



# The Mobile Economy Middle East & North Africa 2022



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# Executive summary



## Mobile supports MENA's recovery from the pandemic

Since the emergence of Covid-19, mobile networks have been instrumental in providing the reliable connectivity needed to sustain social and economic activities. As countries bring the pandemic under control, a priority for governments in the Middle East & North Africa (MENA) and elsewhere is to drive economic recovery and promote sustainable development. Digital services and technologies will be crucial to realising this objective, by stimulating economic growth, mobilising the workforce and enabling industrial efficiencies.



## Mobile internet users surpass 300 million in the region

The number of mobile internet users in MENA exceeded 300 million in 2021, with penetration due to reach 50% of the population by the end of 2022. The GCC Arab states are home to the highest concentration of mobile internet users, but low take-up rates elsewhere reflect the work that remains to connect offline populations.

Smartphone adoption is growing well and is set to increase most strongly in MENA's less advanced mobile markets over the period to 2025, underpinned by continued network investment from operators. Increasing user engagement with bandwidth-hungry applications such as video will lead to a surge in data consumption across the region, growing by 430% between 2021 and 2027.



## 4G dominates, but 5G's footprint expands

4G is MENA's leading mobile technology, with almost 270 million connections at the end of 2021. Take-up has more than doubled over the past five years, driven by network expansion (particularly in frontier markets) and efforts by mobile operators to transition users from legacy networks. However, 4G adoption is projected to peak in 2023 as consumers increasingly migrate to 5G plans.

At the regional level, 5G remains at a nascent stage. The current adoption rate of just 1% is expected to grow to 17% by 2025. However, operators in the GCC Arab states are among the global leaders in 5G, with competition and government support triggering launches of some of the world's first and fastest next-generation mobile networks. 5G connections in this part of MENA are set to reach 41 million by 2025 (49% of total connections).

While the consumer market has been the focus of early 5G deployments, B2B is the largest incremental opportunity in the 5G era, with a raft of digital transformation projects underway across industries. To fully exploit these opportunities, 5G leaders in MENA are investing in new capabilities, with edge computing a priority. This ties in with operators' efforts to grow revenues beyond core telecoms services.



## Operators push ahead with network transformation

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In MENA, sustainability and security are the main priorities of operators' network transformation strategies. This is unsurprising given the backdrop of rising security threats and demand for a greater focus on energy efficiency from shareholders and customers. The use of cloud and IT technologies is also high on the agenda; operators have been working closely with leaders in cloud networks to deploy new capabilities and accelerate progress.

The use of open networking technologies is also starting to gain momentum, with Turkey emerging as a pioneer market for open RAN tests and pilots. For operators in the region's low-ARPU markets, open RAN brings the promise of reduced costs for deploying and operating networks. Meanwhile, operators in advanced markets are assessing the technology as part of their plans to diversify network equipment supply chains, strengthen their bargaining power with suppliers and boost flexibility to innovate and quickly deploy key network capabilities.



## The mobile industry continues to deliver benefits to the economy and wider society

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Mobile technologies and services continue to make a significant contribution to MENA's economy, generating 5.4% of GDP in the region in 2021 – around \$255 billion of economic value added. The mobile ecosystem also supported approximately 890,000 jobs (directly and indirectly) in 2021 and made a substantial contribution to the funding of the public sector, with around \$20 billion raised through taxation.

Mobile operators play a key role in efforts to achieve the UN Sustainable Development Goals (SDGs). They continue to deliver the connectivity that enables the growth of small businesses and digital transformation of enterprises, and provide access to life-enhancing services and tools for citizens. Mobile money is one example, with adoption scaling rapidly as operators support the region's shift to digital payments. Meanwhile, mobile operators are increasingly taking steps to fulfil SDG 13: Climate Action through cooperation to protect the environment and reduce carbon footprints, and the deployment of base stations powered by renewable energy such as solar.



## Policy decisions are fundamental to accelerate MENA's digital future

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In a post-pandemic world, digital connectivity is expected to become even more vital to citizens, firms and institutions alike. Regulatory frameworks that are conducive to investment will be crucial to incentivising the deployment of telecoms infrastructure. Such infrastructure will be key to economic recovery and future crisis resilience. Seizing the mobile opportunity will require forward-looking spectrum policy, with well-designed assignment spectrum roadmaps, fair prices and technology-neutral licences needed to support the growth of 5G over the course of this decade and beyond.

It is also more important than ever before to address the barriers to mobile internet adoption and usage in MENA, while data protection regimes must ensure privacy, safety and security for those engaging in the digital economy.

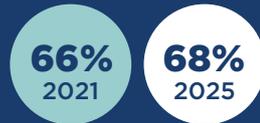
# The Mobile Economy Middle East and North Africa



## Unique mobile subscribers

2021  
2025

412m  
456m



**Penetration rate**  
Percentage of population



**CAGR**  
2021-2025

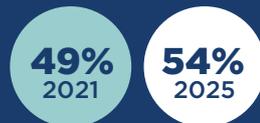
2.5%



## Mobile internet users

2021  
2025

307m  
362m



**Penetration rate**  
Percentage of population



**CAGR**  
2021-2025

4.2%



## SIM connections

(excluding licensed cellular IoT)

2021  
2025

648m  
700m

**Penetration rate**  
Percentage of population

103% 2021 | 105% 2025



**CAGR**  
2021-2025  
2.0%



## 4G

Percentage of connections  
(excluding licensed cellular IoT)

2021  
41% → 2025  
44%



## 5G

(excluding licensed cellular IoT)

**Connections**  
116m  
2025

**Adoption**  
17%  
2025



### Smartphones

Percentage of connections  
(excluding licensed cellular IoT)

2021

77%



2025

84%



### Internet of Things



2021

617m Total connections

2025

1.03bn



### Operator revenues and investment

2021

\$63.3bn



2025

\$66.5bn

Total revenues

Operator capex

\$37.3bn

2022 — 2025

73% on 5G



### Mobile industry contribution to GDP

2021

\$255bn **5.4%** of GDP

2025

\$276bn



### Public funding

2021

\$20bn



Mobile ecosystem contribution to public funding (before regulatory and spectrum fees)



### Employment

330,000 jobs



Directly supported by the mobile ecosystem



560,000 jobs

supported indirectly

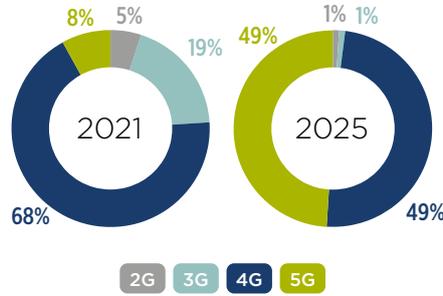


## Subscriber and technology trends

### GCC Arab states



#### TECHNOLOGY MIX\*



#### SUBSCRIBER PENETRATION



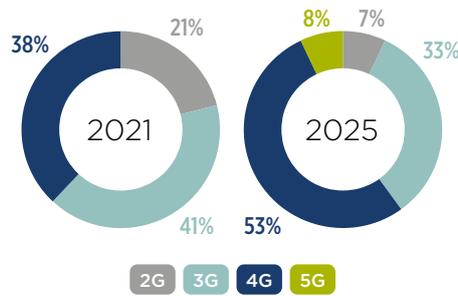
#### SMARTPHONE ADOPTION



### North Africa



#### TECHNOLOGY MIX\*



#### SUBSCRIBER PENETRATION



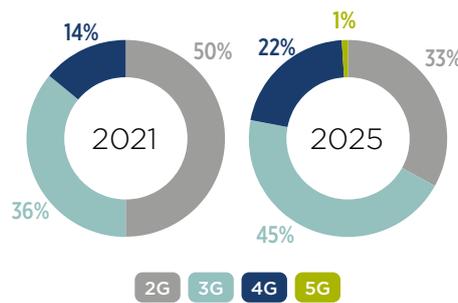
#### SMARTPHONE ADOPTION



### Other Arab states



#### TECHNOLOGY MIX\*



#### SUBSCRIBER PENETRATION



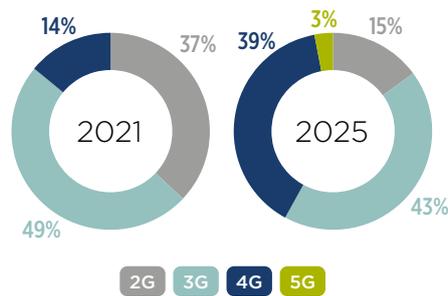
#### SMARTPHONE ADOPTION



### Levant



#### TECHNOLOGY MIX\*

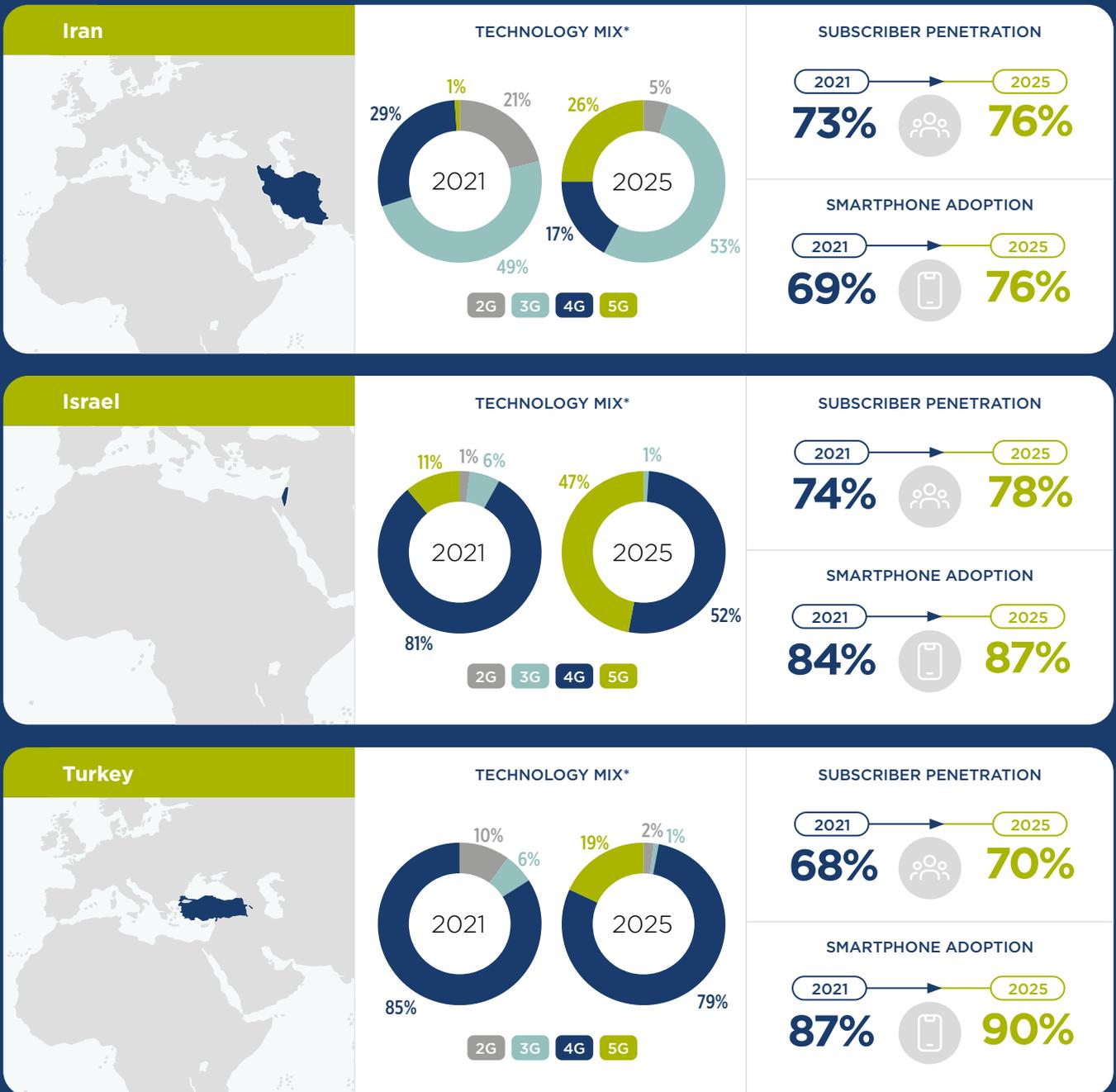


#### SUBSCRIBER PENETRATION



#### SMARTPHONE ADOPTION





\* Percentage of total mobile connections (excluding licensed cellular IoT)  
 Note: Totals may not add up due to rounding



