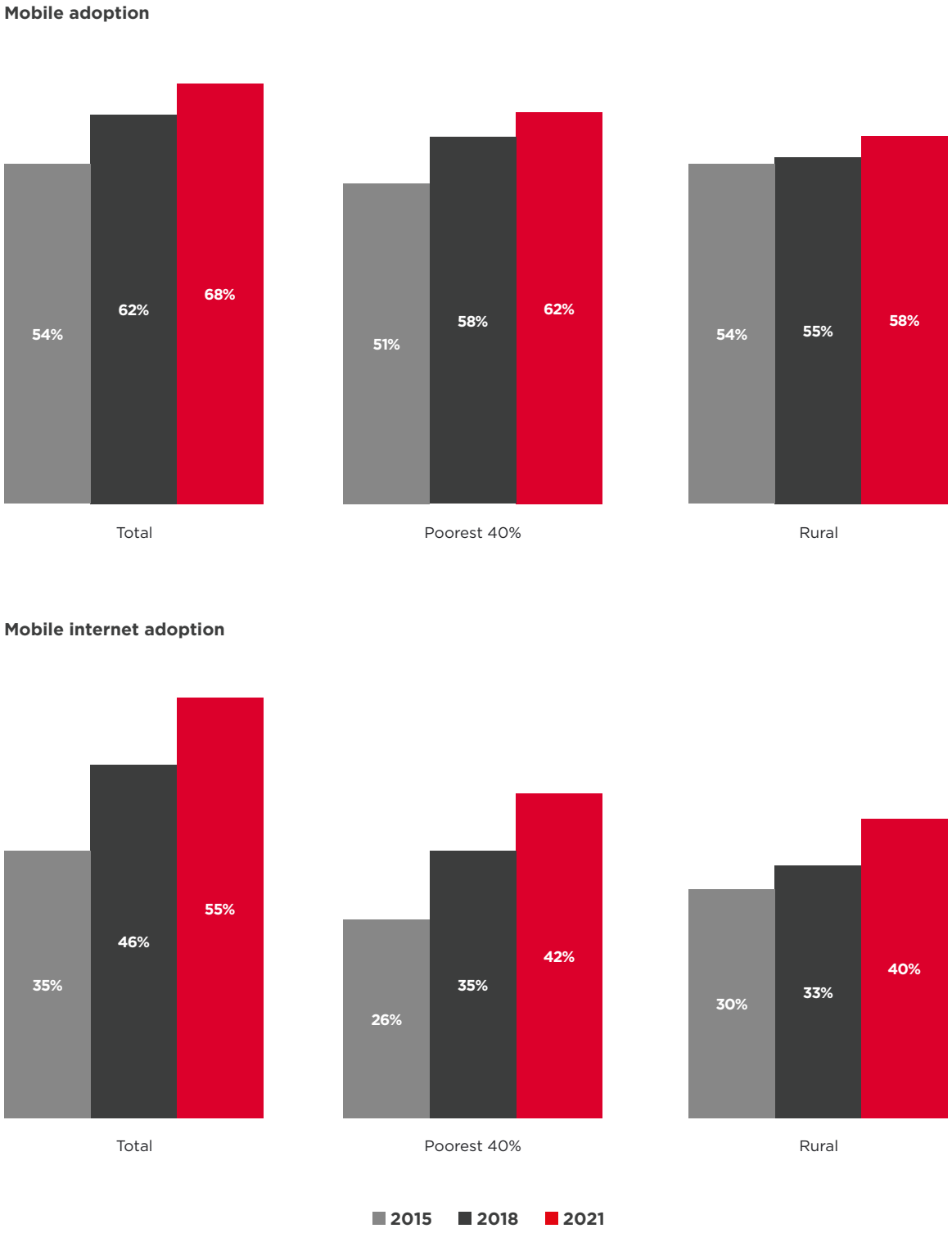
The barriers to mobile internet adoption are particularly acute among certain segments of the population, including the poorest, those in rural areas, women, persons with disabilities and the elderly – or a combination thereof.

Driving mobile internet adoption among these user segments remains a focus for operators globally, as highlighted by industry efforts to improve connectivity among low-income and rural users. Mobile internet is used by 42% of the world's poorest 40% (equivalent to 1.3 billion people), representing an increase of 560 million since 2015.[21] Nonetheless, there is still a 13-percentage-point gap between overall mobile internet adoption and adoption among the poorest 40%. Meanwhile, the gap between total and rural adoption is even more pronounced (see Figure 4).

The disparity is largest in LMICs, leading operators to explore smartphone financing initiatives and other schemes to support people on low incomes. This contributes to achieving SDG 1: No Poverty by driving improvements in household productivity and providing a platform for humanitarian assistance (see Case study 1). Operators are also partnering with charities and asking the public to donate devices they no longer use to support people living in digital poverty (see Case study 2), in addition to offering discounted plans to eligible customers. For example, AT&T, T-Mobile US and Verizon all participate in the Federal Communications Commission (FCC) Affordable Connectivity Program (ACP), which provides a discount on broadband service for eligible households.

21 This calculation of mobile internet penetration takes the poorest 40% of population in each country into account.

Figure 4 | Mobile and mobile internet adoption*



* Percentage of population
Base: Total population

Source: GSMA Intelligence

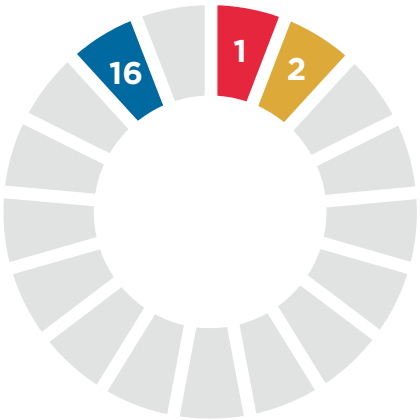
Case study 1:
European mobile operators support people affected by the war in Ukraine

Challenge:
Peace, diplomacy and international cooperation are fundamental conditions for the world to progress on the SDGs towards 2030 and beyond. The war in Ukraine and other military conflicts are humanitarian tragedies, which also impact prosperity and social outcomes throughout the rest of the world, including exacerbating poverty, food insecurity and the lack of access to affordable energy.[22]

Solution:
European operators have rolled out voluntary measures to help Ukrainian refugees in Europe. These include actions on free/reduced calls and SMSs in 31 countries, free/reduced outbound roaming in 29 countries and SIM cards for refugees in 21 countries. Operators have also deployed Wi-Fi hotspots at places of arrival of refugees and boosted mobile signal in border areas, among a range of other humanitarian measures.[23]

Impact:
Communities affected by conflict continue to prioritise digital technology, not only to communicate and to seek and share information, but increasingly also to access humanitarian assistance. The GSMA Mobile for Humanitarian Innovation programme works to accelerate the delivery and impact of digital humanitarian assistance. The programme has reached more than 9 million people with improved access to and use of life-enhancing mobile services in humanitarian contexts.[24]

Main SDGs impacted:



22 Sustainable Development Report 2022, United Nations Social Development Network, 2022
23 'GSMA Response to the Ukraine Crisis', GSMA, March 2022
24 Mobile for Humanitarian Innovation Annual Report, GSMA, 2022

Case study 2:
Vodafone works to end digital poverty

Challenge:
Digital poverty is still a big problem in the UK. Around 1.5 million households do not have access to digital connectivity and roughly half of those affected are children. The problem could get worse due to the 'cost of living crisis', whereby high inflation is outstripping wage and benefit increases.

Solution:
As part of Vodafone's everyone.connected campaign, the operator donates free connectivity to UK charities and gives connectivity to someone in need every time a customer signs up for its Vodafone Together service plan, through a partnership with the Trussell Trust. Furthermore, Vodafone has set up the Great British Tech Appeal, asking the public and businesses to donate devices they no longer use. Vodafone then provides six months' worth of free connectivity, including data, calls and texts. The devices and connectivity are distributed through charity partners Barnardo's and the Refugee Council.

Impact:
Vodafone has pledged to connect 1 million people living in digital poverty by the end of 2022. As of July 2022, it had provided free connectivity to 500,000 people via charities working in communities nationwide and its partners, including the Trussell Trust and Good Things Foundation.[25]

Main SDGs impacted:

"Connectivity has proven to be even more vital for everyday life in recent years – work, education and keeping in touch with family have all become more digital. That's why closing the digital divide is so important, and why our everyone.connected programme is having a transformative effect for so many people."

Ahmed Essam, CEO, Vodafone UK

25 'Vodafone and The Trussell Trust report rising need for free connectivity due to the cost-of-living crisis', Vodafone, April 2022

The mobile industry contributes to SDG 5: Gender Equality and SDG 10: Reduced Inequalities by increasing women's access to and use of mobile technology to enhance their lives. In 2021, 84% of adult women in LMICs owned a phone and 60% used mobile internet. However, uptake is slowing as the impact of the pandemic on women's digital inclusion comes into focus.[26] In 2021, only 59 million additional adult women in LMICs started using mobile internet compared to 110 million in 2020.

With mobile internet adoption in 2021 rising faster among men than women, progress in reducing the mobile internet gender gap has stalled after years of progress. Across LMICs, women are now 16% less likely than men to use mobile internet, compared with 15% in 2020 and 25% in 2017. The gender gap is widest in Sub-Saharan Africa and South Asia. While the gender gap has remained relatively unchanged in Sub-Saharan Africa since 2017, it narrowed significantly in South Asia from 67% in 2017 to 36% in 2020 – but it widened to 41% in 2021.

Renewed investment and focus, along with effective collaboration and partnerships between different stakeholders, are therefore needed to avoid women being left further behind.

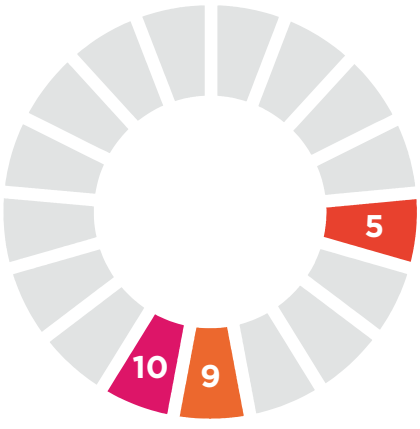
Case study 3: Robi Axiata empowers women in rural Bangladesh

Challenge:
Owning a mobile phone and accessing the internet can be life-changing, yet mobile ownership and use remain unequal between women and men. Women are still 23% less likely than men to have access to mobile phones and use mobile services, and they are 48% less likely to use mobile internet. This gap is particularly acute for the most underserved, including those who have low literacy levels, live in a rural area, have low incomes or have a disability.

Solution:
Robi Axiata, along with the Bangladesh government's ICT division and Huawei, provided ICT training to women using six digital mobile training buses. The training was spread over three years and designed to reach women in rural areas. Each bus was custom-built and equipped with 23 workstations and other key resources needed to facilitate the training such as Wi-Fi and laptops.

Impact:
More than 63,000 women have been trained via the initiative. Two of the training buses have since been handed over to the Bangladesh government, which aims to use the buses to train 166,000 women in all 64 districts of Bangladesh by 2023.[27] Since 2015, the mobile internet gender gap in Bangladesh has been reduced by 15 percentage points.

Main SDGs impacted:



26 The Mobile Gender Gap Report 2022, GSMA, 2022
27 Achieving mobile-enabled digital inclusion in Bangladesh, GSMA Intelligence, 2021

"The emerging industrial revolution 4.0 era places digital telcos at the epicentre of national competitiveness as well as industrial and social development. This places on us the onus of spawning resilient digital ecosystems centered on the combination of human capital and inclusive industrial revolution 4.0 platforms. While bridging affordability, adoption and usage gaps remains fundamental to our mission, we are also called upon to embrace an unprecedented level of collaboration and openness with respect to the exposure of our platforms and capabilities, for exploitation by broader ecosystems comprising innovators, enterprises and end users."

