5G Business Potential beyond mobile broadband

Middle East and Africa 5G Outlook

60 million mobile 5G subscriptions is the Middle East and Africa by end of 2024

Globally, 5G is on a roll. During the second quarter of 2019 several markets switched on 5G following the introduction of new 5G-compatible smartphones. As 5G devices increasingly become available and more service providers launch 5G, over 10 million 5G subscriptions are projected worldwide by the end of 2019.

Looking ahead, in the first five years, 5G subscription uptake is expected to be significantly faster than that of LTE, following its launch back in 2009.

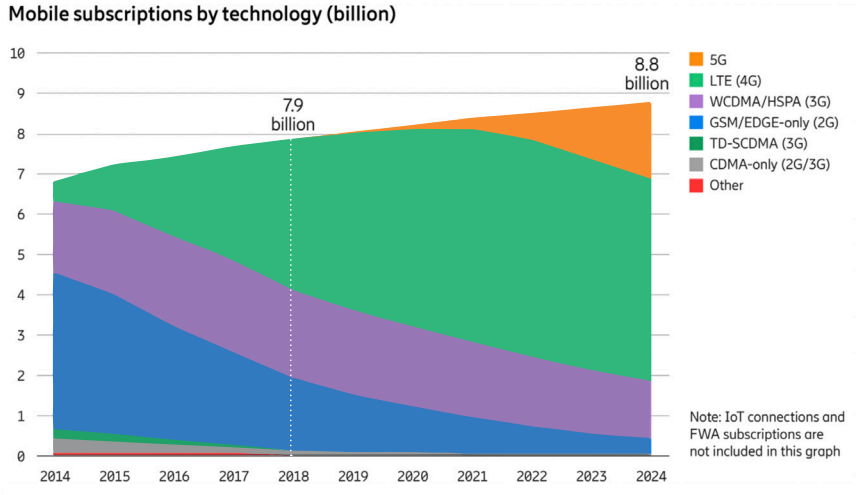

Figure 1. Mobile subscription by technology -Ericsson mobility report

In Middle East and Africa, the operators in the advanced markets of the Gulf were among the first in the world to launch 5G, with commercial 5G services already live in five Gulf countries by the end of Q2 2019. There will be 60 million mobile 5G subscriptions in the Middle East and Africa by the end of 2024 according to Ericsson latest mobility report forecasts, though that will represent just 3% of all mobile subscriptions in the region.

Moreover, we are working with partners in a multitude of industries, as well as academia partners within research and development projects.

But the significance of 5G goes far beyond consumer subscription numbers. 5G will improve service providers' efficiency by reducing the cost per gigabyte (GB) production through the networks.

5G will also have new capabilities that will allow operators to develop new use cases, applications, services and revenue streams, towards consumer, enterprise and different industries and markets; those new 5G applications and services are expected to have a profound impact on a range of industry collaborations.

These changes won't happen at once, but they are coming soon. 5G technology is being developed in stages, and the use cases for 5G will also evolve over time. The specifications for 5G radio networks were set out by standards body the 3GPP in its Release 15, which was finalized in June 2018. The standards for 5G core networks will be defined in the 3GPP's next set of 5G standards, Release 16, which is due to be finalized towards the end of 2019.

The 5G use case evolution

MEA service providers can benefit from an addressable market of up to USD 46 billion by 2030

Industry 4.0 merges operational information and communication technologies with cyber-physical systems, enabled by advanced wireless communication and Industrial IoT services. This digital and wireless transformation will be powered by 5G networks, which have the potential to drive economic growth in the region like no previous generation of mobile technology.

For example, the security, high speeds, low latency and massive number of connections in 5G networks will support industries and agricultural transformation in many countries in the Middle East and Africa. This will enable new revenue streams from IoT and industrial applications – and accelerate digitalization.

Our global study, 5G The 5G business compass – How to realize 5G-powered company business potential (in partnership with Arthur D. Little), found that service providers have the ability to address an additional revenue opportunity, by targeting the digital transformation of other industries, such as automotive and manufacturing, using 5G-IoT technology.

The study was further developed reflecting the Middle East and Africa industry landscape; presenting 10 industries that will drive growth in addressable revenues from digitalization. These include agriculture, manufacturing, energy and utilities, public safety, healthcare, public transport, media and entertainment, automotive, financial services and retail (Figure 2). This growth will offer service providers a revenue opportunity of an additional 35% in addition to the telecom service revenues forecast.