# 01

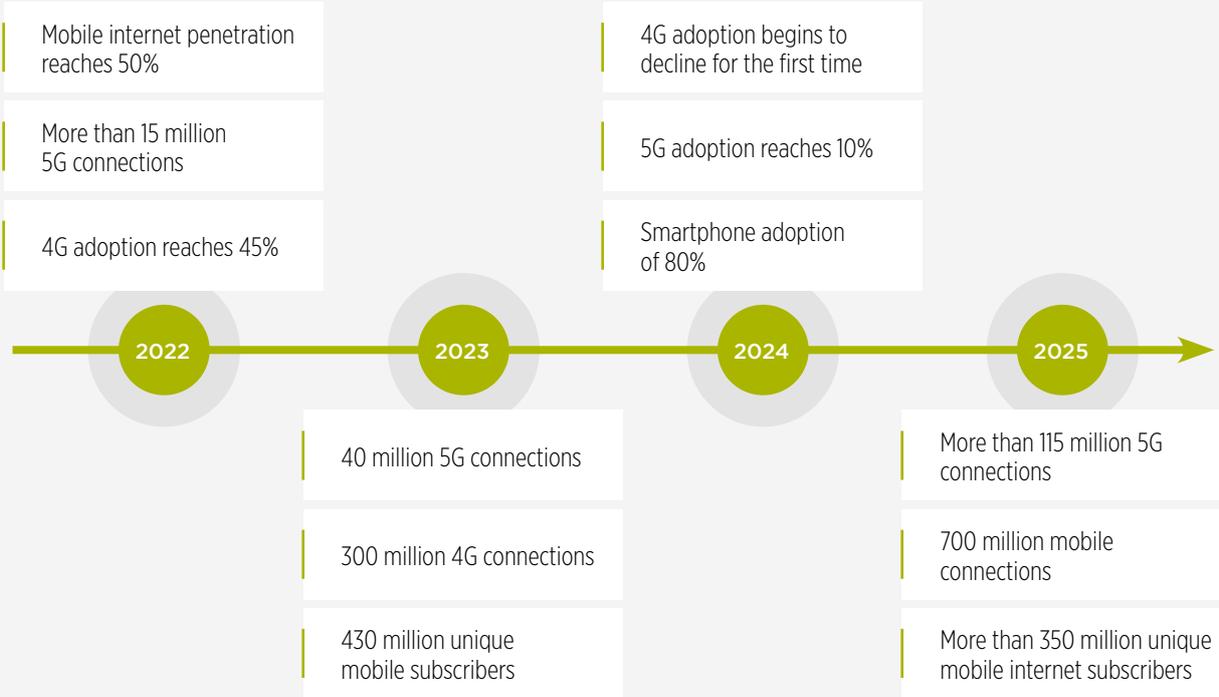
# The mobile market in numbers



## 1.1 Mobile adoption continues to rise

Figure 1

### Key milestones for the mobile industry in MENA to 2025

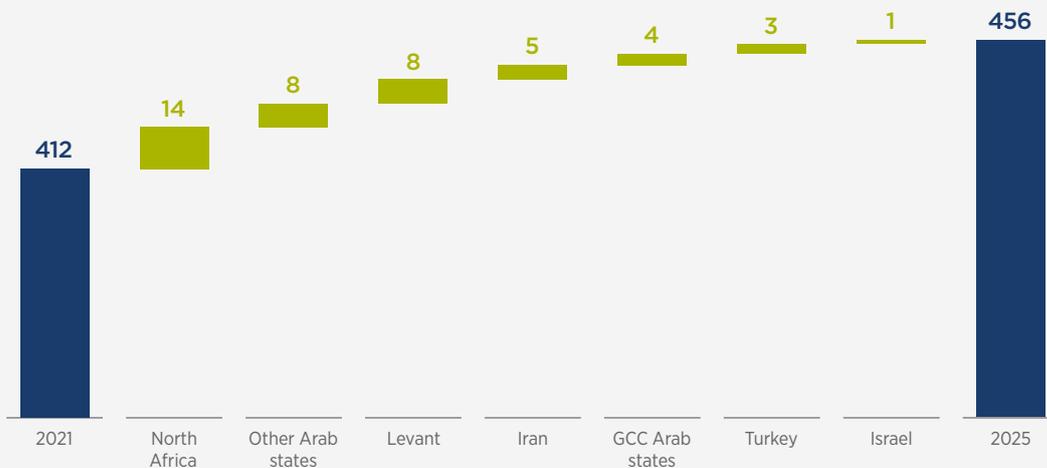


Source: GSMA Intelligence

Figure 2

### Mobile subscribers to grow by nearly 45 million in MENA by 2025, with North Africa contributing nearly a third of new subscribers

New mobile subscribers (million)



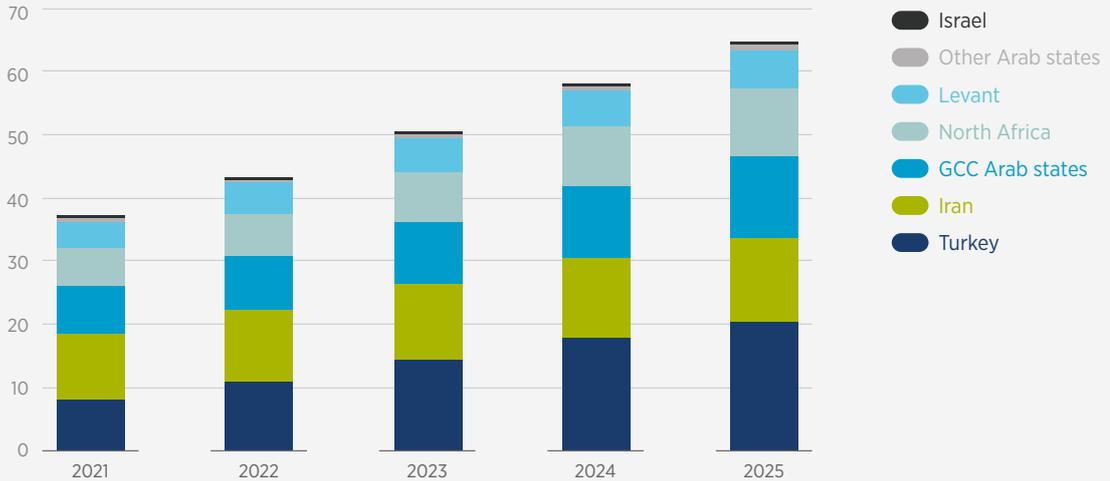
Source: GSMA Intelligence

Note: Total may not add up due to rounding

Figure 3

**Licensed cellular IoT connections in MENA will reach 65 million by 2025, with Turkey accounting for nearly half of new connections**

Licensed cellular IoT connections (million)



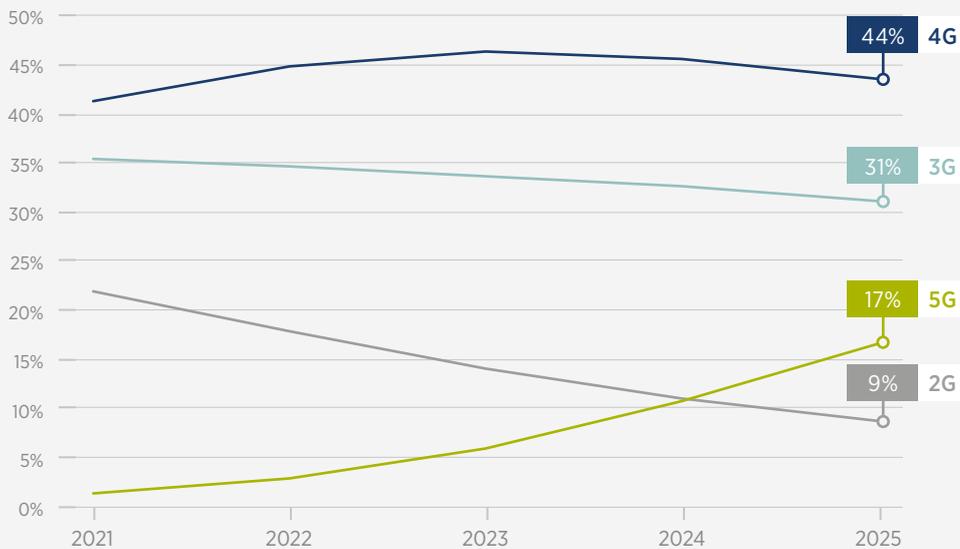
Source: GSMA Intelligence

**1.2 5G adoption accelerates as 4G reaches its peak**

Figure 4

**5G will account for nearly a fifth of total mobile connections in MENA by 2025**

Percentage of connections (excluding licensed cellular IoT)



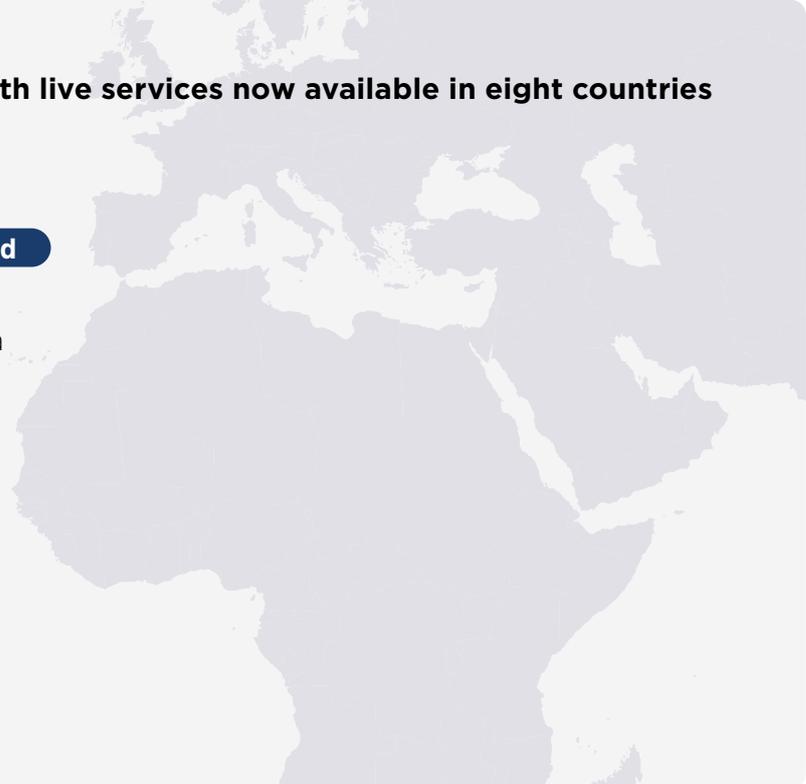
Source: GSMA Intelligence



Figure 5

**5G's footprint is expanding, with live services now available in eight countries in the MENA region**

- |  |  |
|--|--|
| <p><b>Live</b></p> <ul style="list-style-type: none"> <li>• Bahrain</li> <li>• Iran</li> <li>• Israel</li> <li>• Kuwait</li> <li>• Oman</li> <li>• Qatar</li> <li>• Saudi Arabia</li> <li>• UAE</li> </ul> | <p><b>Planned</b></p> <ul style="list-style-type: none"> <li>• Libya</li> <li>• Tunisia</li> <li>• Turkey</li> </ul> |
|--|--|