Dr Hans Wijayasuriya, Joint Acting Group CEO, Axiata Group Berhad

The mobile industry contributes to SDG 10: Reduced Inequalities by providing access to life-changing products and services for persons with disabilities. The GSMA's Mobile Disability Gap Report studies digital inclusion of persons with disabilities in seven LMICs: Algeria, Bangladesh, Guatemala, India, Kenya, Nigeria and Pakistan. It analyses how much less likely persons with disabilities are to use mobile internet compared with persons without disabilities.[28]

The 2021 report found that persons with disabilities have lower levels of mobile ownership than persons without disabilities in all countries surveyed. Bangladesh has the widest gap, where persons with disabilities are 55% less likely to own a mobile phone than persons without disabilities, and the smallest gaps are in Kenya and Pakistan at 11% each. Operators and their partners can take many steps to improve accessibility. For instance, developing inclusive products and services that meet the diverse needs of persons with disabilities is an important step.

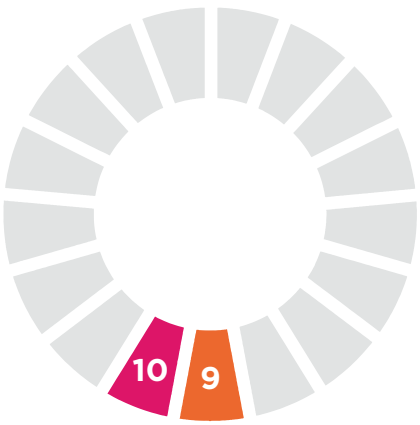
Case study 4:
Safaricom drives the digital inclusion of visually impaired customers in Kenya

Challenge:
Following an audit of its products and services to understand usage by persons with disabilities, Safaricom found that individuals with visual impairment were the most excluded category of users. For example, some visually impaired customers had to ask third parties to make transactions for them, which left them vulnerable to fraud and security risks.

Solution:
To support visually impaired users, Safaricom built an interactive voice response platform to help customers query the balance of their M-Pesa account. Safaricom also introduced Jitambulishe, a voice biometrics service that allows a customer to create a vocal password for easier access to services such as resetting their M-Pesa PIN and PUK requests. Furthermore, the operator worked in partnership with Dot Incorporation to launch the Dot Watch, which enables visually impaired users to read all SMS notifications in Braille.[29]

Impact:
Initiatives such as these give the visually impaired greater confidence when using mobile devices, which can unlock the life-enhancing potential of smartphones as an assistive technology and a gateway to digital inclusion.

Main SDGs impacted:



28 The Mobile Disability Gap Report 2021, GSMA, 2021
29 Driving the Digital Inclusion of Persons with Disabilities: Policy considerations for low- and middle-income countries, GSMA, 2022

Reducing digital exclusion among the elderly is another way in which the mobile industry contributes to the SDGs, with age being a factor across poverty eradication, good health, gender equality, decent work, economic growth, reduced inequalities and sustainable cities.[30] Mobile operators have introduced several initiatives to help the elderly acquire digital skills, including Telia's More Digital programme and China Mobile's 'mobile phone class for the elderly' and 'mobile phone mentor'.[31]

Acquiring digital skills, and mobile digital skills in particular, is critical for people to participate in a rapidly digitalising society, with skills remaining the largest self-reported barrier to using mobile internet.[32] There is broad agreement that digital skills are not just the technical skills people need to go online and use the internet; they also encompass a range of cognitive and non-cognitive skills, such as those associated with communication and media literacy, and concepts such as privacy and safety. Initiatives by operators to help customers develop their proficiencies and confidence to use tools online, therefore, often cover an array of topics.

30 Ageing, Older Persons and the 2030 Agenda for Sustainable Development, UNDP, 2017
31 China Mobile Limited Sustainability Report, 2021
32 The State of Mobile Internet Connectivity 2021, GSMA, 2021

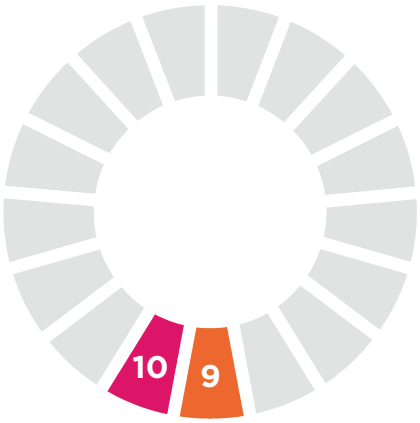
Case study 5:
Telia reduces digital exclusion among the elderly

Challenge:
Although Sweden has one of the highest levels of internet penetration in the world, there is still a need for mobile operators to tackle digital exclusion, particularly among the elderly. A third of people aged 76 and over in Sweden do not use the internet at all, with a further 18% saying they rarely use it.[33] This is becoming increasingly problematic as more everyday activities and services move online.

Solution:
A lack of skills and confidence is a key factor behind digital exclusion among the elderly. In response to this, Telia launched More Digital, an IT training programme designed to show the elderly how they can benefit from using digital tools in their everyday lives. This could include looking for information on the internet, creating an email account, initiating a video call or learning more about social media. The More Digital workshops are led by young people from the local area, who are supported by Telia employees and adult supervisors that Telia has trained around the More Digital concept. The digital skills programme is part of Telia's Digital Inclusion agenda, aiming to reach 1 million people through its various digital inclusion initiatives.

Impact:
Approximately 12,000 senior citizens in more than 30 municipalities in Sweden and Norway have attended More Digital workshops so far. During the pandemic, Telia Sweden also launched printed guide materials for seniors to build their digital skills. The material was shared with 200,000 Telia customers aged 75 and over.[34] According to the report by Skövde University, 70% of the participants estimate that they use IT services more now compared to before.

Main SDGs impacted:



33 The Swedes and the Internet 2021, The Swedish Internet Foundation, 2021
34 Annual + Sustainability Report 2021, Telia Company, 2021

“Ensuring access to connectivity and the right digital skills is crucial for a sustainable society. Therefore, Telia offers the best network in Sweden while we proactively work to equip and include more people in digital life in various ways and increase security online. Through our More Digital concept, we help seniors get started with new and additional digital services. This contributes to more people being able to benefit from and take part in society’s digital opportunities.”

Anders Olsson, CEO, Telia Sweden

04.

Inclusive connectivity: making the most of mobile internet

Being connected to mobile internet is only the first step

Unlocking the full transformative power of mobile requires the online experience to be affordable, relevant and secure. This enables individuals to access new and enriching online services that can accelerate social and economic inclusion. Using mobile to engage in life-enhancing activities is particularly important in LMICs, where access to traditional services is often lacking, particularly in areas such as education and healthcare.

Jannatul Mukta

Pilot participant, MISTT
Bangladesh

The vast majority of the population within Bangladesh live within 3G coverage, but a much smaller proportion are adopting and using mobile internet. Jannatul took part in a pilot of the GSMA Mobile Internet Skills Training Toolkit (MISTT) in Bangladesh. The toolkit works to tackle usage gaps by providing key online tools to help people in connected areas who don't have the digital skills to use and benefit from mobile internet.

"The mobile internet skills training has helped me and my community in many ways. I can get online news and keep updated with what is happening in the world. I can easily access information for my college programmes and communicate with my friends. I found out about my job through the internet. My life has changed completely."

"Mobile connectivity is driving another period of incredible technology advancement, driving new ways of working and new opportunities for our communities, our businesses and our planet. Spurred on by Covid-19, receptivity to technology and doing things digitally has gone to a whole new level and the rate of digital adoption has, out of necessity, grown dramatically. The opportunities and the value that will be created are enormous."

Andrew Penn, CEO, Telstra

Usage grows across mobile-enabled services

During the pandemic, connectivity emerged as a lifeline for society by enabling social and economic activities to continue amid unprecedented social and travel restrictions. This led to a sharp uptake in usage across several mobile-enabled activities, as highlighted in the 2021 report.[35]

Despite lockdown measures gradually easing across many countries in 2021, growth in the proportion of mobile subscribers engaging in activities on their phones relevant to the SDGs was maintained. For example, an additional 330 million people used mobile phones to make video calls in 2021, meaning 67% of mobile subscribers (3.5 billion individuals) used mobile for this purpose. This indicates that new behaviours formed during lockdown restrictions have stuck and shows that additional subscribers continue to realise the benefits of mobile internet. Below are other examples of usage continuing to grow across key mobile-enabled services:

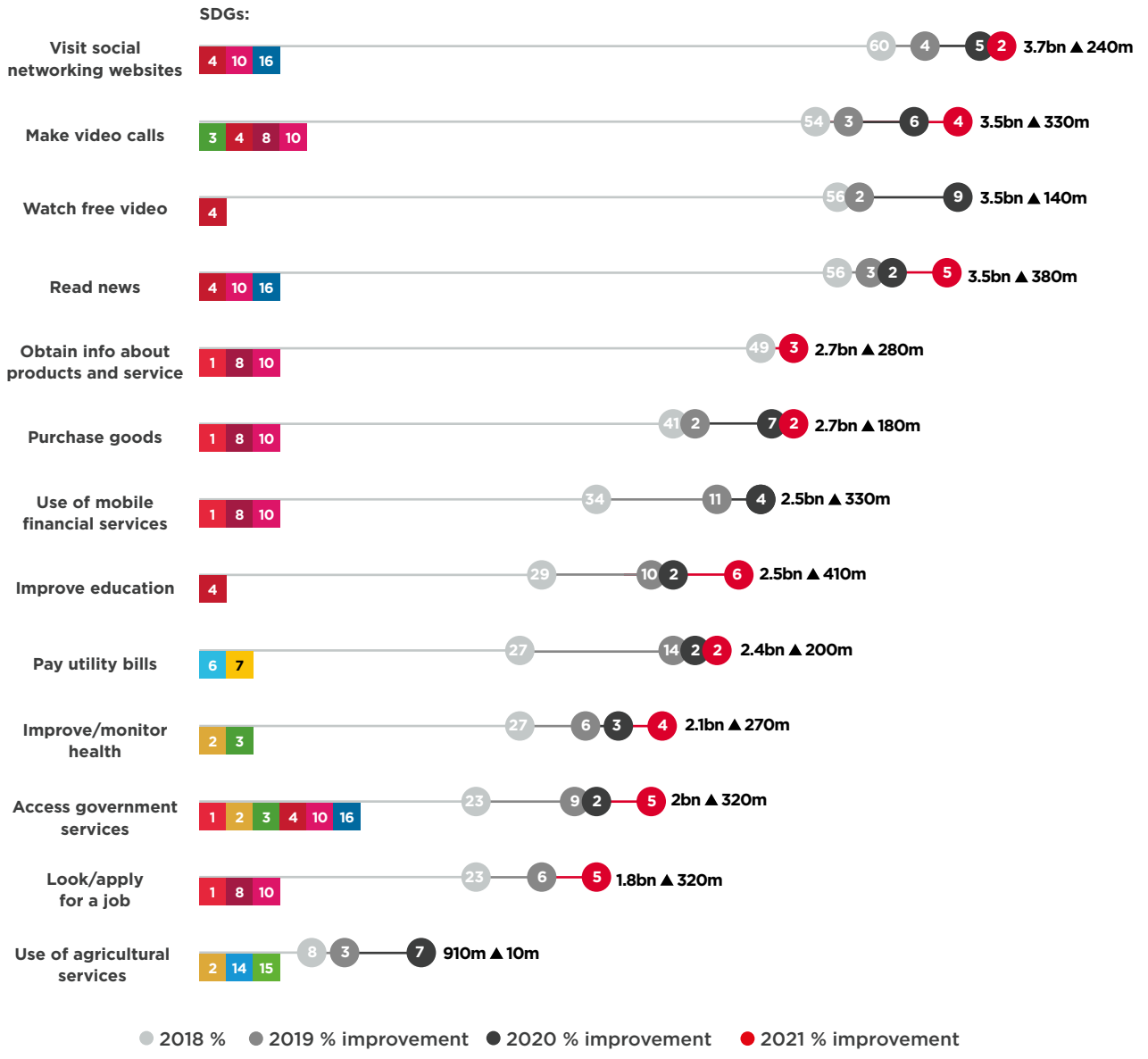
- **Improving education:**
  The biggest uplift in 2021 was among people using mobile to access educational information for themselves or their children, with 2.5 billion individuals (48% of mobile subscribers) using their devices for this purpose – an increase of 410 million people since 2020. This supports the mobile industry's contribution to SDG 4: Quality Education, which recorded one of the biggest improvements in the SDG impact score in 2021. There was a 7-percentage-point increase in the use of mobile for educational purposes in LMICs, while high-income countries recorded a 4-percentage-point increase, supported by new operator initiatives aimed at boosting digital skills through mobile technologies (see Case study 6).