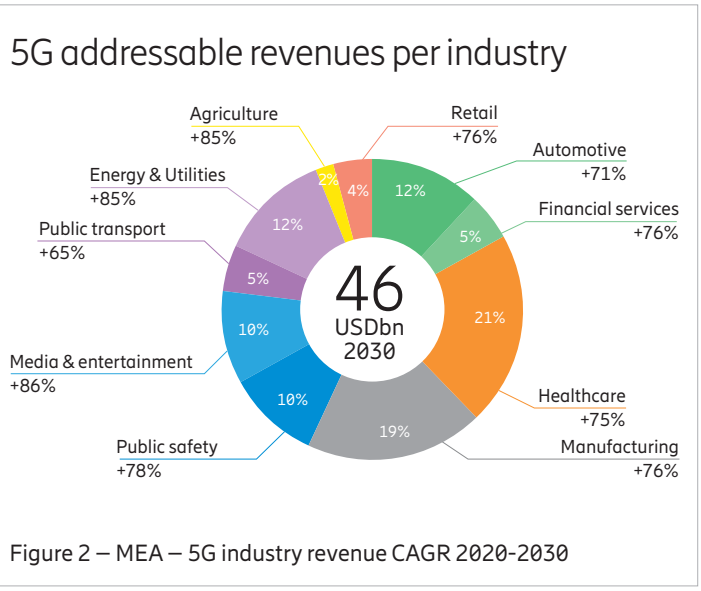

Figure 2 – MEA – 5G industry revenue CAGR 2020-2030

To capture new market opportunities, operators must be highly competitive within industry digitalization, where the shift from connectivity provider, to service enabler and now service creator is a stark one. By 2030, estimated potential revenue increase is predicted to range from USD 15.18 billion for a network developer to USD 45.91 billion should operators in the Middle east and Africa adapt their business model to become a service enabler and creator (Figure 2).

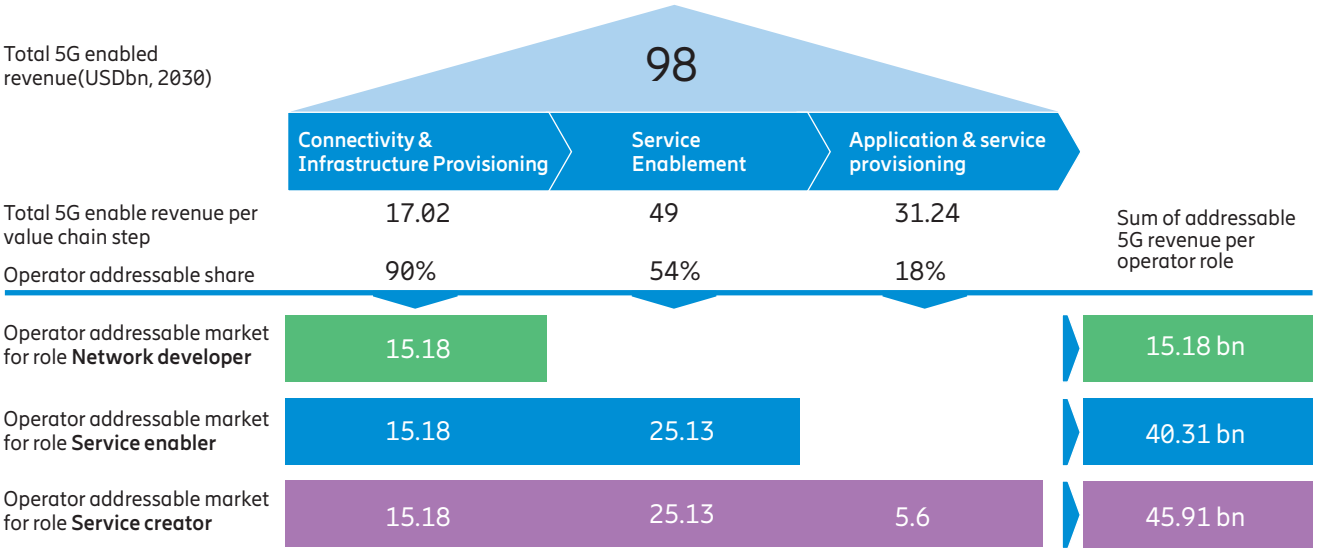

Figure 3 MEA Operator Potential per industry role by 2030

5G for industries in Middle East and Africa

Methodology

Ericsson, in partnership with Ovum, chose to define the Middle East and Africa operator 5G market focus and opportunities starting from a use case perspective. In order to maximize market opportunities for investments, the use cases have been grouped into industry verticals with primary and secondary focus.