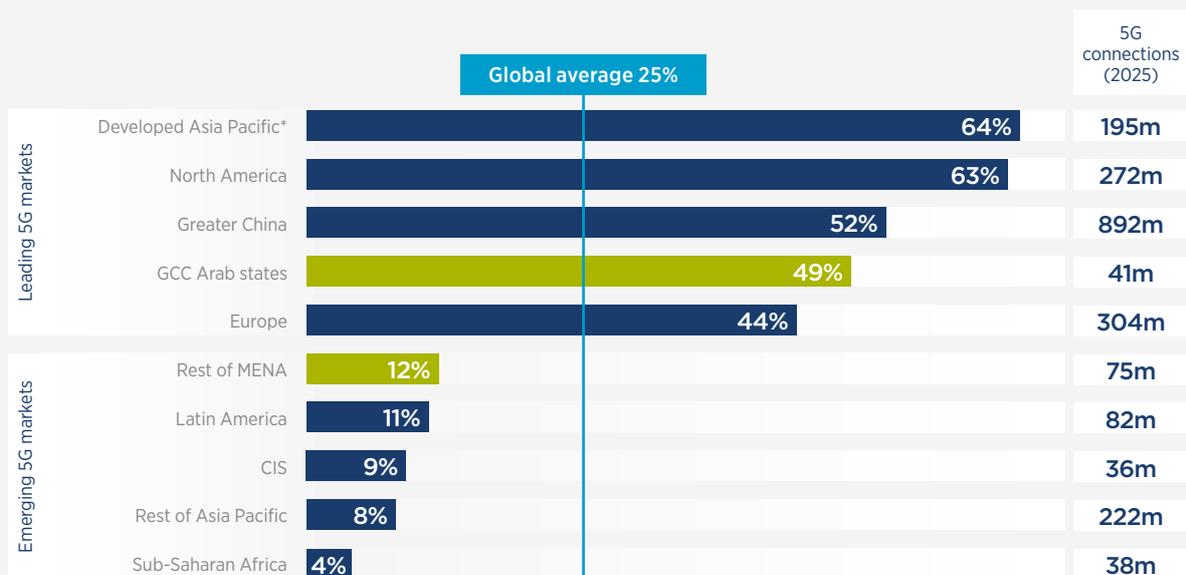


Source: GSMA Intelligence

Figure 6

**GCC Arab states to be among the leading 5G markets globally**

5G adoption in 2025 (percentage of connections)



Source: GSMA Intelligence

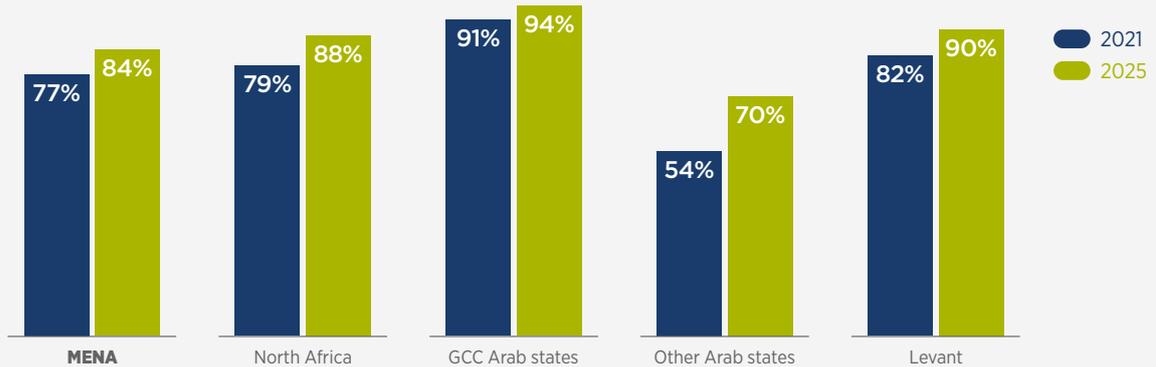
\*Australia, Japan, Singapore and South Korea

### 1.3 Smartphone adoption and data traffic increase at pace

Figure 7

#### Other Arab states will see the fastest growth in smartphone adoption to 2025

Smartphones as a percentage of total connections (excluding licensed cellular IoT)



#### Top three smartphone markets in MENA (smartphone connections, 2025)



Iran  
**99 million**



Egypt  
**91 million**

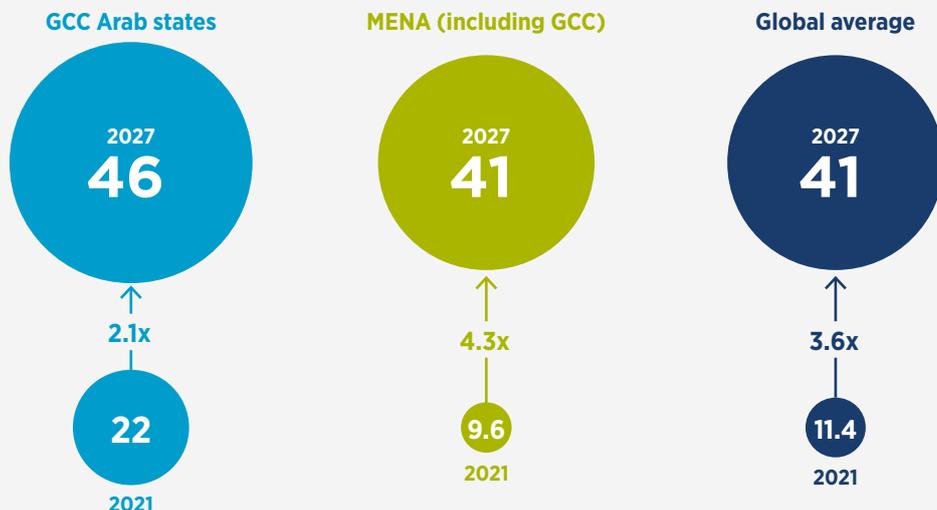


Turkey  
**73 million**

Figure 8

#### Mobile data traffic in MENA will more than quadruple over the six years to 2027, driven by increasing smartphone adoption and video usage

Mobile data traffic per smartphone (GB per month)



Source: Ericsson

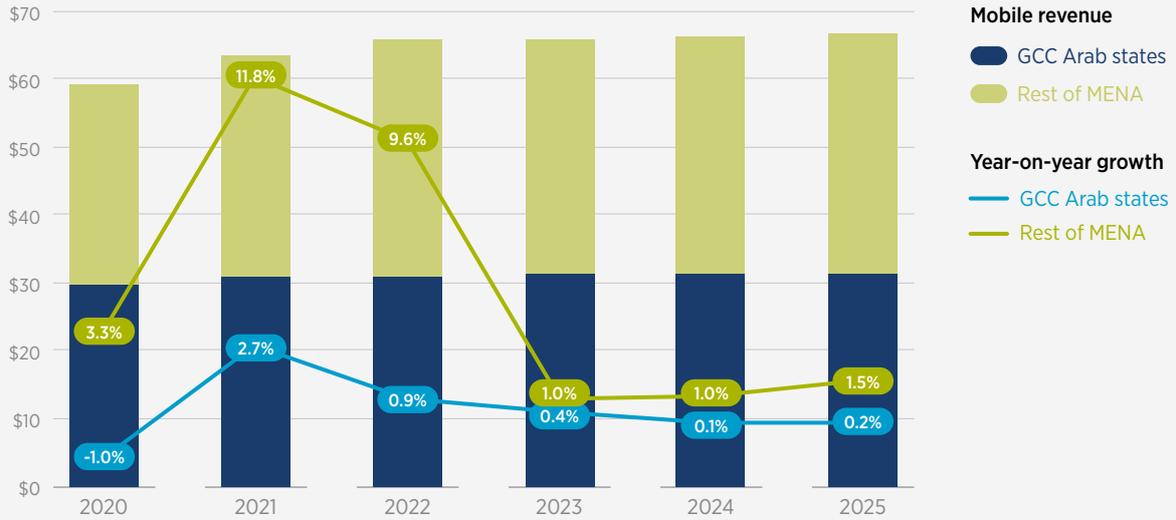


## 1.4 Revenue growth begins to recover

Figure 9

### Revenue growth in MENA will remain in positive territory as economic activities pick up

Mobile revenue (billion), year-on-year growth (%)

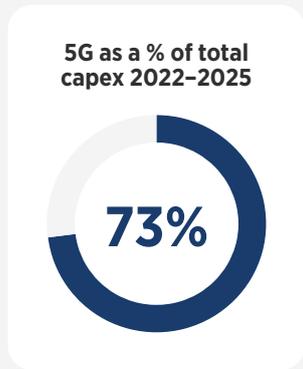
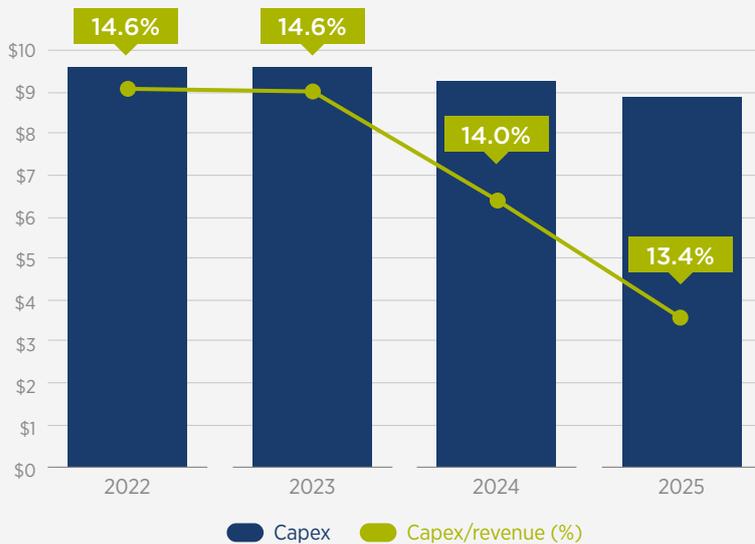


Source: GSMA Intelligence

Figure 10

### Capex to moderate in MENA over the medium term, though 5G will account for a rising share of operator investment

Operator capex (billion)



Source: GSMA Intelligence



# 02

# Key industry trends





## 2.1 5G makes steady progress

### Operators look to drive 5G adoption

5G continues to make inroads in MENA, driven by developments in the GCC Arab states. At the end of March 2022, eight countries in the region had launched commercial 5G services: Bahrain, Iran, Israel, Kuwait, Oman, Qatar, Saudi Arabia and UAE. Operators in a further three countries (Libya, Tunisia and Turkey) have publicly announced plans to launch commercial 5G services in the coming years.

Additionally, there is evidence that 5G coverage is ramping up. Bahrain and Kuwait became two of the first countries globally to record nationwide 5G coverage, while UAE reached 90% 5G population coverage at the end of 2021. In Saudi Arabia, 60 of the 136 governorates were covered by 5G services as of mid-2021, up from 30 a year earlier.

With 5G network coverage expanding, 5G adoption is steadily rising across the region. However, as is the case in most countries around the world, 5G has yet to move beyond early-adopter status. Operators in MENA are therefore increasing their efforts to promote the incremental benefits that 5G brings and the services that benefit consumers the most. This includes cloud-based gaming, e-sports and extended reality (XR) applications.

Operators in MENA are increasing their efforts to promote the incremental benefits that 5G brings.

Examples include the following:

- e& (formerly known as Etisalat) and Microsoft have formed an agreement to enable e& customers to bundle an Xbox Game Pass with their mobile subscription, providing access to Microsoft's library of games (including cloud gaming) across devices.
- Zain's e-sports subsidiary hosts a range of competitive gaming tournaments in the Middle East. It has also recently signed a joint-venture agreement with gaming start-up Playhera to launch a new e-sports platform across the region.
- Ooredoo has announced a three-year strategic collaboration with Snap to build augmented reality (AR) experiences at a range of sites across MENA, including the National Museum of Qatar and FIFA World Cup 2022 stadia.