- **Improving healthcare:**
  Mobile health solutions continue to play an important role in supporting the industry's

35 2021 Mobile Industry Impact: Sustainable Development Goals, GSMA, 2021

contribution to SDG 3: Good Health and Well-Being. An additional 270 million people used mobile to improve or monitor their health in 2021, taking the total to 2.1 billion (41% of mobile subscribers). While year-on-year growth was distributed relatively evenly between high-income countries and LMICs, usage of mobile health solutions is 26 percentage points higher in high-income countries. This highlights the potential for new digital healthcare solutions in LMICs, as outlined in Case study 8.

Figure 5 | Mobile usage by activity and the related SDGs



Data is sourced from the GSMA Intelligence Consumers in Focus Survey, which has more than 50,000 respondents and covers 52 countries over the 2017–2021 period. The number of users is calculated by multiplying unique mobile subscribers by the percentage of survey respondents that performed a particular activity (e.g. reading the news) on a mobile phone. Unique subscriber data is sourced from GSMA Intelligence, combining data reported by mobile operators with the annual GSMA Intelligence Consumers in Focus Survey.

Source: GSMA Intelligence

Case study 6:
AT&T and Verizon develop smart learning solutions

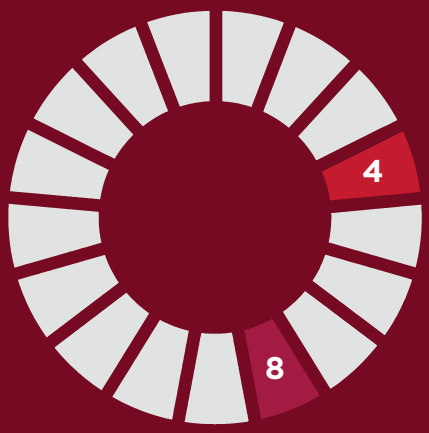
Challenge:
SDG Target 4.4 aims to substantially increase the number of people who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship by 2030. However, training to get these skills can be expensive and some teachers may have limited knowledge of these areas.

Solution:
As part of its $2 billion digital divide commitment, AT&T introduced Connected Learning, a multi-year initiative investing in digital inclusion, literacy and education to help connect today's learners with skills, resources and opportunities for success – in and out of the classroom. This includes opening Connected Learning Centers, which provide students and families with access to education, mentoring and tutoring resources, as well as high-speed internet and computers.

Furthermore, Verizon is fostering digital inclusion and skill development through two large-scale initiatives: Verizon Innovative Learning and Verizon Skill Forward. Building on best practices from a decade in US middle and high schools, they launched Verizon Innovative Learning HQ, a free online portal that offers AR/VR experiences, professional development and lesson plans to develop all educators' capacity to promote digital skills in the classroom. Also, given that technology will cause disruption in the workplace for many adults, they have also launched Verizon Skill Forward, which helps prepare and place learners in high-demand digital roles via a unique bootcamp programme that includes both intensive technical training and social support.

Impact:
By the end of 2022, AT&T will have launched more than 20 AT&T Connected Learning Centers in neighbourhoods facing barriers to connectivity.[36] Meanwhile, Verizon Innovative Learning has invested more than $1 billion in market value so far, with the aim to equip 10 million young people with digital skills training by 2030, and Verizon Skill Forward aims to prepare 500,000 adult learners for the jobs of the future by 2030.[37]

Main SDGs impacted:



36 about.att.com/csr/home/reporting/issue-brief/digital-divide.html
37 'Verizon Innovative Learning celebrates 10 years and $1B in contributions to education', June 2022

Case study 7:
Orange helps young people to build skills that employers demand

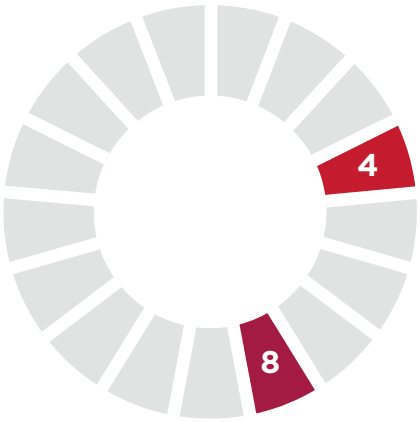
Challenge:
In Sub-Saharan Africa, the supply of labour outweighs demand. Since most young people cannot find formal jobs, they take up informal income-generating opportunities instead. Part of the reason for the lack of formal jobs for young people is that they lack the skills that employers demand.[38]

Solution:
The Orange Foundation leads a range of initiatives to boost digital skills, such as the Orange Digital Centers (ODCs),[39] which bring together three complementary programs aimed at providing free and inclusive resources to support local tech start-ups and entrepreneurs:

- **Coding School:**
  A freely accessible and free-of-charge technological centre that offers training and events for the community of young developers.
- **Solidarity FabLab:**
  A digital production workshop for creating and prototyping with digital equipment, such as 3D printers, milling machines and laser cutters.
- **Orange Fab:**
  A start-up accelerator with an aim to build national and international business partnerships with the Orange group and the international Orange Fab network.

Impact:
Orange has opened ODCs in nine countries and intends to set up an ODC in each of its 26 operating countries by 2025. This will help people acquire new digital skills, in addition to promoting entrepreneurship and enhancing job prospects.

Main SDGs impacted:



38 Informal Youth Employment in the Mobile Industry in Sub-Saharan Africa, GSMA, 2021
39 For more information, see www.orangedigitalcenters.com

Case study 8:
Globe Telecom delivers remote health solutions

Challenge:
The COVID-19 pandemic has magnified weaknesses and gaps in healthcare systems. LMICs in particular often lack adequate healthcare facilities, supplies and workers to ensure the rapid testing and detection of infections. This highlights the pressing need to strengthen health systems, with digital solutions likely to play a crucial role in addressing systemic challenges.

Solution:
Globe Telecom has launched two digital health services: KonsultaMD and HealthNow. KonsultaMD is a subscription-based service that offers 24/7 virtual medical consultations. It also provides digital management of health consultation records and the issuance of medical documents such as e-prescriptions, e-laboratory requests, e-referrals and e-medical certificates. HealthNow is a telehealth and medicine delivery service. It differs from KonsultaMD in that users pay for medical advice on a per consultation basis, rather than a subscription model. In July 2022, KonsultaMD and HealthNow, along with another health app called AIDE, announced consolidation to become a one-stop health superapp under KonsultaMD.[40]

Impact:
KonsultaMD reached more than 1 million members in 2021, a 168% increase on the previous year. Additionally, HealthNow processes 15,000 to 20,000 medicine delivery orders daily and serves as the Ayala Group's technology partner in administering COVID-19 vaccines. To date, it has helped administer more than 1 million vaccines.[41]

Main SDGs impacted:

"The pandemic underscored the need to make healthcare more accessible and affordable for Filipinos. This provided Globe with an opportunity to expand the reach of its ecosystem of digital solutions platforms, particularly KonsultaMD and HealthNow. At a time when physical distancing was key, these mobile-first applications made doctors, consultations and basic health services more accessible to those who needed immediate medical attention during the pandemic, without the risk of exposure. Likewise, it has helped in providing healthcare workers the much-needed reprieve from the overwhelming traffic in hospitals, as it served as a national triage system for patients."

Vince Yamat, Managing Director, Globe (917Ventures)

40 'KonsultaMD, HealthNow and AIDE Announce Consolidation', *ACHealth*, July 2022
41 'Globe's Telehealth Services Post Stellar Growth in 2021', *Globe Telecom*, February 2022

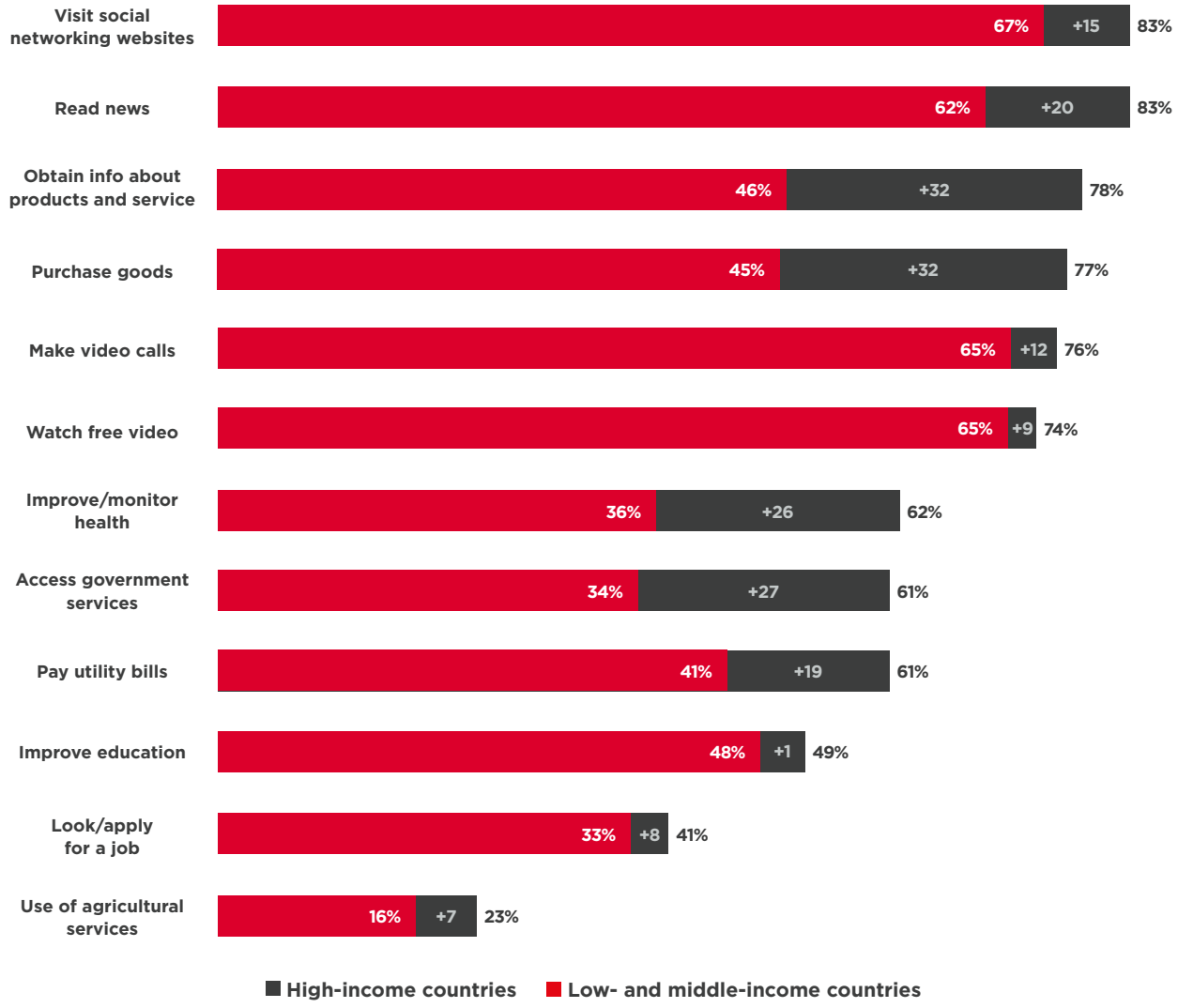
"At Orange, we are committed to reducing the digital divide by improving our network coverage, making affordable terminals available and providing access to digital services that are useful in everyday life, particularly in the areas of banking and healthcare. Digital technology makes sense only if it is accessible to all."