The chosen method is, an outside-in analysis of the key verticals and industries across key countries in the region, using qualitative assessment of 5G and digitization business potential on nine different industries supported by interviews.

The study also covers the market operators' technical capabilities, while also considering their go-to-market and business model challenges.

In the short term (1-3 years), 5G usage will evolve the consumer mobile broadband (eMBB) experience and related video applications (UHD, VR, AR); it will complement the existing fixed wireless access (FWA) for home and small office broadband access, while we can witness few simple robotics, remote control, and industrial management solutions.

The primary focus for 5G services in the Middle East and Africa should be on industry Oil and gas, transport and automotive, public safety and Manufacturing

5G, in mid to long term (3+ years), will further develop together with industry 4.0 adaptation, to enable advanced automation and robotics, remote operation application, and autonomous vehicles.

The primary focus for 5G services in the Middle East and Africa should be on industry verticals that are prominent in the region, offer clear opportunities for 5G use cases; and in which service providers have an established expertise.

— Oil and gas (Mining)
— Transport and automotive
— Public Safety and Critical infrastructure
— Manufacturing.

Secondary focus: Secondary verticals are those that offer some opportunities for 5G services, but perhaps on a smaller scale:

— Media and Entertainments
— Healthcare
— Retail

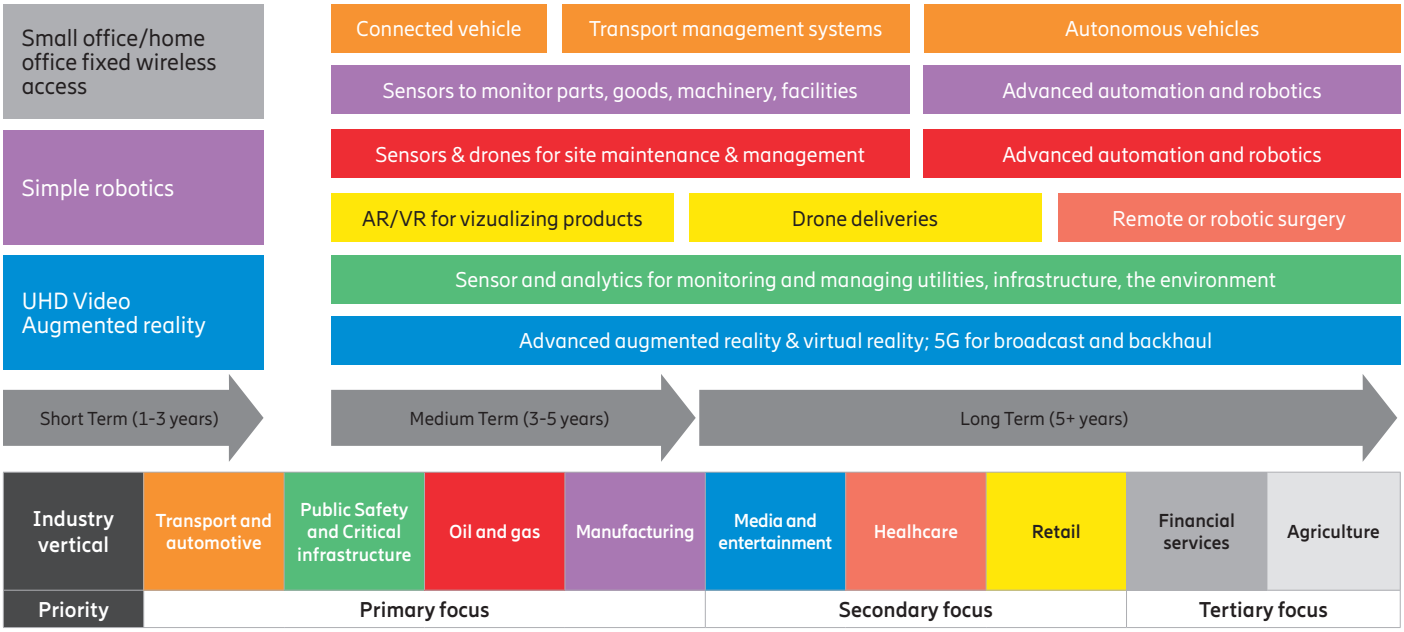

Figure 4 -MEA 5G Industry and use case roadmap -Ovum

United Arab Emirates 5G market prospects

The non-oil sector accounted for more than 70% of the UAE's GDP, with the biggest non-oil sectors being: Retail and wholesale (11.7% of GDP in 2017); financial services (8.6%); construction (8.4%); and manufacturing (8.3%). In manufacturing, the UAE is prominent in metals and building materials, including aluminum, ceramics, and cement. The UAE also manufactures petrochemicals, pharmaceuticals, food and drink, consumer goods, and there is increasing activity in high-tech manufacturing sectors such as aerospace. The UAE's government is keen to encourage growth in local manufacturing – as well as the service sector – as part of its economic diversification plans.*

The UAE is spending heavily on infrastructure, with USD 7 billion allocated for construction and other preparations for the hosting of EXPO 2020 in Dubai, according to the World Bank. The UAE has also set up an Office for Future Food Security. Several vertical farms, where crops are grown in controlled indoor environments, have recently been set up in the UAE and more are planned.

Additionally, the UAE has some technology-focused development plans, including national strategies for the Fourth Industrial Revolution as well as for artificial intelligence. In 2017, the UAE appointed its first minister for artificial intelligence.