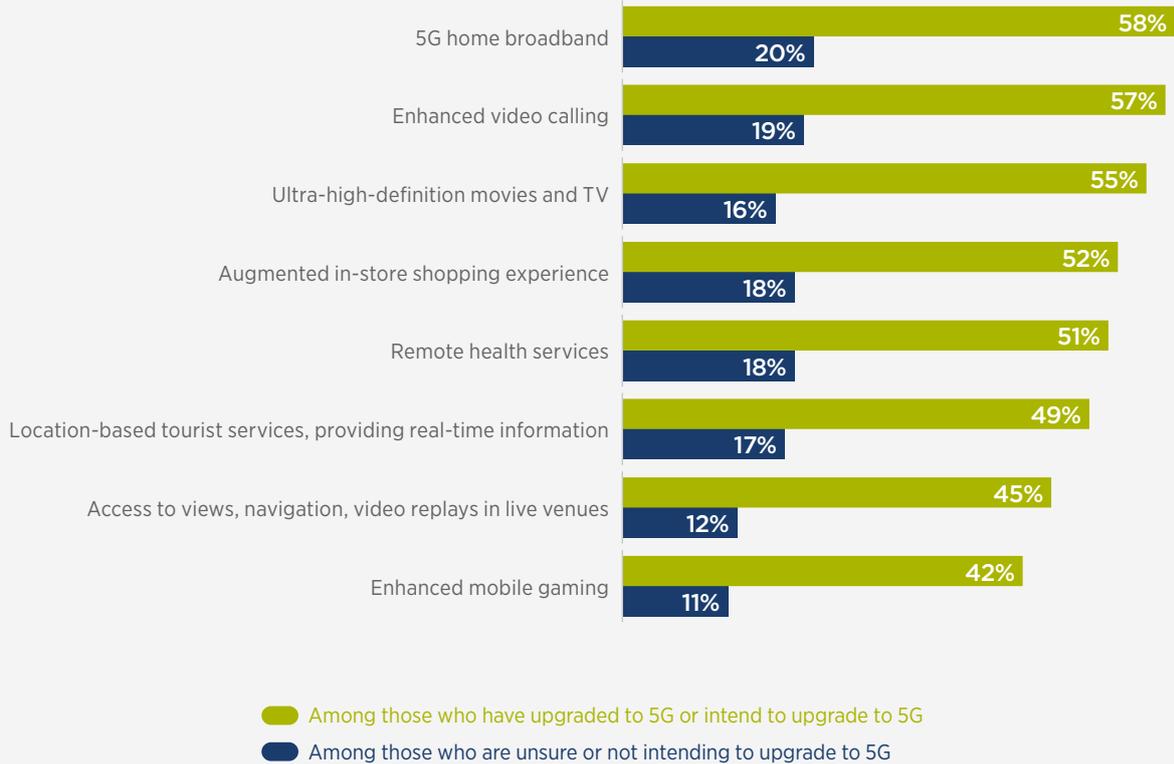
5G fixed wireless access (FWA) has also garnered significant early interest from operators in MENA. With the exception of Iran, 5G FWA services are available in all countries that have launched commercial 5G networks in the region. There have been some promising early signs in terms of user adoption. For instance, in Oman, there were more than 75,000 5G FWA subscriptions at the end of 2021, equivalent to 15% of the country's total fixed broadband subscriptions.<sup>1</sup>

1. Market Indicators Semiannual Report - Telecom & Post (July-December 2021), Telecommunications Regulatory Authority, March 2022

**Figure 11**

**Strong interest in 5G home broadband suggests an untapped opportunity for operators**

Percentage of smartphone users who find the following 5G use cases or 5G-enhanced services very or extremely appealing (aggregate)



Source: GSMA Intelligence Consumers in Focus Survey 2021



## Operators pursue 5G enterprise opportunities

While the consumer market has been the focus of early 5G deployments, B2B is the largest incremental opportunity in the 5G era, with a raft of digital transformation projects underway across different industries. To fully exploit these opportunities, 5G leaders in MENA are investing in new capabilities.

Edge computing is a priority for operators in the region, with multiple routes to market possible.

Those that have the capability to deliver complete solutions can position themselves as a 'one-stop shop' for enterprises. Alternatively, partnering with vendors, such as cloud service providers and telecoms vendors, can provide operators with a faster time-to-market with compelling solutions that take advantage of operators' unique 5G edge capabilities.<sup>2</sup> Examples of partnerships involving MENA operators include the following:

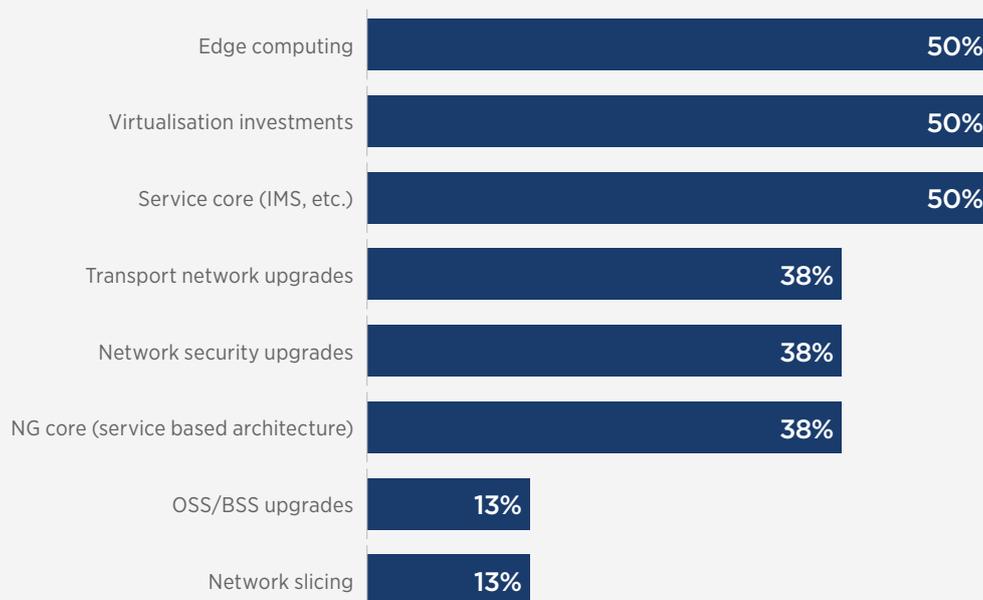
- In March 2022, Du and Huawei signed a memorandum of understanding (MoU) to research, verify and replicate multi-access edge computing (MEC) applications in the Middle East. The agreements build on their past collaboration in this area, which includes leveraging 5G MEC to live broadcast the UAE President's Cycling Cup in February 2021.
- e& launched its 5G Enterprise MEC solution in collaboration with Microsoft in October 2021. Oil & gas, transportation, smart manufacturing and logistics were touted as key industry sectors for the proposition. e& UAE announced a similar partnership with AWS in March 2022; the two companies will create a catalogue of pre-packaged 5G edge computing solutions for enterprises.

**Figure 12**

### Edge computing is a top priority for operators in the Middle East and Africa

Considering your 5G core and service network, which areas of investment are most important for delivering successful 5G services?

Percentage of respondents, Middle East and Africa



Source: GSMA Intelligence Operators in Focus: Network Transformation Survey 2021

2. [The edge opportunity in the enterprise market: progress, challenges and future outlook](#), GSMA Intelligence, 2022

The full power of edge computing will not be unleashed until 5G standalone (5G SA) is more widely deployed. As is the case globally, most initial 5G deployments in MENA began with a non-standalone (NSA) architecture, leveraging the 5G radio access network (RAN) equipment for connectivity and a 4G core for control functions. This allowed operators to quickly roll out enhanced mobile broadband (eMBB) services and serve up additional network capacity. However, it also meant forgoing the added functionalities enabled by 5G SA, such as an improved ability to support

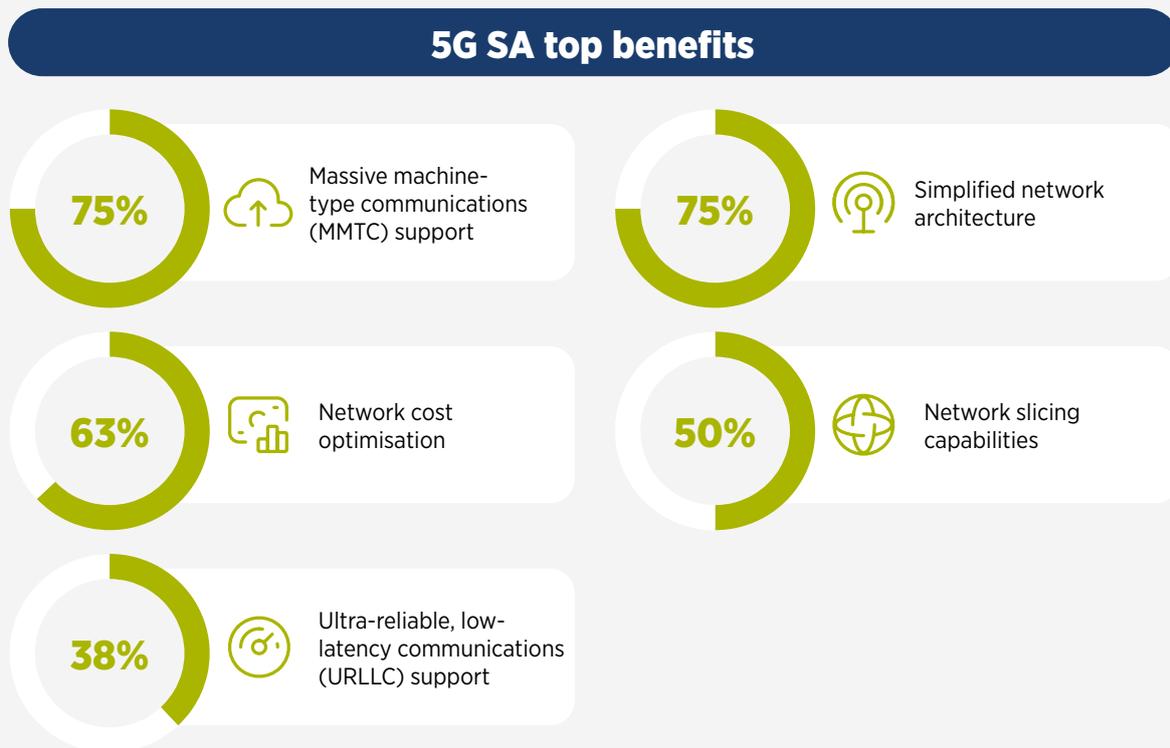
IoT (massive machine-type communications – MMTc), network slicing and ultra-reliable, low-latency communications (URLLC) use cases.

With this in mind, operators are now starting to ramp up 5G SA deployments. STC and Zain have deployed commercial 5G SA networks in Saudi Arabia, while STC has also launched 5G SA in Kuwait. Operators in Bahrain and UAE have publicly announced their intentions to deploy 5G SA networks. As 5G SA deployments in the region ramp up, operators will be able to address demanding enterprise use cases and scale solutions more effectively.

Figure 13

### Deploying 5G SA offers new business opportunities as well as cost benefits

Percentage of operators in the Middle East and Africa citing top benefit of 5G SA (top three choices selected)



Source: GSMA Intelligence Operators in Focus: Network Transformation Survey 2021



## 2.2 The telco of the future



### Sustainability commitments and ambitions grow

Sustainable transformation is gathering pace across MENA. Ahead of COP26 in Glasgow, Saudi Arabia and UAE committed to reaching net zero by 2060 and 2050, respectively. These are particularly ambitious commitments from the countries, considering their levels of fossil fuel reserves. Saudi Arabia and UAE have both started to diversify their economies away from fossil fuels and engage in economic transformation, raising prospects for sustainable growth. Governments and operators in the region have allocated significant resources to developing their renewable energy sectors and have started to cooperate on sustainability agendas and harmonising efforts. At MWC Barcelona 2022, e&, STC, Zain, Batelco, Du and Omantel signed a MoU aimed at strengthening their cooperation to preserve and protect the environment and reduce their carbon footprint through operations.

Operators including Du, e& and MTN are implementing programmes to deploy base stations powered by renewable energy, hybrid solutions and advanced cooling solutions, while reducing

dependence on diesel for base-station backup power. Countries with few or no natural energy resources are more exposed to global fluctuations in energy prices, so local operators have every reason to be ambitious with renewables. Turkcell provides a strong example, with the Turkish operator already committed to meeting its electricity demand from renewables by 2030.

MENA is home to some of the leading 5G markets globally. However, the rollout of new 5G networks has created upward pressure on operators' energy usage to power the new equipment. Being energy-efficient and using renewables economically is a necessity to avoid a competitive disadvantage; energy is a top three area of opex for operators, after labour and site rentals. Private sector commitments across the region on net zero are likely to accelerate during 2022–2024, while renewable electricity demand is expected to grow, driven by rising energy prices and the region's ample access to solar as a natural resource.