Michaël Trabbia, Executive Vice President Technology and Innovation for the Group, Orange

There is a sizeable gap in usage of mobile-enabled services between high-income countries and LMICs

On average, the gap between the usage of mobile-enabled services in high-income countries and LMICs is 17 percentage points. The biggest gap (32 percentage points) can be found in mobile use cases relating to online commerce, such as using mobile to obtain information about products and services and using mobile to purchase goods. The gap tends to be smaller when a financial account or formal identification is not required, which is typically the case for activities such as using mobile to look for a job, accessing online education or watching free video.

Figure 6 | Mobile usage by activity in high-income countries versus LMICs



Data is sourced from the GSMA Intelligence Consumers in Focus Survey 2021, which has more than 20,000 respondents and covers 20 countries. The number of users is calculated by multiplying unique mobile subscribers by the percentage of survey respondents that performed a particular activity (e.g. reading the news) on a mobile phone. Unique subscriber data is sourced from GSMA Intelligence, combining data reported by mobile operators with the annual GSMA Intelligence Consumers in Focus Survey.

Source: GSMA Intelligence

Reducing the disparity between high-income countries and LMICs requires operators and their partners to make progress on several fronts. There is some overlap with the steps needed to increase mobile internet adoption (e.g. improving affordability, boosting digital skills and addressing security concerns). In addition, operators and their partners need to tackle other barriers, such as improving access to safe and secure financial services to drive usage of mobile-enabled services.

Financial inclusion helps previously unbanked families to more easily participate in the digital economy. In 2021, the number of registered mobile money accounts reached 1.35 billion globally, up 18% since last year and 10 times more than in 2012 (134 million).[42] This is facilitating access to essential utilities and government services, emphasising the importance of the mobile sector to SDG 1: No Poverty, SDG 6: Clean Water and Sanitation and SDG 7: Affordable and Clean Energy. In addition to mobile money, mobile operators are providing a pathway to financial inclusion in several other ways, as highlighted by Turkcell's Paycell solution (see Case study 9).

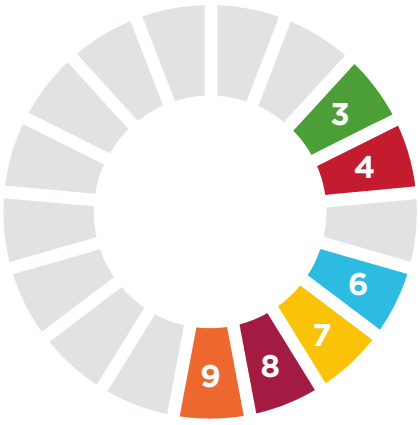
Case study 9: Turkcell drives adoption of digital payments in Turkey

Challenge: There are approximately 30 million unbanked users in Turkey, equivalent to around a third of the adult population. Some of the main structural barriers to account registration include the cost of setting up a bank account, preference for cash, lack of trust in the system and a lack of proper identification.

Solution: Turkcell launched Paycell in 2017 to enable more customers to readily access financial services by offering a fast and secure mobile payment solution. The service has subsequently evolved to embed solutions in various verticals including pay-later, bill payment, e-wallet, money transfer and payment facilitation over the Paycell mobile application. Paycell is also focusing on increasing the number of merchants on its platform by expanding the reach of Paycell Android POS, QR codes and Virtual POS.

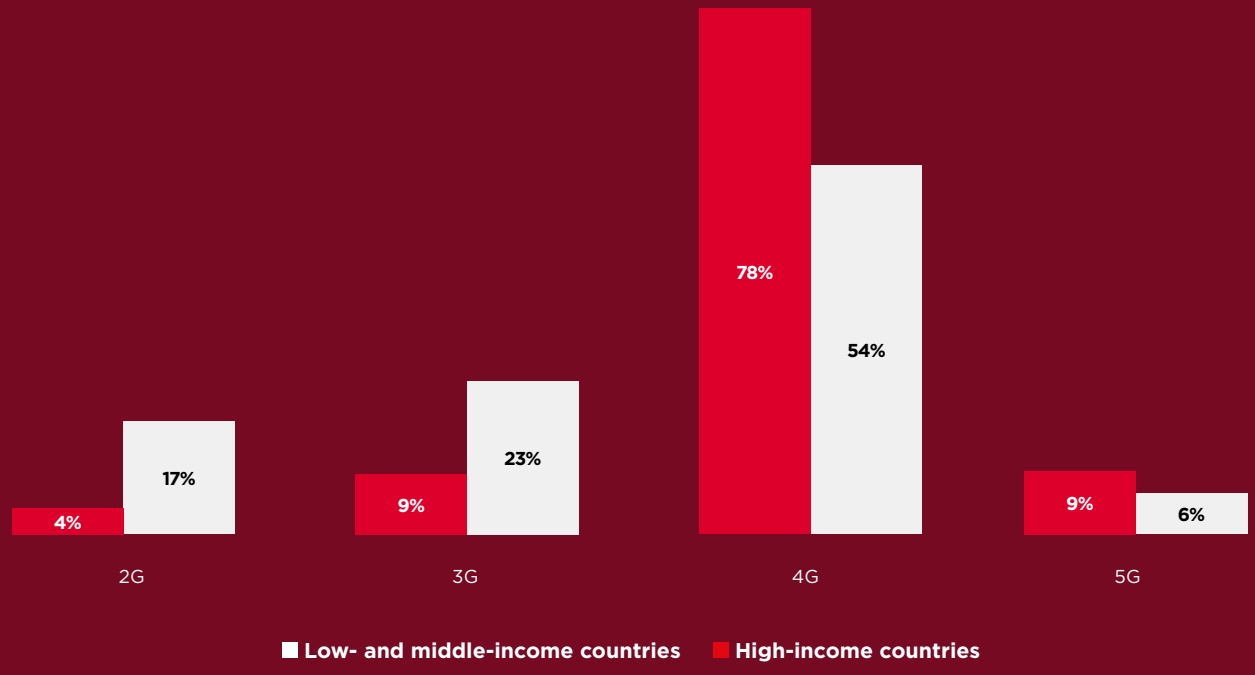
Impact: Paycell reached 6.6 million active users at the end of 2021, up from 4.7 million active users at the end of 2020. Growth has been accelerated by the pandemic, which fuelled demand for e-commerce and other online services requiring a digital payment solution. Paycell revenue reached TRY468 million in 2021, supporting Turkcell's strategy to accelerate revenue growth through new standalone services outside of connectivity.[43]

Main SDGs impacted:



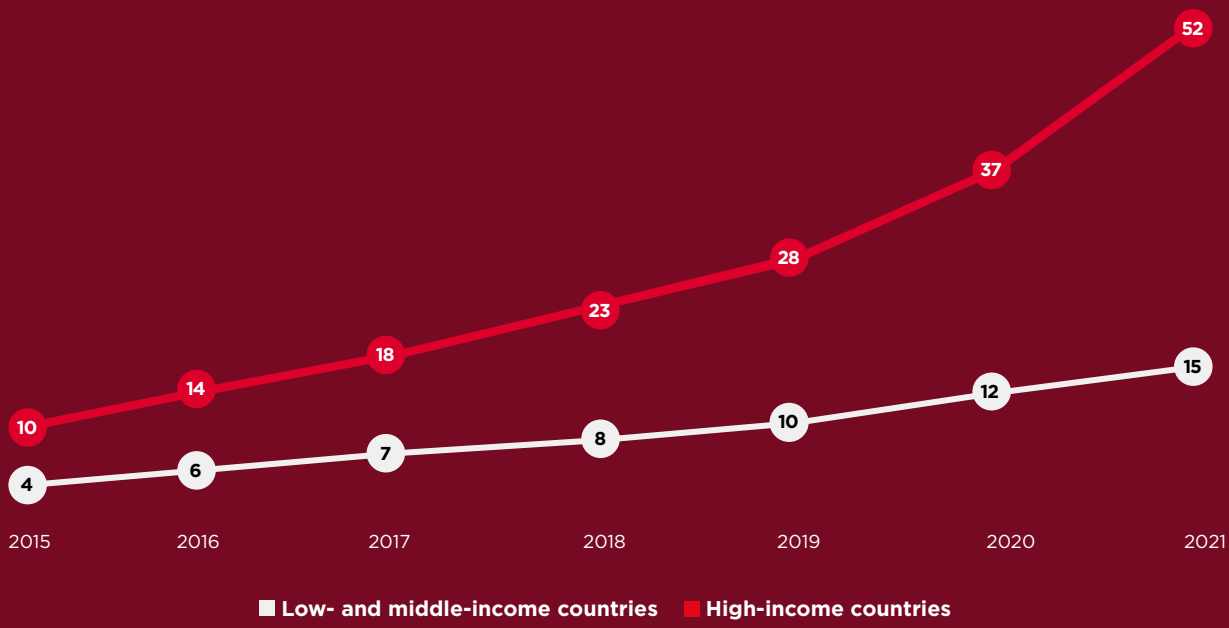
42 State of the Industry Report on Mobile Money 2022, GSMA, 2022
43 Turkcell Integrated Annual Report 2021

Figure 7 | Proportion of mobile connections by technology, 2021



Source: GSMA Intelligence

Figure 8 | Average mobile download speeds (Mbps)



Source: GSMA Intelligence calculations of data provided by Ookla® Speedtest Intelligence®

Higher-quality mobile networks support the industry's SDG impact

Connecting to higher-quality networks allows users to access a broader range of services. In LMICs, average mobile download speeds have increased nearly fourfold in the last seven years, enabling users to access bandwidth-heavy applications, such as those requiring video calling or streaming. That said, the gap between download speeds in LMICs and high-income countries is increasing, with average mobile download speeds remaining in the mid-single digits in several LMICs, including Ethiopia, Ghana and Tanzania.

The widening gap in average mobile download speeds demonstrates the need to accelerate the adoption of 4G services in LMICs. While 4G is the most prevalent mobile technology globally at 4.9 billion connections (59% of total mobile connections), it accounts for less than half of connections in Sub-Saharan Africa, CIS and the Middle East and North Africa (MENA). LMICs, with the notable exception of China, have also been slower to roll out 5G networks, which further contributes to the widening gap in network quality.

"Connectivity has become a lifeline to Filipinos as we recover from the pandemic, which accelerated our shift to becoming a more digital society. Globe has been at the forefront of the Philippines' digital transformation, bringing together innovation and sustainability to deliver life-enabling services in fintech, edutech, healthtech and business solutions that propel the country's inclusive growth and development."

Ernest L. Cu, President and CEO, Globe Telecom, Inc

5G drives operator innovation

5G has become mainstream in many pioneer markets (notably China, South Korea and the US) and is making considerable progress elsewhere. At the end of 2021, 176 mobile operators in 70 markets around the world had launched commercial 5G services. Rising 5G adoption, along with continued 4G take-up, is driving growth in mobile data speeds in high-income markets, enabling mobile to support a range of new services.

5G is contributing to multiple SDGs, including SDG 8: Decent Work and Economic Growth. In South Korea, for example, 5G millimetre wave (mmWave) backhaul is being deployed along subway lines. This can boost public Wi-Fi speeds by up to 25 times,[44] allowing commuters to access a wider range of services while travelling, boosting productivity and overall well-being. 5G is also accelerating digital transformation among enterprises, as outlined in Case study 10.