The Emirate of Dubai has further plans and projects, including the Smart Dubai smart-city initiative, which could offer a platform for 5G applications and services including autonomous vehicles, intelligent traffic systems, and the monitoring and management of utilities as well as environmental metrics.

As part of the Dubai Autonomous Transportation Strategy launched in 2016, Dubai has set itself a target stating autonomous vehicles should account for 25% of journeys within the emirate by 2030. In October 2018, the RTA said it would begin trials of self-driving taxis.

In October 2018, Masdar City, a purpose-built sustainable development in Abu Dhabi, launched a self-driving shuttle bus which Masdar said will represent the first operational use of autonomous vehicle technology in the Middle East and North Africa.

UAE's two operators, Etisalat and Du, have outlined their plans for the early deployment of 5G.

In July 2018, Etisalat said it had agreed with the organizers of the EXPO 2020 event to deploy a 5G network at the EXPO 2020 site in Dubai. The EXPO 2020 organizers said that 5G would allow them to provide advanced digital services to site visitors, as well as enabling use cases.

* https://www.government.ae/en/about-the-uae/economy

United Arab Emirates lead use cases are transport and automotive as well as Media and entertainment

The UAE first 5G focus use case cluster is **Transport and automotive**, with Connected Vehicles as the market key growth accelerating at **143% CAGR*** by 2024.

There are varied and substantial opportunities to use 5G and allied technologies to improve transport systems. Transport represents the most prominent use case for 5G in UAE. In part, that is because of official backing for futuristic transport systems – for example, Dubai has set a target that autonomous vehicles should account for 25% of journeys within the Emirate by 2030.

Jebel Ali port is said to be one of the largest sea port in the Middle East. Dubai International Airport is one of the busiest in the world for international air traffic.

Transport and automotive use cases:

- Management and automation of transport hubs (e.g. airports, and ports)
- Intelligent supply chain management – asset tracking; truck platooning
- Connected vehicle (diagnostic, information and entertainment systems)
- Traffic management systems, and Autonomous vehicles

The second is **Media and entertainment**, with Enahnced Video Services as the market key growth accelerating at **138% CAGR*** by 2024.

The major public events that are coming up in UAE notably the EXPO 2020 exhibition in Dubai, will offer opportunities to develop 5G-based media and entertainment applications in the region. These applications are expected to include the streaming of high-definition video, and the use of AR to deliver information and entertainment to visitors.