## Solar emerges as an alternative to diesel

Diesel generators have traditionally been the most economical way to generate electricity in off-grid or bad-grid scenarios across MENA. However, solar has become a competitive option over the past few years, due to three main factors:

- strong support for renewable electricity from local governments
- operator aims to control energy costs
- reduced prices of photovoltaic panels.

MENA has an exceptional sunshine duration ratio, which makes solar a particularly promising option for network operators. They can deploy solar panels at their sites and store the unused electricity in batteries, and they can build larger, centralised solar farms. As part of its commitment to be net zero, carbon neutral by 2040, Orange has deployed three solar farms in Jordan, supplying around 70% of the electricity needs of its subsidiary in the country.



## Operators step up their network transformation plans

The commercialisation of 5G has coincided with the introduction of network innovations such as open RAN, virtual RAN and network automation. Combined with new market demand for energy efficiency and network security, operator decisions on network transformation strategies have never been so important.

In the Middle East and Africa, sustainability, network security and end-user security are the main priorities of operators' network transformation strategies, according to GSMA Intelligence's latest survey. This is unsurprising given the backdrop of rising security threats and demand for a greater focus on energy efficiency from shareholders and customers.

The survey also demonstrates the widespread interest in the use of cloud and IT technologies in the network, as well as automation of business functions and network operations. Combined, such technologies can help operators scale networks to match demand more easily, reduce costs and accelerate service innovation.

Operators in MENA have been working closely with leaders in cloud networks to deploy new capabilities and accelerate progress. For example, e& and Microsoft have a multi-year partnership to build

a simplified network architecture and operations using public cloud technology. In addition, STC and Rakuten have a MoU to explore opportunities for collaboration in cloud networks and automation.

In 2021, only around a quarter of operators in the Middle East and Africa claimed that the use of open networking technologies (including open RAN) was a very or extremely important priority. This points to the many competing priorities that need to be juggled and the fact that open RAN announcements until recently have hailed from other regions.

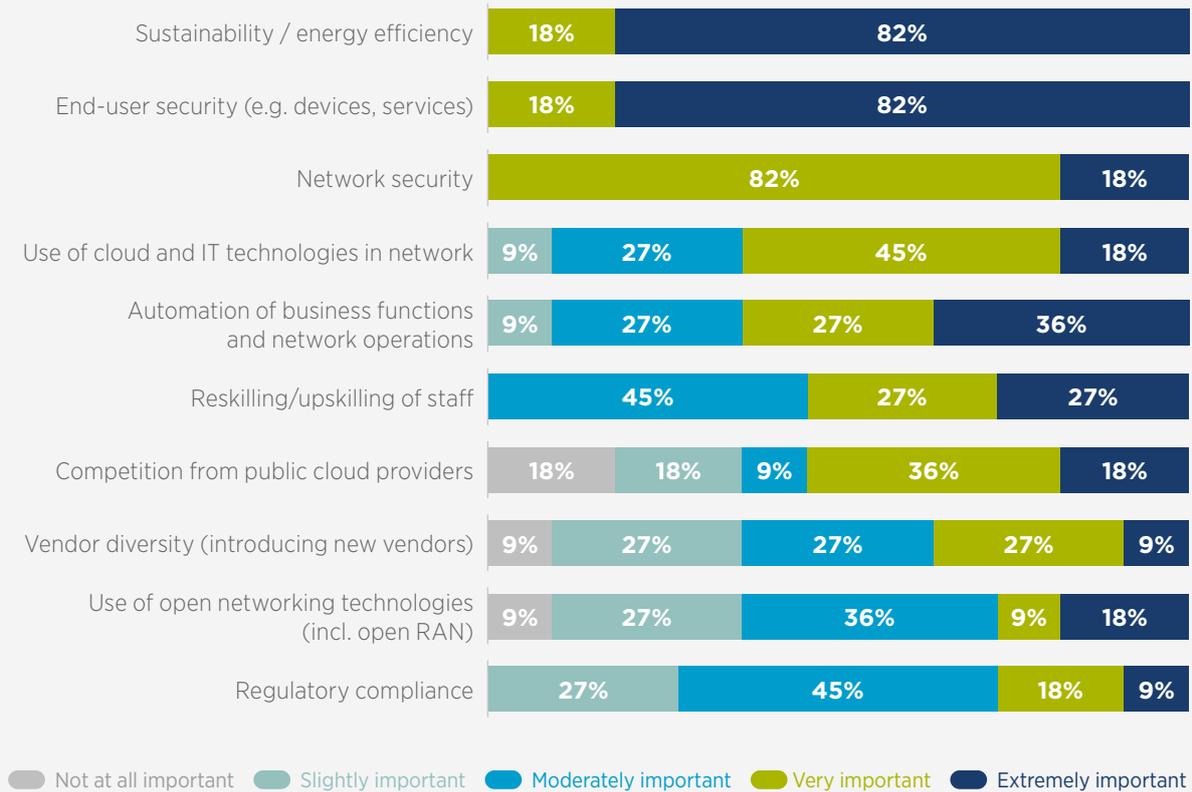
However, this is starting to change; open RAN momentum is building in MENA. In July 2021, Etisalat Group, STC, Zain Group, Mobily and Du signed a MoU to progress the implementation of open RAN solutions in their respective markets. Batelco and Omantel were then added to the Open RAN MoU in March 2022. In the same month, the operators involved in the Open RAN MoU launched the first regional community lab in collaboration with Telecom Infrastructure Project (TIP) and Intel. This will help foster the open RAN ecosystem in MENA, enabling operators to accelerate the deployment of open networking technologies.

**Figure 14**

**Sustainability and security are high on the agenda, followed by the use of cloud and IT technologies**

How important are the following priorities as a part of your network transformation strategy?

Percentage of respondents, Middle East and Africa



Source: GSMA Intelligence Operators in Focus: Network Transformation Survey 2021

Turkey has emerged as a pioneer market for open RAN in the region. Vodafone Turkey and Parallel Wireless began testing open RAN across 2G, 3G and 4G sites in the Bilecik Province in northwestern Turkey in July 2019. Turkcell and Mavenir have completed a number of open vRAN tests and pilots throughout the country. Turk Telecom has also worked with Parallel Wireless and Juniper Networks to test RAN Intelligent Controller (RIC) software, which will be critical to the optimisation of open networks while helping to spur innovations.

Motivations for implementing open RAN vary among operators. For those in the region’s low-ARPU markets, open RAN offers reduced costs for deploying and operating networks, which could be particularly significant in rural areas, where the economics of network deployment are most challenging. This is part of the rationale behind e’s decision to deploy open RAN in Afghanistan. Meanwhile, operators in advanced markets are assessing the technology as part of their plans to diversify network equipment supply chains, strengthen their bargaining power with suppliers and boost flexibility to innovate and quickly deploy key network capabilities.



## Operators look to diversify revenues

There is often scepticism about operator success beyond core telecoms services, but operators in MENA are providing a growing number of examples of revenue diversification. Revenue beyond core as a percentage of total revenues varies significantly among MENA operators, and there is no 'one size fits all' in terms of strategy or timeline for diversification, reflecting different regulatory environments and consumer habits. Some operators offer a wide range of consumer services beyond core: Turkcell, STC, e& and Orange are notable examples. Turkcell increased

its non-core revenue share from 24% to 27% between 2017 and 2020.<sup>3</sup> With this high level of diversification and growth, Turkcell provides one of the broadest portfolios of consumer digital services.

Consumer services still represent the largest contributor to revenues in MENA, but enterprise is the main growth driver as operators increasingly target the digital transformation of vertical industries.

## Financial services and security

Financial services and security represent key components of revenue diversification strategies for operators in MENA. Orange Money provides an example in financial services. As of June 2021, it had reached 23 million active customers across Africa and the Middle East. A further example is STC Pay, the digital payment arm of Saudi Arabia's STC Group. It was the first company in Saudi Arabia to receive a digital banking licence and the first 'unicorn' in the country. STC Pay was also the first fintech 'unicorn' in the Middle East and has enabled 7.8 million users to gain complete control over their financial transactions, including transferring money, paying bills and using advanced financial analytical services.

The pandemic resulted in growing demand for security-related services provided by operators as enterprises pushed ahead with their digital transformation. Most operators consider investing in security very or extremely important to help achieve long-term enterprise revenue goals. According to the GSMA Intelligence Operators in Focus: Enterprise Opportunity Survey 2021, security was highlighted as the primary growth area by more than 50% of operators surveyed in MENA.<sup>4</sup>

3. [Operator revenue diversification: growth beyond core continues as Covid-19 spurs digitisation](#), GSMA Intelligence, 2021

4. [Enterprise Opportunity 2021](#), GSMA Intelligence, 2021



### Covid-19 as a catalyst for diversification

The pandemic has accelerated the shift to digital for consumers and enterprises in MENA, and fuelled growth beyond core services. In 2020, Covid-19 heavily affected MENA operators' core businesses, with mobile roaming and equipment sales declining significantly. However, in the enterprise market, demand for value-added services, particularly cloud, finance and security, grew significantly as enterprises sped up their digital transformation.

Meanwhile, 5G rollout and commercialisation bring a new set of opportunities and challenges around monetisation. This is set against the backdrop of a growing shift of economic value away from operators towards internet giants, which have leveraged new technologies and delivery models to capture a rising share of engagement and value. The new environment requires new business models and organisational structure.

### Restructuring of e&

Etisalat rebranded to e& at the beginning of 2022 and announced a strategic restructuring aimed at driving revenue diversification and international growth. The goal of the restructuring is twofold: capture incremental value from new growth areas and respond to the changing regulatory environment and consumer habits brought about by Covid-19 and 5G. The restructure splits the UAE operator; the telecoms division will remain the same, but verticals will operate differently. The consumer business falls under e& life, the B2B division will be called e& enterprise and a new vertical called e& capital will serve as an investment arm to focus on joint ventures, acquisitions and startup investment opportunities.

e& has said that it is moving out of the traditional telco model and up the digital value chain, amid increasing competition from OTT players. This comes as the UAE government lifted restrictions on certain OTT voice services, such as Zoom and Skype, in the wake of the Covid-19 pandemic – a move that could weigh on traditional voice revenues.



# 03

# Mobile contributing to economic growth and social development





### 3.1 Mobile's contribution to economic growth

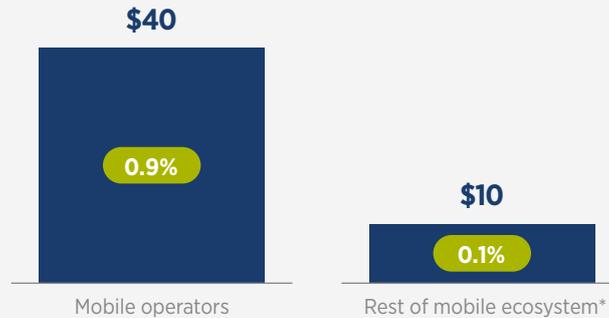
In 2021, mobile technologies and services generated 5.4% of GDP in MENA – a contribution that amounted to \$255 billion of economic value added. The mobile ecosystem also supported approximately 900,000 jobs (directly and indirectly) and made a substantial contribution to the funding of the public sector, with \$20 billion raised through taxation on the sector.

By 2025, mobile's contribution to the regional economy will grow by more than \$20 billion (approaching \$280 billion), as countries in the region increasingly benefit from the improvements in productivity and efficiency brought about by the increased take-up of mobile services.