However, 5G is about more than just mobile services. At the end of 2021, 68 operators offered 5G fixed wireless access (FWA) services, with the performance improvements enabled by 5G over 4G allowing FWA to target a broader opportunity in the home broadband market. In rural towns, for example, a greenfield 5G mmWave FWA network can deliver download speeds of at least 100 Mbps and cost savings of up to 50% versus FTTH where new ducts for fibre cables need to be built.[45] This is helping operators to expand the reach of high-speed home broadband services, bridging the digital divide between urban and rural communities.[46]

44 www.gsma.com/5GHub/subways
45 The 5G FWA opportunity A TCO model for an ISP deploying a greenfield 5G mmWave FWA network, GSMA Intelligence, 2022
46 For an example of a recent 5G FWA deployment seeking to bridge the digital divide, see 'UScellular, in Collaboration with Qualcomm and Inseego, Launches 5G mmWave High-Speed Internet Service in 10 Cities', UScellular, April 2022

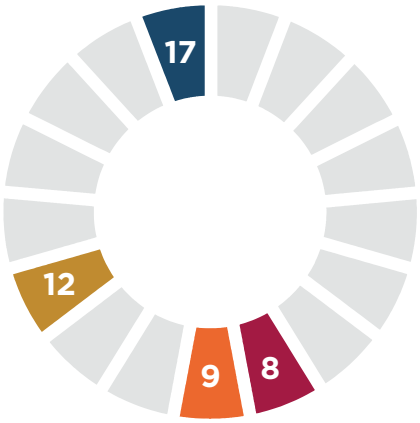
Case study 10:
Thundercomm, ThunderSoft, Qualcomm and Chinese mobile operators boost industrial productivity at a major automobile plant

Challenge:
Today, industrial transfer robots generally move heavy objects along fixed routes that are expensive to alter. This limits the flexibility of the factory to respond to changes in demand. Moreover, for safety reasons, these transfer robots must be kept completely separate from the workers, which can mean a large amount of space is wasted.

Solution:
A leading automaker in Beijing is deploying 5G industrial transfer robots that employ artificial intelligence (AI) to help improve their performance over time. The still or moving images captured by the robots' onboard cameras are used to help train them to recognise specific objects. Although the machine learning takes place in the cloud or at an edge computing facility, the results are used to improve the image recognition software running on the robots' onboard modules.

Impact:
The combination of 5G, robotics and AI could improve productivity in manufacturing plants by more than 10%, potentially adding hundreds of billions of dollars to a country's economic output.[47] 5G robots, equipped with machine vision, could also make factories safer – they will be able to detect workers in the vicinity and take appropriate actions to prevent accidents.

Main SDGs impacted:



05.
Inclusive planet:
building a greener society

Four key climate change indicators – greenhouse gas concentrations, sea-level rise, ocean heat and ocean acidification – set new records in 2021.

This represents yet another clear sign that human activities are causing planetary-scale changes in the land, ocean and atmosphere.[48] Major efforts are required from all countries around the world to mitigate the ongoing climate crisis. However, despite its global nature, climate change threatens to deepen inequalities between richer and poorer countries. LMICs have fewer resources to strengthen their resilience and adaptive capacity to climate-related disasters; they are also often the countries that are most vulnerable to the impacts of climate change. Global action from all sectors and governments is therefore a must to accelerate progress on climate-related SDGs (e.g. SDG 12: Responsible Production and Consumption and SDG 13: Climate Action).

Fortinee Nabulya

Clinic owner, ENGIE Energy Access and MTN Mobile Money platform
Uganda

In emerging markets, access to mobile is rapidly outpacing access to basic services such as access to energy. To reach global goals such as SDG 7: Affordable and Clean Energy, mobile technology is increasingly providing new solutions and unlocking new business models. In Uganda, mobile-enabled solar PAYG kits, such as ReadyPay, are improving energy access for 700,000 people, bringing cleaner and affordable energy to families and businesses such as Fortinee's business.

"Before I acquired ReadyPay Solar, I would have to send away patients that came after dark. But now, I'm in a position to treat all the patients, no matter what time they come."

Setting CO_2 reduction targets

The GSMA produces an annual assessment of how the mobile industry is progressing against the target to be net zero by 2050.[49] This report shows that net zero commitments have been made by operators that together account for one third of global market share by connections. The majority of commitments are for 2050, implying the need for CO_2 reductions of 50% in each successive decade until then. Some groups have set even more ambitious targets, enabled by a rapid substitution of renewable energy in place of fossil fuels (see Figure 10).

However, despite growing support for the reduction of fossil fuel use, mobile operators face a number of challenges in accessing renewable electricity sources, particularly in countries that are more reliant on electricity generation from fossil fuels.[50]

Challenges include the following:

- Regulation does not always support power purchase agreements (PPAs), which enable a commercial energy consumer, such as a mobile operator, to enter into an agreement with the independent power producer (IPP) and commit to purchasing a specified amount of renewable electricity at an agreed price for a set period of time.
- Limited transmission and distribution infrastructure restricts renewable energy expansion.
- There is a lack of a level playing field for renewable electricity, with energy markets distorted by subsidies.

49 Mobile Net Zero: State of the Industry on Climate Action 2022 report, GSMA, 2022
50 Mobile Industry Position Paper: Access to Renewable Energy, GSMA, 2022

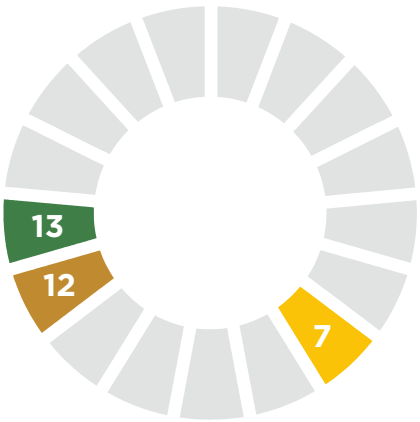
Case study 11:
Claro generates renewable energy in off-grid areas

Challenge:
In off-grid areas, mobile operators are often forced to use diesel generators to guarantee the reliability of power supply for base stations. This is less than ideal considering that generators emit high levels of carbon dioxide and have onerous cost implications associated with refuelling.

Solution:
In 2021, Claro Dominican Republic, a subsidiary of América Móvil, partnered with Caban Systems to successfully develop a renewable energy pilot that sought to reduce the use of diesel fuel using energy as a service (EaaS). EaaS allows customers to generate renewable energy onsite and offset grid costs. Caban Systems generated clean energy onsite on behalf of Claro Dominican Republic.

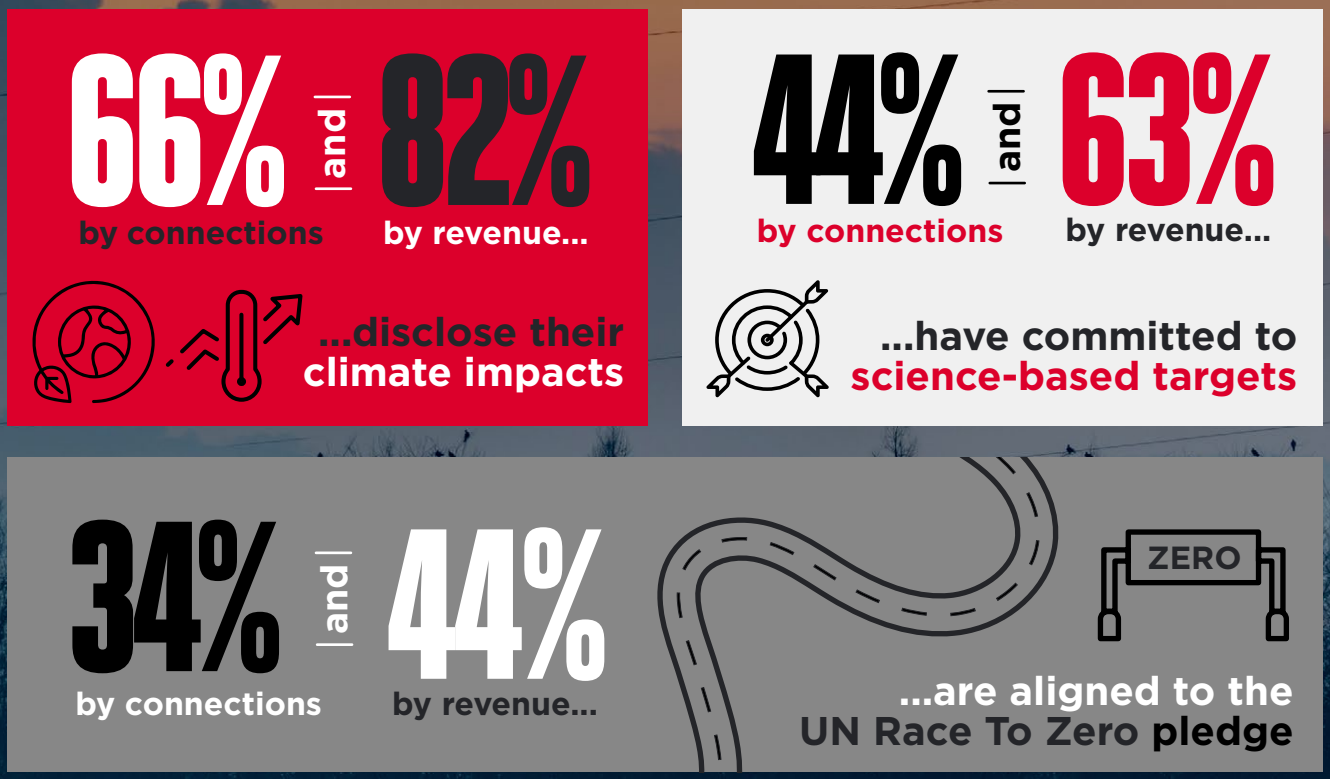
Impact:
The implementation of EaaS allowed Claro to modernise the entire operations at its Palomino site with zero upfront costs. It also allowed the operator to immediately save on opex and emissions while increasing reliability for the end user. Claro reported annual fuel savings of 98.5% and an annual reduction of 5,162 diesel gallons per year. Shifting to EaaS and renewable energy, Claro was able to align business objectives, customer satisfaction and ESG targets.[51]

Main SDGs impacted:



51 For more information, see Mobile Net Zero: State of the Industry on Climate Action 2022 (www.gsma.com/betterfuture/resources/mobile-net-zero-state-of-the-industry-on-climate-action-2022-report), GSMA, 2022

Figure 9 | Climate commitments by operators



Source: CDP, United Nations Framework Convention on Climate Change and operator websites

Figure 10 | Climate targets by operator

Company	Science -based targets	Carbon neutral target year	Race To Zero target
2degrees	Committed		
A1	Targets set: 1.5°C	2014	
Altice	Committed		2050
América Móvil	Targets set: 1.5°C		2050
AT&T	Targets set: 1.5°C	2035	
Axiata	Committed		2050
BCE	Committed	2025	
Bharti Airtel	Targets set: 1.5°C		2050
British Telecom	Targets set: 1.5°C	2030	2040
Chunghwa Telecom	Committed		
CK Hutchison	Committed		
Deutsche Telekom	Targets set: 1.5°C	2025	2040
Elisa	Targets set: 1.5°C	2020	
Far EasTone	Targets set: 2°C		
Globe Telecom	Committed		2050
Iliad	Committed	2035	
JT Group	Targets set: well below 2°C*	2030	
KDDI	Targets set: 1.5°C	2030	
KPN	Targets set: 1.5°C	2015	2040
LG Uplus		2030	
Liberty Global	Targets set: 1.5°C		
Magyar Telekom	Targets set: 1.5°C	2016	2050
Millicom	Targets set: 1.5°C		2050
MTN	Committed		2040
M1	Targets set: 1.5°C		
NTT Docomo	Targets set: 1.5°C	2030	
Orange	Targets set: 1.5°C		2040
Proximus	Targets set: 1.5°C	2016	2040
Reliance Jio	Targets set: 1.5°C	2028	
Safaricom	Targets set: well below 2°C		2050
Singtel	Targets set: well below 2°C		2050
SK Telecom	Targets set: 1.5°C*	2050	

Company	Science -based targets	Carbon neutral target year	Race To Zero target
SoftBank	Targets set: 1.5°C	2030	
Spark	Targets set: 1.5°C		
STC	Committed		2050
Swisscom	Targets set: 1.5°C	2020	2050
Taiwan Mobile	Targets set: well below 2°C		
TDC	Targets set: 1.5°C	2028	2030
Tele2	Targets set: 1.5°C	2020	
Telefónica	Targets set: 1.5°C	2025**	2040
Telenor Group	Targets set: 1.5°C	2030***	
Telia Company	Targets set: 1.5°C	2020	2040
Telkom	Committed		2050
Telstra	Targets set: 1.5°C	2020	2050
Telus	Targets set: 1.5°C	2030	2050
TIM	Targets set: 1.5°C	2025	2040
T-Mobile US	Targets set: 1.5°C		
TPG	Committed		2050
Turkcell	Committed		
Verizon	Targets set: 1.5°C	2035	2040
Vodacom	Targets set: 1.5°C	2030	2040
Vodafone	Targets set: 1.5°C	2030	2040

* Submitted to SBTI for validation
** Main markets: Spain, Germany and Brazil
*** Nordic operations

Source: SBTI, UNGC and operator websites

Decarbonising mobile networks

One of the engineering feats of the 5G new radio (NR) standard is that it is far more spectrally efficient than 4G (and even more so than 3G). In practical terms, this gives operators the ability to transmit more cellular data for a certain amount of spectrum and power – something welcome in an era of rising costs and pressure to reduce energy consumption.