Media and entertainment use cases:

- New media formats and immersive applications at stadia and public events; use of AR/VR (EXPO 2020)
- New content formats e.g. using AR and VR.
- Delivery of high-speed video

* Based on Ericsson & ADL global study (for Service creator role)

Kingdom of Saudi Arabia 5G market prospects

Mining and quarrying – which is made up primarily of oil and gas – accounted for 40.1% of Saudi Arabia's GDP in 2018, according to National Accounts figures published by the country's General Authority for Statistics. Petroleum refining accounted for a further 3.7% of GDP. Other big sectors of the Saudi economy are: Government services (13.4% of GDP in 2Q18); financial, business and real-estate services (9.9%); non-oil manufacturing (8.7%); retail, wholesale, and hospitality (8.4%); transport and communication (5.8%).*

A key objective of Saudi Arabia's Vision 2030 National Development Plan is to diversify the country's economy away from oil and gas. Although Saudi Arabia's economy will continue to be driven by oil through to 2020, the country will see gains in the non-oil sector, particularly in manufacturing and services, according to the World Bank. In January 2019, the Saudi government unveiled a new industrial strategy, the National Industry Development and Logistics Program, that is intended to raise investment and growth, with a focus on four sectors: Industry, mining, energy, and logistics.

Saudi Arabia is planning the largest commercial 5G roll-out in the Middle East and Africa; To pave the way towards the introduction of 5G, in early 2018 the Saudi authorities set up a national 5G task force, chaired by the deputy governor of the regulatory authority, the CITC. The task force will bring together 5G stakeholders including government, operators, vendors, and potential users. The task force will work on spectrum, technical development, and use cases in industry verticals. With additional spectrum in the 3.5GHz band would be made available to Saudi operators, which combined with earlier spectrum allocations and 5G network deployments already underway would enable the most extensive 5G coverage in the MENA region.

* https://vision2030.gov.sa/en

Kingdom of Saudi Arabia lead 5G use cases are Oil and gas as well as public safety and critical infrastructure

KSA first use case industry cluster is **Oil and gas with Real-time Automation** as the market key growth accelerating at **135% CAGR*** by 2024.

The oil and gas industry are one of the biggest sector in the Gulf economies, and despite efforts to diversify those economies, oil and gas will continue to be prominent.

There will be substantial opportunities to use 5G in the oil and gas sector Saudi Arabia's oil companies, together with global oil industry leaders are planning to use 5G for applications including sensor systems that will monitor safety and security at its sites. Many already has sensor systems, but it says that 5G's higher speeds and lower latency, combined with the network slicing that is possible with 5G, will allow for more complex sensor systems that will deliver higher levels of safety and reliability.

5G could also enable or extend the use of autonomous and remote-controlled machinery and vehicles on oil and gas sites, to improve safety and operational efficiency

Oil and gas use cases:

— Remote monitoring at upstream oil and gas sites.
— Automation and robotics in petrochemicals.

The second is **Public Safety and Critical infrastructure** with **Smart surveillance** as the market key growth accelerating at **138% CAGR*** by 2024

Public infrastructure and critical services are becoming increasingly connected, through the deployment of applications for monitoring and managing environmental conditions, safety, security, transport, and utilities such as electricity and water.

Major public events in the region – with the challenge to co-ordinate millions of people visiting few sites at specific times over a span of a week, will create further opportunities and requirements for connecting public infrastructure and critical services.

5G will allow for wider and more sophisticated connectivity and management of public and critical infrastructure. It will be possible to deploy sensors on a massive scale to monitor and manage energy use, environmental conditions, garbage collection, street lighting, and traffic flow. The high speed of 5G networks will allow for better use of video for public safety purposes;

Public safety and critical infrastructure use cases:

— Smart metering and management of utilities and environment;
— Applications for Smart city and new city projects;
— Public surveillance for security and safety;
— Monitoring and managing built infrastructure.

* Based on Ericsson & ADL global study (for Service creator role)

Qatar 5G market prospects

In Qatar, mining and quarrying – primarily oil and gas – accounted for 32.3% of GDP. The biggest other sectors of the economy are construction (15% of GDP in 2017); manufacturing (8.7%), retail and wholesale (7.8%), and public administration (7.3%).*

Qatar's National Vision 2030 development plan has the stated aim of transforming Qatar into an advanced country, which is capable of sustained development and of providing a high standard of living for its people, by 2030. The plan is based on four development pillars: Human; social; economic; and environmental.