Figure 15

**The mobile ecosystem in MENA directly generated around \$50 billion of economic value in 2021, with operators accounting for the majority**

Billion, percentage of GDP

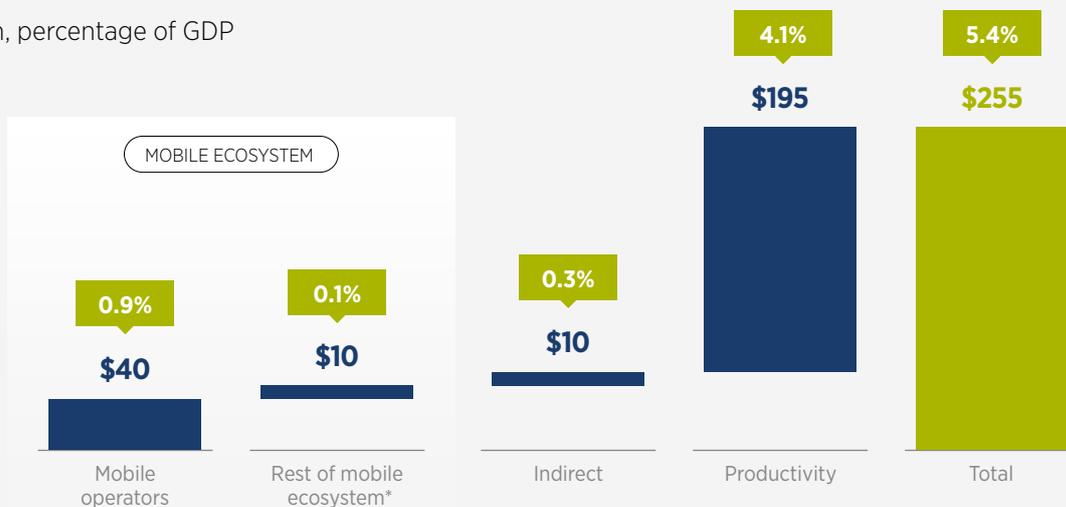


\*Rest of the mobile ecosystem includes infrastructure providers, device manufacturers, distributors and retailers (formal & informal) and content, apps & service providers.

Figure 16

**Additional indirect and productivity benefits bring the total contribution of the mobile industry to \$255 billion in 2021**

Billion, percentage of GDP

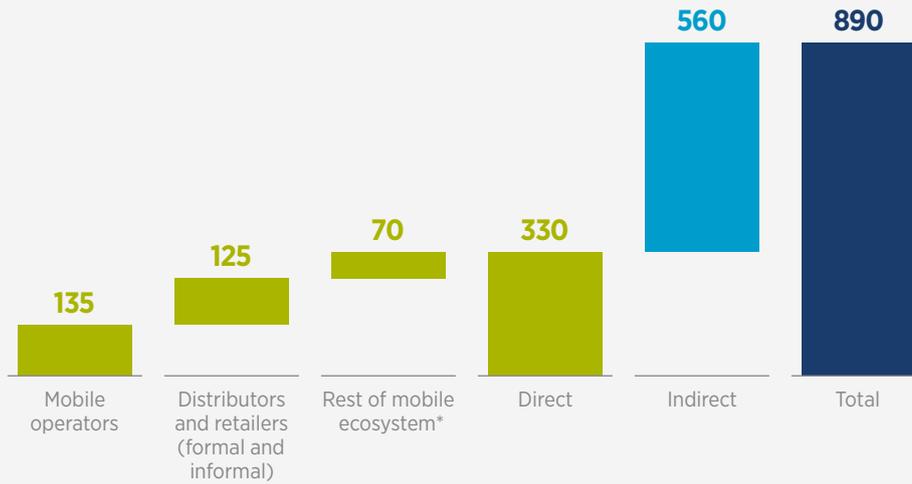


\*Rest of the mobile ecosystem includes infrastructure providers, device manufacturers, distributors and retailers (formal & informal) and content, apps & service providers

Figure 17

**The mobile ecosystem in MENA directly employs around 330,000 people and another 560,000 indirectly**

Jobs (thousands), 2021

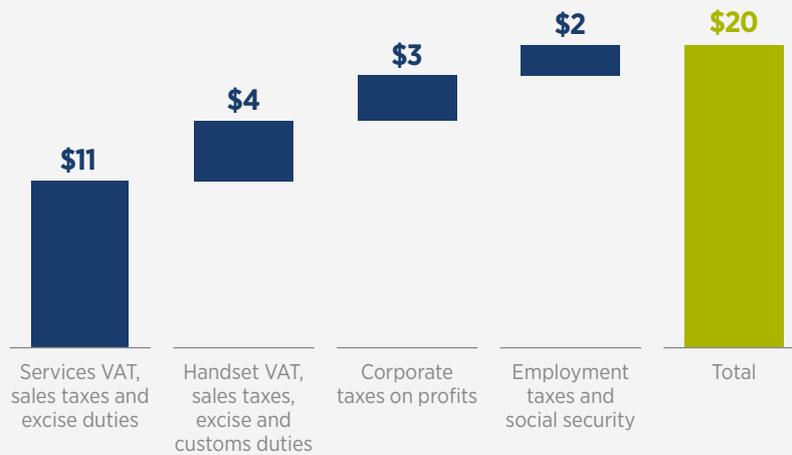


\*Rest of the mobile ecosystem includes infrastructure providers, device manufacturers, and content, apps & service providers.

Figure 18

**In 2021, the mobile ecosystem in MENA contributed \$20 billion to the funding of the public sector through consumer and operator taxes**

Billion



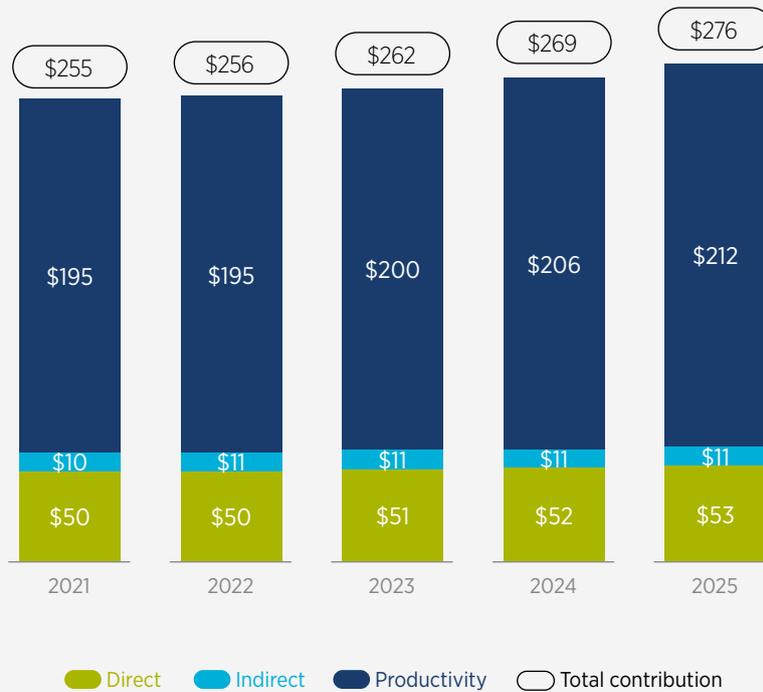
Source: GSMA Intelligence



**Figure 19**

**Driven mostly by productivity gains from the use of mobile technologies, the regional economic contribution of mobile will increase by around \$20 billion by 2025**

Billion



Source: GSMA Intelligence

## 3.2 Mobile enhancing digital and financial inclusion

### Bringing more people online

At the end of 2021, 307 million people in MENA were connected to the mobile internet – an increase of 14 million on 2020. However, 322 million people remain offline. Operators’ investments mean only 6% of the population are not covered by a mobile broadband network, but a far greater proportion (45%) do not use mobile internet services due to various non-infrastructure limitations. These include affordability, knowledge and digital skills, relevance, safety and security, and access to enablers (such as electricity and formal ID).

Affordability remains a barrier to mobile internet use for many in the region. Affordability of internet-enabled handsets and mobile data worsened in MENA (and many other regions) due to the impact of Covid-19 on employment and income levels. Operators have been supporting customers through

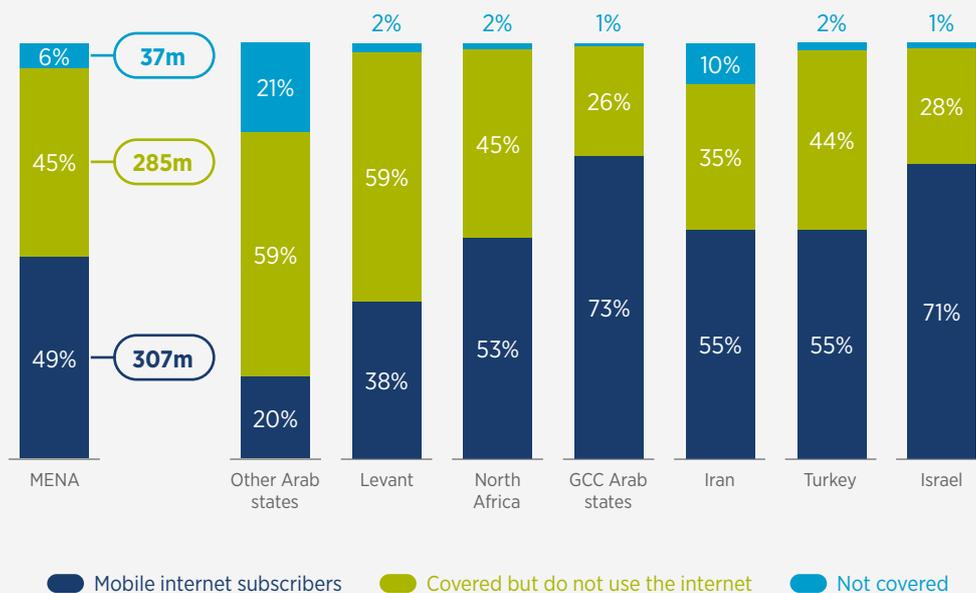
social tariffs and handset-financing models, such as payment instalment plans, subsidies, loans, leases and rentals.

Efforts also continue to reduce the number of people not covered by a mobile broadband network. For example, in November 2021, the Algerian telecoms regulator awarded extra spectrum in the 900 MHz band to the country’s three network operators to help improve services and widen coverage. Extending network coverage is a priority even in the region’s most advanced mobile markets. In Saudi Arabia, operators have recently launched a domestic roaming service in the Asir region, enabling users to connect to any available mobile network in the event of coverage gaps on their own provider’s network. There are plans to expand this service to further villages and settlements to improve digital inclusion.

Figure 20

### Nearly half of MENA’s population are covered by a mobile broadband network but do not use mobile internet

Percentage of population, 2021



Source: GSMA Intelligence

## Mobile money adoption continuing on its upward trajectory

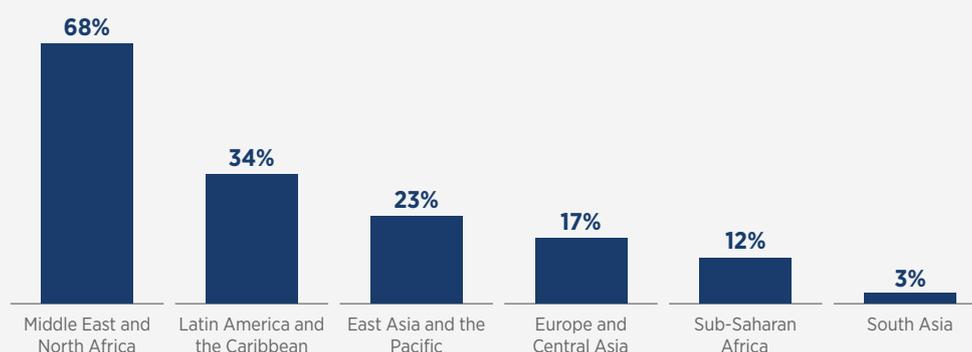
While Sub-Saharan Africa and East Asia & the Pacific account for most of the world's mobile money accounts, the mobile money ecosystem in MENA is growing rapidly, with adoption rising faster than in any other region. In 2021, there were 28 live mobile money services in the region, accounting for 59 million registered accounts (+7% year-on-year) and 5 million active accounts (+68% year-on-year). There was also strong growth in transaction volume and value, with 242 million mobile money transactions occurring in 2021, at a value of \$13.7 billion (+49% year-on-year).<sup>5</sup>

Several operators in MENA are supporting the shift to digital payments. Orange Money reached 25.1 million active customers in Africa and the Middle East at the end of 2021, supported by its services in Egypt, Jordan, Morocco and Tunisia. With populations growing rapidly in most low- and middle-income countries (LMICs), mobile money markets are far from saturated, with demand for mobile financial services likely to remain high among financially excluded groups.