However, because new 5G use cases will drive average data usage and create the need for network densification, there is the prospect that 5G leads to a more efficient network that could paradoxically result in higher emissions. With 5G adoption being led by high-income countries and China, 5G could deepen climate inequality unless steps are taken, such as the following:

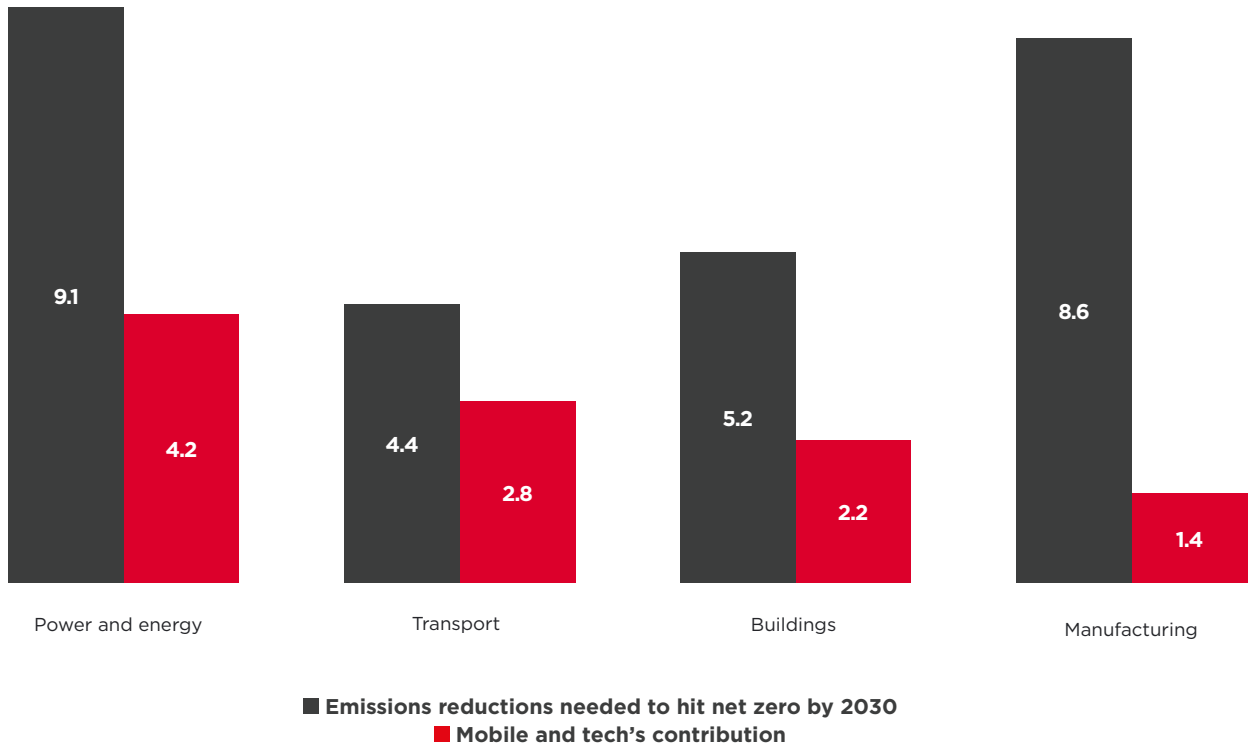
- **Deploying AI-driven energy management:** Operators and their vendors are incorporating AI into multiple levels of the network stack. This can result in a system-level change in which energy is used where it is required in a more precise and scrupulous fashion. For example, RAN sleep modes allow networks brief respite periods, as opposed to the 'always-on' mode of 4G and prior generations.[52]
- **Switching to lithium batteries**: At a network level, switching to lithium batteries allows energy to be retained/stored and distributed in a staggered fashion as opposed to the linear cascade through the RAN and core that can lead to leakages. Other benefits (versus lead-acid batteries) include a longer life and a smaller and lighter form factor, which requires less space in equipment housing.

52 The carbon-neutral mobile network, GSMA Intelligence, 2022

Enabling the decarbonisation of other industries

Beyond the investments that operators make to improve the energy efficiency of their networks, a larger proportionate impact is available through the digitisation of other industries. This is premised on a so-called 'enablement effect', in which mobile connectivity, associated digital infrastructure and AI improve productivity in other industries. This results in lower energy consumption and therefore the avoidance of CO_2 in those sectors.

Figure 11 | Mobile and digital tech can enable emissions savings of 40% in the four industries that make up 80% of global emissions (CO_2 reduction in Gt)



Source: GSMA Intelligence

Figure 12 | Examples of the role that mobile and digital technology can play in lowering emissions across different sectors

Sector	Digital decarbonisation driver	Main SDGs impacted
Power and energy	**Connected solar and wind grids** support the widescale shift away from fossil fuels to renewables. To distribute and manage these two renewable sources of energy, the grids rely on IoT sensors that connect to a mobile network, the cloud and/or end-user premises (residential or commercial) through cellular or non-cellular protocols.[53]	7 12 13
Transport	**Electric vehicles (EVs)** lead to a reduction in CO_2 emissions through the substitution of petrol- or diesel-based mileage. Linked to a smartphone, embedded sensors in EVs allow car owners to manage and sell excess power back to the grid (vehicle-to-grid or V2G). Moreover, charging point sensors provide location beacons for passing EVs, avoiding wasted emissions from searching for a charging point.[54]	11 13
Buildings	**Smart meters** optimise electricity usage within residential premises and commercial buildings (e.g. offices, campuses or hospitals). They can run on cellular or non-cellular protocols and allow for smarter and more efficient use of energy based on usage patterns, time of day and capacity levels of national or local energy grids.	11 12 13
Manufacturing	**Smart factories** refer to a manufacturing setting in which machinery and robotics are fitted with sensors that allow data streams to be analysed on the edge cloud, enabling real-time adjustments in production capacity and equipment maintenance. This helps improve productivity and operational efficiency and, consequently, reduce energy consumption and emissions.[55]	8 12 13

Source: GSMA Intelligence

53 Industry pathways to net zero – Decarbonisation in energy and utilities, GSMA Intelligence, 2022
54 Industry pathways to net zero – Decarbonisation in transport, GSMA Intelligence, 2022
55 Industry pathways to net zero – Decarbonisation in manufacturing, GSMA Intelligence, 2022

Cutting emissions in the mobile industry supply chain

Based on mobile industry analysis, the biggest source of emissions for operators is not from their electricity consumption but from emissions arising from the industry's supply chain. These are often outside the direct control of operators, making it a bigger challenge to address. Nonetheless, operators have a responsibility to work with their suppliers, reflecting the importance of SDG 17: Partnerships for the Goals.

Mobile devices have so far been the primary target when it comes to reducing supply-chain emissions because they are the primary conduit to telco services, have high shipment volumes and are the focus of much consumer marketing efforts. Additionally, there is an increasing focus on driving greater circularity among network equipment suppliers, including the introduction of direct mandates (i.e. requirements in RFP processes).

Operators in advanced markets are helping their counterparts in lower-income countries introduce circular economy initiatives. Examples include creating and interconnecting marketplaces for second-hand equipment, sharing best practice, creating common metrics that can be used globally to measure environmental impact and raising awareness of the benefits of a more circular economy across the industry. This eases the financial pressure of meeting CO_2 reduction targets in LMICs, accelerating progress towards climate-related SDGs.

"Climate change poses long- and short-term risks to the strength of our communities. To help, AT&T is accelerating the adoption of global broadband-based smart climate solutions to drive emissions reduction at scale as well as making progress on our own journey to net zero by 2035."

Susan Johnson, EVP and GM Wireline Transformation and Supply Chain, AT&T Mobility

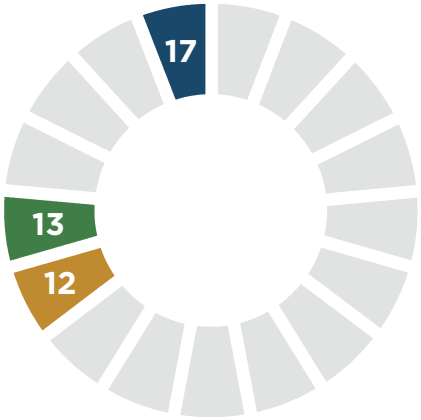
Case study 12:
AT&T moves to a more circular economy for network equipment

Challenge:
Because of rapid technological advancements and the accompanying changes to customer behaviours, device lifecycles have shortened, resulting in greater production and waste. Therefore, there is a greater need than ever before to reduce resource use and to move to more sustainable business models. This applies to the telecommunications industry and its network equipment.

Solution:
The AT&T Global Supply Chain Investment Recovery (IR) group helps to minimise the environmental impact of the operator's internal waste and e-waste. It works with AT&T's contracted R2-certified vendors to recover and recycle network infrastructure assets. Materials are dismantled, sorted and baled by commodity in preparation for sale or recycling.