Qatar's economic development objectives include moving to a knowledge-based economy, and the deployment in Qatar of new technologies including 5G are likely to help the country to achieve this aim. Qatar is also developing a world-class healthcare system, in which advanced technologies could play an important role.

Qatar has a public investment program for the 2014-24 period that is valued at USD 130 billion, much of it linked to the hosting of major upcoming sporting events, according to the World Bank. Qatar is building eight stadia for the World Cup, including the flagship Lusail Stadium, which will host the final match of the tournament.

Operators in Qatar began their 5G preparations and deployments early.

In January 2019, Qatar's telecoms regulator, the Communications Regulatory Authority (CRA), said that operators should roll out 5G networks by 2020 in all densely-populated areas, along main roads, and venues.

Major events will offer operators and others in the industry a unique opportunity to develop and demonstrate 5G applications, as it is likely to be one of the first major global events at which many visitors will have a 5G smartphone or other 5G device.

* https://www.mdps.gov.qa/en/knowledge/Doc/QEO/Qatar-Economic-Outlook-2018-2020-En.pdf

Qatar lead 5G use cases are Media and entertainment as well as public safety and critical infrastructure

First use case industry cluster in Qatar is **Media and entertainment,** with **Enhanced Video Services** as the market key growth accelerating at **138% CAGR*** by 2024

The major public events in Qatar will create opportunities to use 5G for a range of media and entertainment purposes.

Media and entertainment use cases:

— New media formats and immersive applications at stadia and public events; use of AR/VR (FIFA2022)
— New content formats e.g. using AR and VR
— Delivery of high-speed video

Second is **Public Safety and Critical infrastructure** with **Smart surveillance** as the market key growth accelerating at **141% CAGR*** by 2024.

Major public events in the region – will create further opportunities and requirements for connecting public infrastructure and critical services.

5G will allow for wider and more sophisticated connectivity and management of public and critical infrastructure.

Public safety and critical infrastructure use cases:

— Applications for Smart city and new city projects.
— Monitoring and managing built infrastructure and public spaces.
— Crowd management systems for security and safety.

* Based on Ericsson & ADL global study 2018 (for Service creator role)

Conclusion and recommendations

A call to action to build your focused industries momentum

The 5G ecosystem will be complex, and service providers will need to collaborate with other interested parties and industries more widely and deeply than what was the case with other technology upgrades. In the Middle East and Africa as elsewhere, developing 5G use cases and applications for industries will require a higher level of cooperation between service providers, vendors, businesses and public sector organizations, regulators and Academia and other authorities, than what has been the case for earlier generations of telecoms technology.

Middle East service providers should decide on a set of verticals and use cases that they should focus on for 5G. Middle East service providers should focus their efforts on the verticals and use cases that offer the biggest and/or most accessible opportunities for developing and commercializing 5G services in the region.

Prepare for the new business models that will come with 5G. With 5G, it will become possible to customize connectivity in new ways, and package and price connectivity based on – for example – speed, specific latency or QoS commitments. Service providers should develop customized service propositions (as a service model) for enterprises and the public sector, as well as for specific industries and verticals. There could also be opportunities for service providers to build and run private 5G networks for enterprises and other organizations.

Service providers must upgrade their networks to support the 5G services that they aim to deliver. Service providers must continue with their network upgrades so that they are ready to deliver 5G-based services. Only the operator with superior networks will be able to use the more advanced features of 5G and develop services and revenues based on those capabilities.

Further reading:

- The 5G for Business compass
  https://www.ericsson.com/en/networks/trending/insights-and-reports
- Ericsson 5G-IoT business potential report
  https://www.ericsson.com/en/networks/trending/insights-and-reports/5g-challenges-the-guide-to-capturing-5g-iot-business-potential
- Ericsson 5G Consumer business report
  https://www.ericsson.com/en/networks/trending/hot-topics/create-your-5g-business-now/5g-consumer-business
- Ericsson 5G Deployment considerations report
  https://www.ericsson.com/en/networks/trending/insights-and-reports/5g-deployment-considerations
- Ericsson Mobility Report
  https://www.ericsson.com/en/mobility-report

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