Figure 21

### MENA recorded the highest growth in new active mobile money accounts

Growth rates for (30-day) active accounts, 2021



Source: GSMA

Despite progress in mobile money adoption, people in LMICs still encounter barriers at each step of the mobile money journey, including insufficient digital skills, difficulties reading and writing, preference for cash, affordability, lack of trust in the system, lack of proper ID and unreliable electricity grids. The extent to which certain barriers are considered important varies by country and gender. In Egypt, for example, 38% of female mobile owners report transaction fees as a reason why they do not have a mobile money account, compared to 28% of their male counterparts.<sup>6</sup>

With growing adoption, the value of transactions flowing between banks and mobile money platforms also continued to rise quickly in 2021, with the best

path to achieving mobile money interoperability an important topic of discussion. The GSMA supports industry-led mechanisms to improve the safety, security and efficiency of payment systems, including industry-led bilateral interoperability.<sup>7</sup> However, regulators in some countries are encouraging the industry to connect to centralised instant payment schemes or switches, such as Egypt's Instant Payment Network and Sudan's Mobile Payment System. When introducing instant payment schemes, regulators should consult with industry players to ensure that appropriate customer redress mechanisms and business continuity plans are agreed in the event of system failure.

5. State of the Industry Report on Mobile Money 2022, GSMA, 2022

6. State of the Industry Report on Mobile Money 2022, GSMA, 2022

7. The many paths to mobile money interoperability, GSMA, 2020

### 3.3 Mobile addressing social challenges

As the first sector to have committed fully to the UN Sustainable Development Goals (SDGs), the mobile industry continues to have substantial positive effects on lives and livelihoods.<sup>8</sup>

Figure 22

#### Mobile's impact on the SDGs in MENA, 2020



Source: GSMA

#### Boosting industry, innovation and infrastructure

SDG 9 aims to build reliable infrastructure, promote inclusive and sustainable industrialisation, and foster innovation. It also seeks universal and affordable internet access in less developed countries to support economic development and wellbeing.

With 412 million unique mobile subscribers and 93% mobile broadband population coverage<sup>9</sup> in MENA, mobile technology contributes to this goal as a provider of critical infrastructure and a platform that allows micro-, small and medium-sized enterprises (MSMEs) to serve bigger markets.

Meanwhile, improvements in network coverage and resilience along with higher smartphone use have better enabled the region to cope with disasters and conflicts, particularly in war-torn countries such as Syria and Yemen. Smartphones have been used by refugees to find safe passage and communicate with friends and family, while mobile applications are used to provide health and education solutions to those fleeing conflict.

Mobile's catalytic effect on adjacent sectors also helps explain the high score for SDG 9 in MENA. The connectivity provided by mobile operators enables verticals to take advantage of technological advancements in IoT, AI and big data analytics, which can in turn support digital transformation programmes. For example, in Turkey, 72% of enterprises are deploying IoT as part of a wider digital transformation agenda, compared to 63% globally.<sup>10</sup> Mobile operators are playing an increasingly prominent role in the rapidly expanding IoT ecosystem in MENA, where IoT applications are often focused on smart city solutions, as governments aim to improve the quality of urban living and environmental impact of cities. As of February 2022, seven mobile operators in five countries – Israel, Qatar, Saudi Arabia, Turkey and the UAE – had launched commercial low-power wide-area (NB-IoT and LTE-M) networks.<sup>11</sup>

8. 2021 Mobile Industry Impact Report: Sustainable Development Goals, GSMA, 2021

9. Mobile Internet Connectivity 2021 Middle East and North Africa Key Trends, GSMA, 2021

10. GSMA Intelligence Enterprise in Focus Survey 2020

11. <https://www.gsma.com/iot/mobile-iot-commercial-launches/>



## Supporting decent work and economic growth

SDG 8 promotes sustained, inclusive and sustainable economic growth, full and productive employment, and decent work for all. As a general-purpose technology, mobile improves the utilisation of labour and capital, and increases productivity. An ITU study shows that a 10% increase in mobile broadband penetration can cause a wider 1.8% increase in GDP in the Arab states,<sup>12</sup> while GSMA research finds that mobile technology has been responsible for driving 13% income per capita growth in MENA between 2000 and 2019.<sup>13</sup> However, the Covid-19 pandemic has profoundly disrupted the region's economies, triggering contractions at the macro level.

Those who have been hit hardest include workers in the informal sector, the self-employed, SMEs and daily wage earners.

Across MENA, more individuals are now using mobile technology to look and apply for jobs, which improves employment prospects and helps to formalise the economy. Mobile can also increase trade and competition by providing consumers with better access to information on products and making it easier to connect with firms. In 2020, 180 million consumers (42%) reported using mobile devices to search for information online.<sup>14</sup>

## The mobile industry's response to Covid-19

The Covid-19 pandemic has emphasised the importance of access to fast, reliable connectivity and a wide range of digital services for social and economic wellbeing. Following restrictions on movement and gatherings to curb the spread of the virus, operators responded quickly with measures to alleviate the impact, including expanding data allowances (e.g. Ogero, Lebanon), launching digital healthcare platforms (e.g. Zain, Kuwait) and providing medical supplies to quarantine hospitals (e.g. Orange, Egypt).

Policymakers have also risen to the challenge of keeping individuals and businesses connected during the pandemic, despite changes in data consumption patterns, particularly significant growth in the use of bandwidth-heavy services such as video calls and online learning and gaming. Jordan released spectrum on a short-term basis to mobile operators in capacity bands, sub-1 GHz and for fixed wireless access (FWA). It subsequently renewed this decision until the end of 2020 with no charge, to help the industry serve the needs of communities and public services.

More than two years on from the emergence of Covid-19, governments across MENA are now focused on leveraging digital services and technologies to drive economic recovery and promote sustainable development. In February 2022, Saudi Arabia announced more than \$6.4 billion in investments in future technologies and entrepreneurship to support its digital vision for 2030. Meanwhile, the UAE continues to provide further incentives for tech businesses and start-ups. Examples include the introduction of golden visas, green visas and freelancer/entrepreneur visas.

Continued network evolution and expansion will be essential to help stimulate economic growth, mobilise the workforce and enable new levels of industrial efficiency across the economy. To that end, STC has announced MENA HUB, a \$1 billion investment in regional connectivity and infrastructure that will support Saudi Arabia's rapidly expanding digital and cloud sector. A recent report from the World Bank finds that the full digitisation of markets in MENA could have "immense" socioeconomic benefits, including considerable uplifts in levels of GDP per capita, employment (particularly female participation in the workforce) and tourism.<sup>15</sup>

12. The Economic impact of broadband and digitization through the COVID-19 pandemic: Econometric modelling, ITU, 2021

13. Mobile technology and economic growth, GSMA Intelligence, 2020

14. <https://www.gsma.com/betterfuture/2021sdgimpactreport#mena>

15. The Upside of Digital for the Middle East and North Africa: How Digital Technology Adoption Can Accelerate Growth and Create Jobs, The World Bank, 2022

# 04

# Policy for a sustainable digital future





The mobile market in MENA has grown rapidly in recent years. It remains ripe with opportunity, as the region progresses with digital transformation and consumers increasingly adopt smartphones and internet-based platforms and services. However, Covid-19 has sent a shockwave through the region's economies, driven up unemployment, disrupted supply chains, increased inflation and exacerbated digital inequalities. Mobile will be central to governments' recovery efforts and laying the groundwork for sustainable growth and job prospects for the region's dynamic, tech-savvy and youthful population.

It is essential for policymakers in MENA to implement policies and best practices that enable affordable access to world-class mobile networks and services. A comprehensive policy approach is required to improve mobile internet adoption and usage.

Effective management of spectrum is the starting point. To maximise the opportunities that mobile connectivity can bring to society, a clear spectrum roadmap is key, with policy priorities determined by a country's local context and level of digital development.

As more people in MENA become connected, the need to safeguard data privacy is growing in importance, especially given the huge cost to individuals and firms of data breaches. At the same time, it is important to remember that not everyone is currently able to enjoy and interact with the digital economy, with vulnerable groups particularly affected. It is therefore imperative that regulators and operators retain a sharp focus on narrowing the digital divide. There is a need to promote digital skills and education across all parts of society and to expand the availability of local content and services to ensure no one is left behind.

## 4.1 Enabling the development of 5G across MENA

To help attract investment and improve mobile network capacity and coverage, governments should implement stable and predictable spectrum policies, outlined in a clearly defined roadmap. This means removing major spectrum roadblocks – namely,

the lack of frequencies for 5G. Assigning spectrum under the right conditions is also vital to ensure its most efficient use, with licence duration, pricing and obligations key aspects that need to be aligned with the reality on the ground.

### A well designed spectrum roadmap

In MENA, the GCC Arab states have become 5G pioneers, with governments and regulators recognising the need to award spectrum on investment-friendly terms. This has enabled mobile operators to deploy some of the world's first and fastest 5G networks. However, more 5G spectrum will be needed in the coming years, including 2 GHz of mid-band spectrum until 2030.<sup>16</sup> Consequently, governments and regulators in GCC countries should outline the steps they intend to take to enable the most efficient and effective availability of spectrum.

5G is projected to spread to the rest of the MENA region over the course of the decade; it is therefore important that policymakers start planning now. Countries including Algeria, Egypt, Jordan, Lebanon, Morocco, Tunisia and Turkey have started to identify suitable 5G spectrum to support commercial launches. Ensuring the required spectrum resources are available under the right conditions when the time is right to launch will help to lower mobile broadband costs, increase coverage and boost connectivity.

16. [Vision 2030 - Insights for Mid-band Spectrum Needs](#), GSMA, 2021

Successful licensing of mobile spectrum starts with a spectrum roadmap<sup>17</sup> which provides a schedule for forthcoming releases to meet a government's broadband plan and other spectrum demands. In particular, a roadmap is an important way of ensuring sufficient spectrum will be cleared and made available to meet the requirements of changing technology and user demand. Information on future spectrum releases is critical for businesses to prepare investment plans, for operators to secure financing for network upgrades and for the rollout of new technologies.

While timings may differ, it remains important for policymakers to consult with relevant stakeholders and make decisions that promote effective 5G rollouts, with a view to prioritising capacity, coverage and affordability. The basic steps for a successful spectrum roadmap are as follows:

- **Identification of spectrum.** The key frequency bands to prioritise now for 5G in the region are in the 3.5 GHz range, as well as 700 MHz and mmWave. However, it may be necessary to consider alternative bands based on what has already been awarded for mobile use. Other mid-bands such as 4.8 GHz and 6 GHz will soon be needed.
- **Spectrum clearance.** The clearance approach used will likely vary depending on factors such as density of use, ease of moving incumbents to alternative frequency bands/technologies, and any impact on services and users.
- **Technology definition and restrictions.** This will inform the technical licence obligations and the amount and geographic availability of spectrum.
- **Spectrum valuation.** This refers to auction reserves or spectrum charges. When considering the level of investment necessary for new 5G networks, it is important these are not set at levels that impact network rollout and quality and drive up the cost of services.
- **Award design.** There are three main approaches to awarding spectrum: auctions, beauty contests and direct awards.<sup>18</sup> The approach adopted and associated licence obligations will need to take into account policy objectives, available spectrum and market specifics (for example, the number of operators, current spectrum holdings and previous approaches that were successful).
- **Award implementation.** The final step is the actual award. This should include documentation with all the necessary details of the award process, spectrum on offer, licence obligations and other essential information for potential licensees.

17. [Roadmaps for awarding 5G spectrum in the MENA region](#), GSMA, 2022

18. [Auction Best Practice](#), GSMA, 2021



## Other foundational elements of a fit-for-purpose spectrum policy

### A significant amount of new harmonised mobile spectrum

Harmonisation has always played a key role in the success of mobile networks; the same is true for 5G. Ensuring the timely availability of prime bands – including those requiring defragmentation – should be prioritised. Regulators should aim in the short term to make 100 MHz of contiguous spectrum available per operator in prime 5G mid-bands (e.g. 3.5 GHz) and around 1 GHz per operator in mmWave bands, which will be central to providing the superfast, ultra-low latency performance that supports the most innovative 5G services and delivers long-lasting socioeconomic benefits.