Impact:
In 2020, the AT&T Global Supply Chain IR group handled more than 23,863 Mt of domestic US operational waste and kept more than 23,298 Mt of these materials from landfills, for a diversion rate of 97.63%.[56]

Main SDGs impacted:



56 For more information, see Strategy Paper for Circular Economy (www.gsma.com/betterfuture/resources/strategy-paper-for-circular-economy-network-equipment), GSMA, 2022

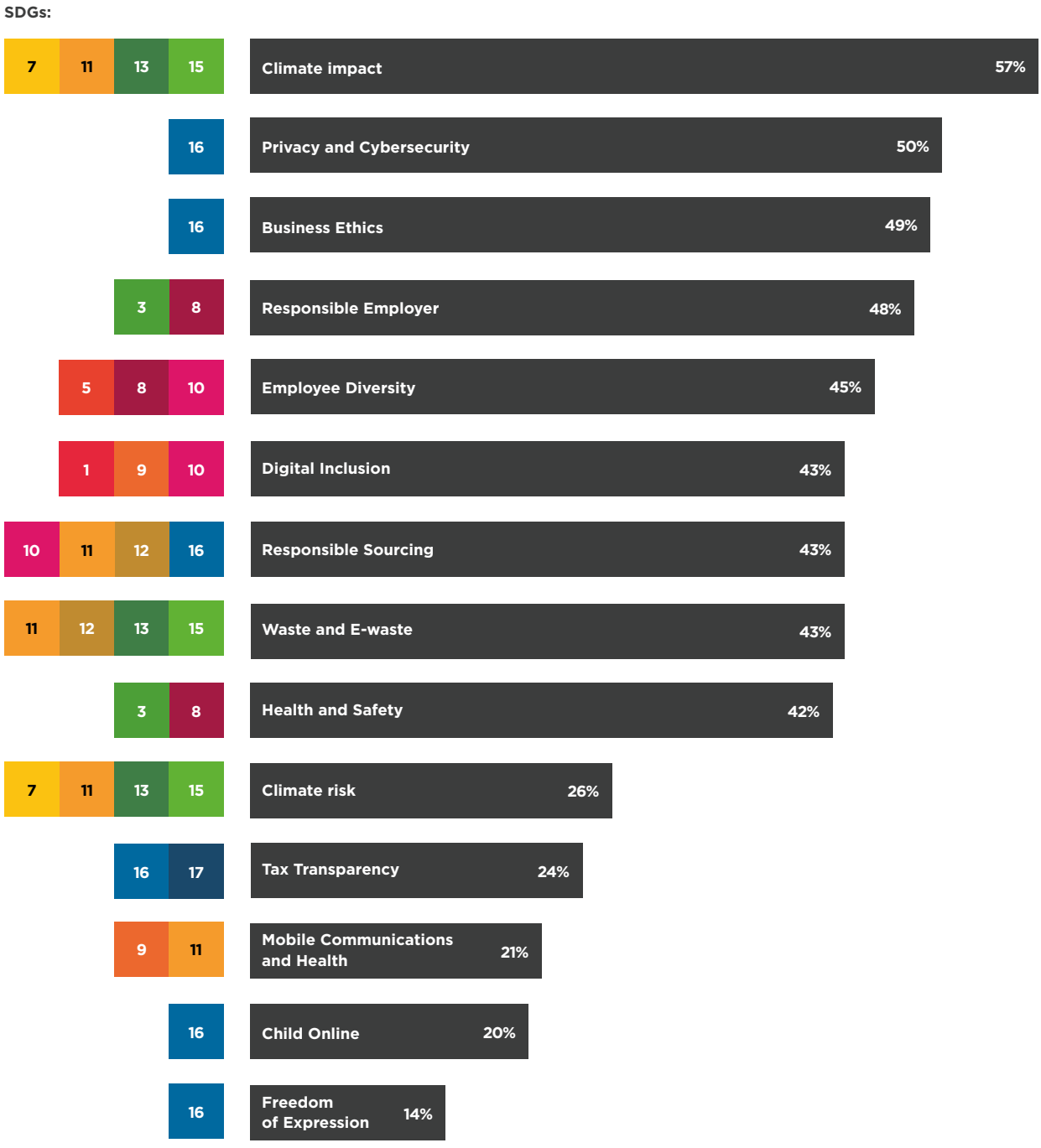
Managing climate risks

To help the industry move towards a more sustainable future, the GSMA has developed a Sustainability Assessment Framework to better understand the landscape of operator efforts in social and environmental sustainability.[57] A key part of the framework is the Operating Responsibly pillar, which focuses on an operator's systems to improve performance on sustainability issues (e.g. climate) within the operator's own operations and supply chain. Figure 13 compares the average scores for each sustainability issue based on the 25 operators assessed in 2021.

In the framework, climate is broken down into two separate material issues: Climate Impact and Climate Risk. Climate Impact analyses how organisations identify and reduce their contribution to climate change, while Climate Risk considers the extent to which an organisation manages and discloses risks presented by climate change.

57 For more information, see The GSMA Sustainability Assessment Framework 2021 (www.gsma.com/betterfuture/resources/the-gsma-sustainability-assessment-framework), GSMA, 2021

Figure 13 | Sustainability Assessment Framework: Operating Responsibly – key issues (percentage of maximum scores scored by all operators)



Source: GSMA

Compared to Climate Impact, operators scored relatively poorly for Climate Risk. This is mostly because less than half of the operators assessed disclosed the results of a scenario analysis for physical and transitional risks because of climate change, while even fewer operators published qualitative targets relating to reducing climate change risks. This is problematic because climate change causes rising sea levels and more hurricanes, tornados and other extreme weather events, which means mobile operators' networks will be damaged with greater frequency. In turn, this will result in more service interruption for customers and greater financial risks for operators.

Given that LMICs are often the countries that are most vulnerable to the impacts of climate change, operators in these countries are under increasing pressure to make their networks as robust as possible. Otherwise, the gap in infrastructure performance between high-income countries and LMICs could widen. Recognising this, Safaricom has undertaken a high-level analysis focusing on climate change risks. The analysis informs the assessment of long-term business sustainability and resilience, identifies areas of further climate action and informs environmental targets and objectives. Other operators – including A1, Globe Telecom, Orange, Taiwan Mobile, Telenor, Verizon and Vodafone – have also carried out comprehensive climate-related financial analysis and scenario planning.[58] In some cases, operators include this analysis within their public ESG reporting.

"I believe we can get climate solutions in place if we work together. One example is how we can advance clean energy transitions, especially in developing countries. I think the global telecommunications community, together with businesses in other industries, should pool its long-term demand for renewable electricity in the grids to attract investments. This way, we can empower sustainable solutions both for our companies and in the societies where we operate."

Sigve Brekke, President and CEO, Telenor Group

58 Mobile Net Zero: State of the Industry on Climate Action 2022, GSMA, 2022

06.
Inclusive business: leading with purpose-driven strategy

Operating responsibly is not just the right thing to do for society and the environment; it is also beneficial from a commercial perspective.

This is supported by global trends in investor sentiments, customer expectations and employee attitudes, which all point to the growing benefits of being a purpose-driven company. At the same time, stakeholders are getting smarter and more discerning when it comes to ESG claims from businesses, underlining the importance of addressing material industry issues and using actionable KPIs to communicate progress.

“Unlike many others, the growth of our industry is never just about the growth of our own business. Every day, our teams enable tens of millions of people to have essential connectivity, stay safe, use online educational resources, get access to the financial system, grow their business, break gender stereotypes and save our planet’s resources.

“We generate exponential growth for the economies in which we operate and this growth provides very local and tangible benefits for the societies that we serve. This local value generation is what makes our industry unique and this clarity of purpose is what gives our teams the strong motivation to keep going even when the challenges seem daunting.”

Kaan Terzioglu, CEO, VEON Group

Broadening the investor base

There has been a notable shift in investor attitudes towards ESG investing in recent years. According to EY research, since the COVID-19 pandemic, 90% of investors attach greater importance to companies' ESG performance when it comes to their investment strategy and decision-making.[59] This is contributing to a reallocation of capital in favour of sustainable assets. For instance, BlackRock reported that mutual and exchange-traded funds invested $288 billion in sustainable products between January to November 2020, a 96% increase over the whole of 2019.[60]

In the mobile sector, there has been strong growth in the issuance of sustainability bonds, whereby operators are securing funding on the basis of achieving social and environmental – rather than purely financial – targets. Bell Canada, Millicom, NTT Docomo, Proximus, Singtel, Swisscom, Vodafone, Telefónica, Tele2, TIM and Verizon are among the operators to have secured recent issuances. This is enabling operators to finance a variety of projects, ranging from securing renewable energy purchase agreements (REPAs) to extending broadband access in remote areas.[61]

Operators can derive other investment-related benefits from strong ESG performance, such as improved analyst recommendations and valuation multiples. However, critics of ESG investing argue the term has become an increasingly broad catch-all for a range of investment approaches, diluting its positive impact on sustainable outcomes and opening up stakeholders to claims of greenwashing.[62] This underlines the importance of effective and consistent approaches to measuring and communicating ESG performance, including progress on the SDGs, as communicated in this report.

Developed alongside EY, the Yale Center for Business and the Environment and a working group of 20 operators representing 45% of the world's mobile connections, the GSMA has launched ESG Metrics for Mobile, a first-of-its-kind mobile sector ESG reporting framework featuring 10 industry-specific KPIs.[63]

The decision-useful and comparable KPIs will allow investors to gain a much deeper level of understanding of the industry's most material impacts and drivers of value. It will also create a less burdensome and more meaningful data collection and reporting process for operators. This will allow for a more efficient and consistent communication of the sector's most relevant ESG disclosures and will provide the tools and setting for data preparers and data users to have a more enhanced and constructive dialogue on ESG performance.

59 'Is your ESG data unlocking long-term value?', *EY*, November 2021
60 Net zero: a fiduciary approach, Blackrock, 2021
61 For more information, see Guide to Digital Inclusion Bond Financing, World Economic Forum, September 2021
62 'RIP ESG?', *Financial Times*, June 2022
63 ESG Metrics for Mobile, GSMA and EY, 2022

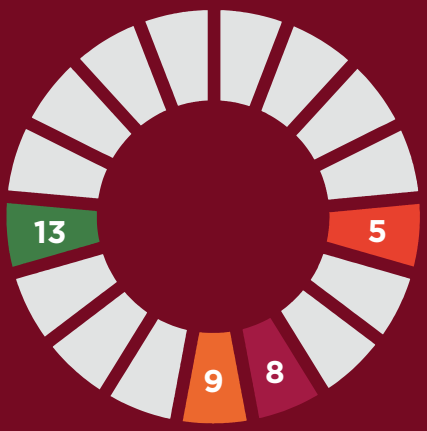
Case study 13:
Telefónica attracts sustainable and responsible capital

Challenge:
Many of the social and environmental challenges facing society require large amounts of investment and financing coupled with long-term commitment and engagement from the public and private sectors. Operators must therefore look towards new sources of financing to achieve their objectives.

Solution:
Telefónica was the telecoms sector's first issuer of senior green bonds and hybrid (green and sustainable) instruments. The funds obtained have been allocated to environmental projects focused on the following: transitioning the network from copper to fibre, which is more efficient and has fewer breakdowns; the deployment and improvement of mobile connectivity in rural areas; and the promotion of entrepreneurship and job creation through investments in start-ups. Telefónica also uses sustainable bank financing tools, such as loans and credits linked to sustainability objectives, which make it possible to progress steadily towards targets such as reducing emissions and achieving gender equality.

Impact:
Telefónica is one of the leading issuers of ESG financing in the telecoms sector. As of May 2022, it has issued ESG capital market transactions amounting to €4.25 billion. The operator also recently refinanced its main syndicated loan of €5.5 billion under environmental criteria. Furthermore, Telefónica plans to expand the ESG criteria within its financing model, with the aim of making sustainable finance one of the main financing tools for the company.[64]

Main SDGs impacted:



"In this Decade of Action, the commitment of the telecommunications sector is clear. We will connect people with our networks, we will empower people with digital skills and we will enable a green transition via digitalisation."

José María Álvarez-Pallete López, Chairman and CEO, Telefónica

Engaging with customers

Consumers are increasingly vocal about the need for companies to act responsibly. According to the Edelman Trust Barometer 2022, 58% of consumers buy or advocate for brands based on their beliefs and values. Meanwhile, the same survey indicates that consumers want more, not less, business engagement on social issues. CEOs are expected to be the face of change, with four in five people saying CEOs should be personally visible when discussing public policy with external stakeholders or work their company has done to benefit society.[65]

At the same time, consumers are becoming more conscious of the measures businesses take to promote their sustainable credentials, with almost half of consumers thinking that many brands that associate themselves with meaningful causes are doing it for publicity purposes.[66] This reiterates the value of developing an effective and consistent approach to measuring and communicating ESG performance. It also highlights the importance of validating any advertising claims.

65 See www.edelman.com/trust/2022-trust-barometer
66 'Brands must tread carefully as consumers grow more aware of greenwashing practices', *Mindshare*, January 2022

Case study 14:
Deutsche Telekom drives service differentiation

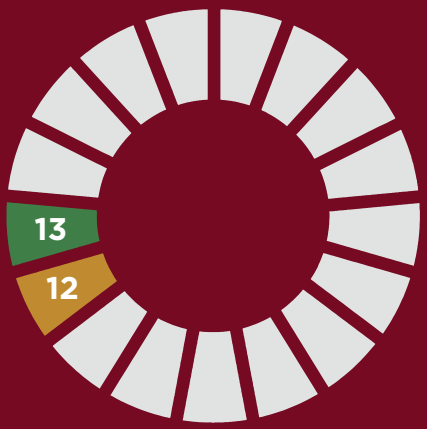
Challenge:
Mobile operators in several regions are grappling with stagnating (or declining) core telecoms revenues as the industry heads towards increasing levels of commoditisation. To reverse this trend, operators are seeking to identify new bases for differentiation.

Solution:
Deutsche Telekom demonstrates an effective approach to highlighting its ESG credentials through customer-facing marketing collateral. It uses the #GreenMagenta and #GoodMagenta labels on products and services that make a positive contribution to overcoming environmental and social challenges in the digital world. The decision on labelling is determined by a panel of experts from a range of fields. If there are clear disadvantages for society or the environment, the #GreenMagenta or #GoodMagenta is not awarded.

For example, Deutsche Telekom has labelled its green network in Germany, which has been operated with electricity from 100% renewable energy sources since 2020, with #GreenMagenta. Its Speedport Smart 4 router, with a case made from 90% recycled plastic and packaging that is entirely plastic-free, also bears the label.[67]

Impact:
With consumers increasingly altering buying habits with social and environmental issues in mind, demonstrating ESG credentials in interactions with customers can drive service differentiation and accelerate revenue growth in the mobile sector.

Main SDGs impacted:



Improving talent acquisition and retention

Microsoft's 2022 Work Trend Index highlights the impact of the pandemic on employee attitudes and expectations.[68] One area which has grown in importance is having a job with a sense of purpose and meaning. Many employees do not want to work for a company that runs contrary to its own values and beliefs and many are attracted to those that are seen to be responsible or ethical. This indicates that, as well as being good for business, taking a lead on ESG can also boost employee engagement, as well as talent attraction and retention. Furthermore, businesses have also highlighted the potential productivity gains from providing employees with meaningful work.[69]

The importance of ESG to employees means businesses are increasingly communicating their work in this area to current and prospective employees (see Case study 15). Moreover, the correlation between being a purpose-driven company and employee motivation is leading some companies to link employee incentives to ESG performance. In the GSMA's Sustainability Assessment Framework, 10 out of 25 operators surveyed connected incentives for employees, managers and/or executives to sustainable performance. Telefónica goes one step further by linking variable remuneration for all employees to performance on climate, gender diversity and customer trust targets.

68 2022 Work Trend Index: Annual Report, Microsoft, 2022
69 'Why giving back is the best way forward for businesses', *The Guardian*, February 2018

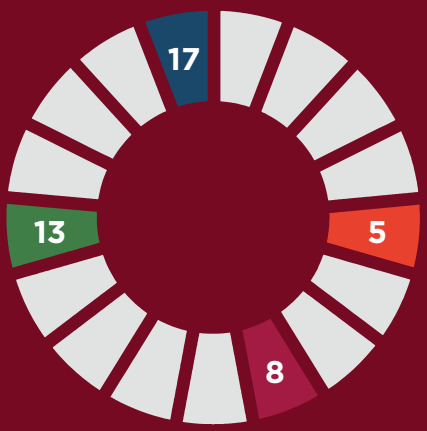
Case study 15:
KDDI communicates progress on the SDGs to employees

Challenge:
The experience of the pandemic has reshaped employee priorities, leading to what some economists have dubbed the 'Great Resignation'. With employees increasingly looking for jobs with purpose and meaning, it is important that employers raise employee awareness of how the company is working to solve social and environmental issues.

Solution:
In Japan, KDDI holds employee training sessions and e-learning events to explain the relationship between its business operations and the 'eight social issue categories' it aims to solve through the KDDI Sustainable Action initiative. Additionally, the operator established an SDG communication portal site (Everyone's SDGs) on the company intranet and launched a new SDGs section in the web-based company newsletter, along with seminars and study sessions, to promote employees' contributions to the SDGs. This information is also communicated externally to potential applicants through its KDDI Sustainable Action Stories Gallery.

Impact:
More than 9,000 employees from 26 headquarters and 10 branch offices participated in KDDI's sustainability training sessions and e-learning events in fiscal year 2020, with these sessions continuing to take place in 2021 and 2022. Moreover, in its annual report, KDDI noted there is a strong correlation between enhancing corporate value and ingraining the KDDI philosophy, which promotes taking action to combat climate change and deliver gender equality.[70]

Main SDGs impacted:



"KDDI's medium-term management plan stems from sustainability – sustainable growth of the society and improvement of company value – with our partners. By making the most use of 5G characteristics, we are aiming to evolve 'Power of Connection' so that our services are adopted in every scene for the upcoming new value-creating era."

Makoto Takahashi, CEO, KDDI

Unlocking other benefits of inclusive business

An inclusive approach to business enables companies to develop a better understanding of stakeholder concerns. This helps companies to anticipate new legislation, manage reputational risks from shifts in consumer expectations and minimise exposure to financial risks such as the increasing price of energy. This enhanced understanding can also feed into innovation and commercial processes, supporting new business lines.

For example, mobile operators can build new revenue streams by addressing environmental and social challenges in areas such as education, environmental management, financial inclusion and healthcare. Examples include IoT solutions to lower emissions across different sectors (see Figure 10), digital payment solutions, telehealth services and disaster response mobile platforms. Not all of these offerings will generate significant returns today; rather, they represent strategic opportunities with 10-15-year investment horizons that will shape a company's role in emerging ecosystems across markets globally.[71]

"We are committed to harnessing technology to empower people and businesses and create a more sustainable and inclusive digital future in this era of hyper-digitalisation.

"Helping accelerate digital adoption and overcome the digital gaps that have become more pronounced since the pandemic continue to be our key priorities to open up new opportunities and improve the lives of our customers, stakeholders and communities."

Yuen Kuan Moon, Group Chief Executive Officer, Singtel

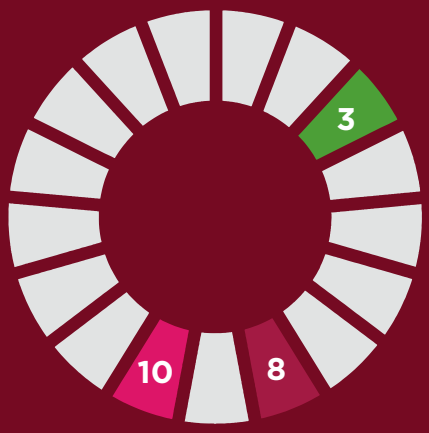
Case study 16:
SK Telecom pursues new revenue streams in ESG-related services

Challenge:
Mobile operators are seeking to capture incremental value from services beyond core connectivity, such as digital services and platforms. A number of these opportunities are associated with ESG-related areas such as education, financial services and healthcare.

Solution:
SK Telecom is using its expertise in AI and data analytics to develop new healthcare products and services. For example, SK Telecom's AI-Powered Care Service uses AI speakers and smart home devices to provide customised care services to vulnerable people (e.g. the elderly who live alone and those with mild dementia). The operator also developed the Nugu COVID-19 Vaccine Care Call service, an AI-powered assistant service that calls vaccine recipients to monitor their health conditions and determine any side effects.

Impact:
Revenues beyond core connectivity account for more than 30% of SK Telecom's total revenue, supported by the operator's AI and data analytics services.[72] SK Telecom's AI-Powered Care Service more than quadrupled its number of users in 2021 and saved more than 200 lives through its Emergency SOS feature. Moreover, the Seoul Metropolitan Government (SMG) ran a pilot of the Nugu COVID-19 Vaccine Care Call service in October 2021. During the pilot, Nugu handled 85% of the total calls, significantly reducing the burden on healthcare workers. SK Telecom will now roll out the services to all 25 districts in Seoul.[73]

Main SDGs impacted:



72 Operator revenue diversification: growth beyond core continues as COVID-19 spurs digitisation, GSMA Intelligence, 2021
73 'SK Telecom Announces Social Value Output for 2021', SK Telecom, May 2022

07.
Concluding remarks

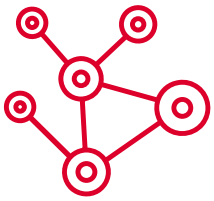
As the primary mean of accessing internet for billions of people and the transforming power behind every single industry, mobile connectivity is a key platform for economic development...

...and many other life-enhancing services. However, as more activities move online, unconnected populations will be at greater risk of exclusion from digital services. As a result, the mobile industry must continue to work together with its stakeholders (including governments, other industries, civil society and the international community) to accelerate digital inclusion and unlock mobile's full potential to address global issues.

Inclusive access: connecting everyone to mobile internet

The pandemic has emphasised the urgency of closing the digital divide, with 3.7 billion people still unconnected and excluded from the benefits of digital services. While great strides have been made to extend network coverage, the usage gap remains sizeable. The mobile industry is focusing on initiatives to tackle this, which generally relates to a lack of affordability, digital skills and relevance, as well as safety concerns.

Governments have an important role to play in driving digital inclusion through actively investing in digital skills training for the general public so that all citizens are able to access essential digital services and use connected devices. Governments can also improve affordability through interventions such as reducing spectrum fees and discriminatory taxation on the mobile sector.



Inclusive connectivity: making the most of mobile internet

Usage of mobile-enabled activities reached new heights in 2021 as mobile subscribers ventured further into online services. That said, there remains a gap in usage of mobile-enabled services between high-income countries and LMICs, highlighting the need for action from the mobile industry and its partners. Mobile operators continue to bring new services and products to market that meet users' needs in areas such as digital education, finance and healthcare. Operators are also upgrading their networks to enable users to access a broader range of services, such as those requiring faster download speeds and lower latencies.

Governments can support efforts to expand the availability of relevant online content and services by enhancing the provision of public services online, such as e-government services. Policies should also be focused on encouraging digitisation of vertical sectors and SMEs to leverage connectivity and the technical advancement of 5G to improve efficiency and reliability of business processes.

Inclusive planet: building a greener society

As climate change threatens to deepen inequalities between rich and poorer countries, global action from all sectors and governments is required to keep the global temperature rise to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature rise even further to 1.5°C. Operators are playing a key role in lowering emissions across different sectors, including power and energy, transport and manufacturing.

Moreover, net zero commitments and strict emissions reduction targets have been made by operators that together cover one third of global market share by connections. This is being enabled by a wide range of innovations to improve energy efficiency in mobile networks, as well as a rapid substitution of renewable energy in place of fossil fuels.

To accelerate progress, supportive regulatory and policy environments are needed to de-risk and attract investment into renewables. For example, policymakers should reduce barriers preventing operators from accessing corporate power purchase agreements for renewable energy.[74]

Inclusive business: understanding the benefits of being a purpose-driven company

There has been strong momentum from mobile operators worldwide to integrate purpose into core business strategies, such as by developing new services targeting underserved segments of the population. The growth in the issuance of green bonds in the mobile sector, whereby operators are securing funding on the basis of achieving social and environmental – rather than purely financial – targets, also demonstrates this move towards stronger ESG integration. Operators can derive several benefits from operating responsibly, such as improved customer acquisition, talent acquisition and risk management.

With stakeholders getting smarter and more discerning when it comes to ESG claims, businesses need to measure progress and harmonise the way they communicate their performance. Through consultations and workshops with mobile operators, industry stakeholders and subject matter experts, a set of 10 core ESG KPIs has been proposed for the mobile industry. They are designed to complement and build on the disclosures many operators are already making through universal reporting frameworks.

Policymakers and investors are invited to engage in dialogue with the industry to understand and unlock the specific needs and challenges that mobile operators can face in certain parts of the world to improve ESG performance.

GSMA™

GSMA Head Office
1 Angel Lane,
London, EC4R 3AB
United Kingdom

Tel: +44 (0) 20 7356 0600
Fax: +44 (0) 20 7356 0601