Lower bands (e.g. 700 MHz) are also key to enabling 5G to reach more people, due to their greater coverage capabilities.

More spectrum beyond 100 MHz will be required as 5G demand increases. Reusing 4G bands and extending the 3.5 GHz range are important steps, but adding new bands (such as the 6 GHz band) is equally important. Part of the 6 GHz band is set for discussion at WRC-23. Discussions regarding its future will need to focus on maximising its value and balancing different uses. Momentum is also building around mmWave, which has been shown to be a 5G solution across multiple deployment capacity scenarios.<sup>19</sup>

### The certainty of long licences and presumption of licence renewals

The longer the duration of a licence, the greater the certainty provided to operators and investors to commit to large, long-term network projects. Putting a presumption of licence renewal in place also helps avoid investments being delayed due to doubts over future rights. The use of indefinite licence terms beyond the minimum period can further enhance predictability. A decision not to automatically renew a licence should only be made where there is a reasonable prospect that the benefits from reassigning spectrum would exceed the costs. For those licences approaching the end of their current terms, timely renewal decisions (ideally

three to five years in advance of licence expiry) would help facilitate ongoing network investments and enable planning that ensures service continuity for end users. Any subsequent fees associated with licencing renewals should not prevent reasonable returns being earned on risky investments, as this discourages technological innovation.

### Fair spectrum prices

Recent studies have demonstrated that higher spectrum prices can slow the rollout of next-generation mobile networks and reduce the network quality experienced by consumers. They can also be associated with higher retail prices in developing countries. Best practice in this area includes the following:

- Assign spectrum to users who will be able to extract the most value from this scarce and finite resource for the benefit of society as a whole.
- Set reserve prices conservatively to allow the market to determine a fair price and to reduce the risk of leaving spectrum unassigned.
- Limit ongoing charges to recovering the cost of spectrum management, following auctions.

To accelerate 5G network investment, short-term monetary gains from spectrum awards should no longer be a measure of success. Policymakers may want to consider shifts in award designs to reflect wider economic goals, such as assigning spectrum with no upfront fees in return for coverage (as has been the case in Qatar and UAE).<sup>20</sup>

### Technology- and service-neutral spectrum licences

A technology-neutral spectrum licensing approach enables efficient use by mobile operators, as the spectrum is not tied to existing technologies and services. An important development has been the ability to ‘gracefully refarm’ bands so that they are used for several technologies simultaneously, including 4G and 5G. This facilitates the introduction of newer technologies in line with increasing mobile broadband demand while also supporting legacy users. For regulators, this means fewer concerns that refarming will leave legacy users unserved.

19. *The economics of mmWave 5G*, GSMA Intelligence, 2021

20. *Spectrum Navigator, Q3 2021: new insights and trends to watch*, GSMA Intelligence, 2021

## 4.2 Facilitating the safe movement of data, while protecting consumers

When people use the internet responsibly and are confident that the digital environment is safe, private and trustworthy, they are more likely to realise the full benefits of a digitally enabled life. Large-scale data breaches have raised the profile of data protection and privacy issues: in MENA, the average financial impact of a breach is \$6.93 million – well above the global figure of \$4.24 million.<sup>21</sup>

Governments must therefore balance the legal and regulatory requirements for consumer protection with self-regulation and accountability for business, while retaining enough flexibility to allow companies to innovate and compete on a level playing field in the digital ecosystem.

An increasing number of jurisdictions in the region have enacted privacy and data protection laws, with the EU General Data Protection Regulation (GDPR) – and its precursor the EU 1995 Data Protection Directive – influential in the development of analogous legal frameworks. For instance, Bahrain, Egypt, Lebanon, Oman, Qatar and the UAE (including the Free Zones Dubai International Financial Centre and the Abu Dhabi Global Market) have introduced specialist laws on data protection, most of which have been guided by GDPR principles.

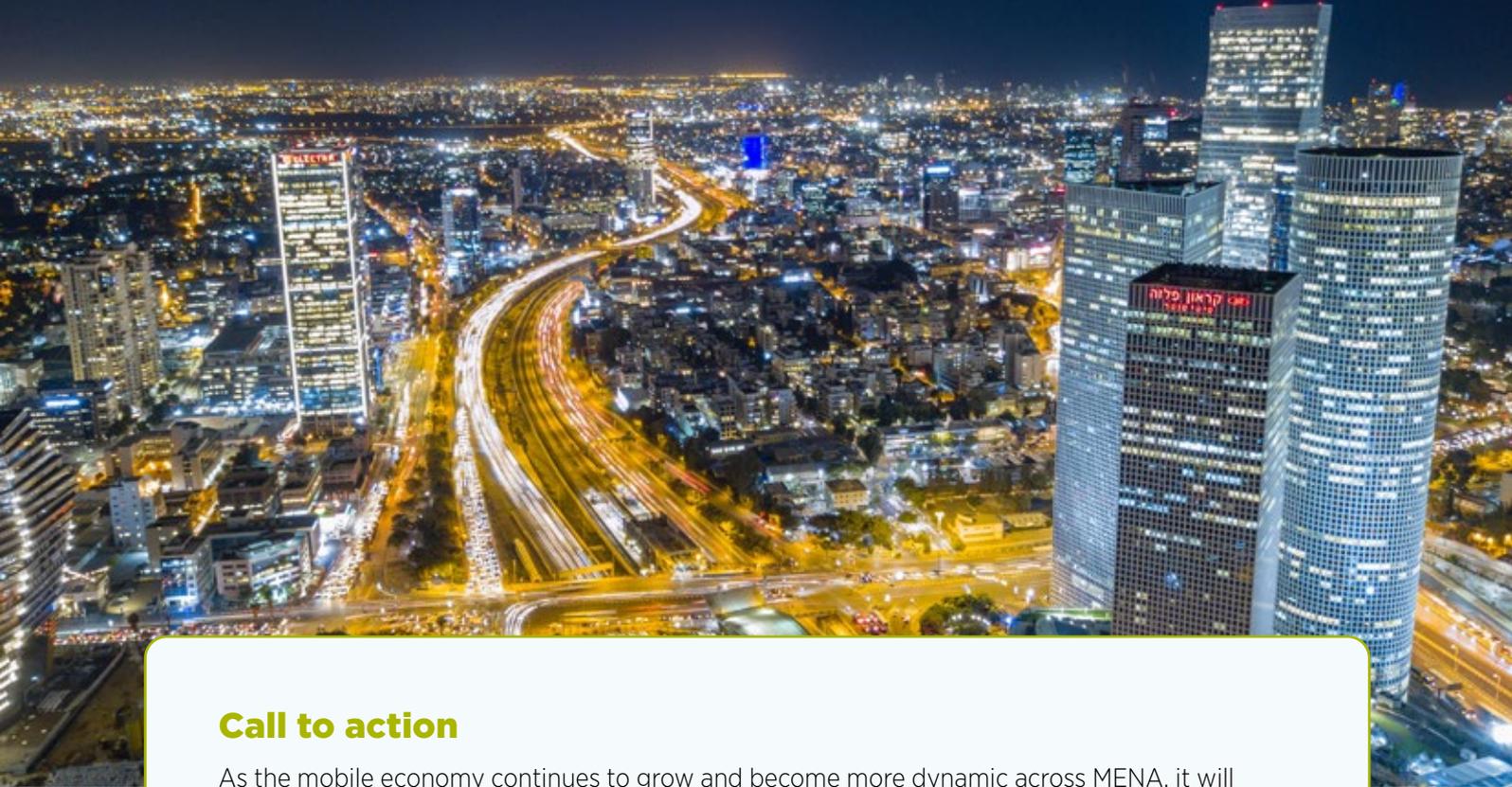
Nevertheless, certain MENA jurisdictions remain in the process of updating their data protection frameworks, while in others the protection of privacy and safeguarding of personal data continues

to be provided for under general provisions of law – sometimes criminal law, which can see sanctions imposed for breaches. Further, with telecoms networks often seen as critical national infrastructure, legal imbalances between operators and other players still exist, with many operators having restrictions and additional obligations in their national telecoms licences.

A common feature of data protection regimes in the region is the restriction of cross-border flows of personal data, whether for individual privacy, economic or national security reasons. Such data nationalisation/localisation policies remain significant barriers to countries in MENA realising the full benefits of the digital economy and can hamper government efforts to effect nationwide digital transformation.

Mechanisms exist whereby personal data can be transferred across borders, and organisations are required to take additional steps, such as putting safeguards in place to comply with the relevant laws. The Gulf Cooperation Council (GCC) has a framework for international data transfers between many MENA countries, but not all jurisdictions are approved as adequate. In those cases, additional control mechanisms are required. The Digital Cooperation Organization (DCO) was also established to enhance cross-border data flows between members within and outside MENA.

21. Cost of a Data Breach Report 2021, IBM Security/Ponemon Institute, 2022



## Call to action

As the mobile economy continues to grow and become more dynamic across MENA, it will become more important for governments, regulators and the wider digital ecosystem to work together to promote transparency and choice, establish regional trust and implement 'smart privacy' laws that respect and defend privacy rights while enabling innovation. Efforts should focus on the following:

- Develop and implement shared data privacy and governance principles across MENA. With the protection and transfer of personal data currently regulated by several international, regional and national instruments, harmonisation across the region (and ultimately on a global basis) will be key to unlocking benefits not only for governments but for end users too.
- Work collaboratively to ensure security, safety and data privacy to protect and empower the individual, and build a foundation of trust between governments. Implementing laws based on similar underlying privacy principles can streamline compliance obligations for companies, saving time and resources, while also preventing misuse of personal data and spurring responsible innovation. In contrast, over-restrictive laws can stifle innovation, while sector-specific laws can skew markets.
- Set policies allowing movement of data between countries without unjustified restrictions or local data storage requirements. Permitting the consolidation and movement of data across borders could enable organisations to embrace digital strategies without heavy compliance costs, ultimately benefitting society. For operators, such action could deliver significant operational costs savings, as well as better services, support and experiences for customers.

## 4.3 Connecting the unconnected

In MENA, mobile continues to be essential to providing access to connectivity and facilitating the creation, distribution and use of digital services. As technology becomes more central to everyday life, the urgency to close the digital divide has never been more pressing. Although the coverage gap has been significantly reduced thanks to operator investments, millions of people remain offline. Those who are unconnected are disproportionately poorer, less educated, rural, female and/or persons with disabilities. Unconnected individuals are less able to mitigate the economic and social disruptions to their lives that the pandemic has caused.

Addressing the main barriers to mobile internet adoption and use remains critical. Mobile devices and services offer life-changing benefits to persons with disabilities, such as enabling access to basic services and independent living. Despite this potential, there are disparities between persons with and without disabilities at each stage of the mobile internet user journey.<sup>22</sup> Notably, GSMA research found that persons with disabilities in Algeria are 76% less likely to own a smartphone than persons without disabilities and are 70% less likely to use the mobile internet.<sup>23</sup>

Closing mobile disability gaps will require collaborative action by stakeholders to understand how to reach and serve persons with disabilities with affordable, inclusive products and services that meet their diverse needs, while raising awareness of the benefits of the mobile internet and building the digital skills to engage with it.

### Addressing the main barriers to mobile internet adoption and use remains critical.

There also remain substantial differences between men and women in access to mobile phones and internet services. Mobile phones are valued by women as life-enhancing tools that make them feel more autonomous, connected and safe, providing them with access to important information that assists them with their daily life. In MENA, there is a 9% gender gap in mobile ownership (two percentage points higher than the average for LMICs) and a 17% gender gap in mobile internet use (again, two percentage points above the average).<sup>24</sup>

For women to be equal citizens in an increasingly digitised, post-Covid world, significant attention is needed from all stakeholders to understand the gender gap and ensure that its closure is championed at the most senior levels within organisations and policymakers. Concerted action must then be developed to implement targeted interventions that explicitly address women's needs, circumstances and challenges, enabling them to reap the full benefits of connectivity.

22. Namely, mobile ownership, awareness of the mobile internet, mobile internet adoption, and regular mobile internet use.

23. *The Mobile Disability Gap Report 2021*, GSMA, 2021

24. *The Mobile Gender Gap Report 2021*, GSMA, 2021

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