



The Mobile Economy

Asia Pacific

2019



The GSMA represents the interests of mobile operators worldwide, uniting more than 750 operators with nearly 400 companies in the broader mobile ecosystem, including handset and device makers, software companies, equipment providers and internet companies, as well as organisations in adjacent industry sectors. The GSMA also produces the industry-leading MWC events held annually in Barcelona, Los Angeles and Shanghai, as well as the Mobile 360 Series of regional conferences.

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Executive Summary



5G is here, but 4G still has room for growth

5G is finally a reality. Following a commercial launch in South Korea earlier in 2019, five more countries will have launched 5G networks by the end of the year. A further 10 are expected to launch in 2020. To support this generational shift and drive consumer engagement in the digital era, Asian mobile operators will invest more than \$570 billion between 2018 and 2025. A significant proportion of this (\$370 billion) will be spent on 5G deployments.

Some countries, particularly the more developed markets seeking to be global leaders in 5G (South Korea, Japan, Singapore and Australia) will see relatively rapid 5G growth: across developed Asia, 5G will account for half of total mobile connections by 2025.

Across the rest of the region, the 5G opportunity is more long term, largely because there is still a lot of headroom for 4G (which will remain the dominant mobile technology across the region). It is unclear whether people in many of the region's emerging markets will potentially pay more for a 5G service, particularly when 4G will meet their needs in the majority of cases. The focus for these markets is to push advancements in areas such as digital commerce and payments, identity and cross-ecosystem collaboration to help create the digital societies of the future.



370 million new mobile subscribers to be added by 2025

At the end of 2018, 2.8 billion people in Asia Pacific subscribed to mobile services, accounting for 67% of the population. The region has been the biggest contributor to global subscriber growth in recent years, with 466 million new subscribers added since 2014 (representing an average annual growth rate of 4.7% – the second highest behind Sub-Saharan Africa). More than half the world's mobile subscribers live in Asia Pacific – mostly in China and India.

However, growth is slowing, and the region's annual average subscriber growth rate out to 2025 will fall behind MENA and Latin America. This is due to three key factors:

- Asia Pacific is home to some of the most penetrated markets in the world, with minimal opportunity for further subscriber growth

- the region also includes markets with very low penetration levels, where socioeconomic issues such as rapid population growth, poverty, inequality, unplanned urbanisation and natural disasters create barriers to mobile adoption
- some markets have seen their previously strong growth stagnate due to the challenges of connecting those still unconnected, particularly poorer and rural communities.

Nevertheless, Asia Pacific will account for more than half of new subscribers globally by 2025: by this time, we forecast 370 million new subscribers to be connected across the region, bringing the total to 3.1 billion, or 72% of the population. Around 90% of these new subscribers will come from six countries: India, China, Pakistan, Indonesia, Bangladesh and the Philippines.



Mobile boosting economic and social development

Mobile continues to make a significant contribution to socioeconomic development across the region. In 2018, mobile technologies and services in Asia Pacific generated \$1.6 trillion of economic value (5.3% of GDP) – a contribution that will surpass \$1.9 trillion by 2023 as countries increasingly benefit from the improvements in productivity and efficiency brought about by the increased take-up of mobile services. Further ahead, 5G technologies are expected to contribute almost \$900 billion to the region's economy over the next 15 years.

The connectivity gap also continues to close. Over the next seven years, 850 million people across Asia Pacific will start using the mobile internet for the first time, bringing the total number of mobile internet users in the region to 2.7 billion by 2025 (62% of the population). This growth in connectivity is helping the mobile industry increase its impact across all the UN's Sustainable Development Goals and is spurring adoption of mobile-based tools and solutions (for example, in agriculture, education and healthcare) that aim to improve livelihoods in low- to middle-income countries.



Enabling policies for digital advancement

The size and diversity of the region mean countries are at different stages of digital development. Consequently, the policy frameworks for a digital society vary as national governments address their own unique challenges.

For some markets, 2019 will see 5G become a reality. On the path to 5G, governments and regulatory authorities have a choice: actively shape a favourable business environment that allows mobile operators to roll out 5G more quickly and broadly (spectrum allocation is a key priority), or wait until operators can justify 5G deployment under current regulatory conditions (which risks holding back the digital advancement of the country).

For many countries in the region, where 5G deployments are several years away, focus lies on other critical components such as payments and identity. Governments will need to ensure they continue to develop policies that are modernised and relevant, and which foster trust in the digital environment. The rapid growth of mobile across the region highlights the need for governments to adapt their policy development: an agile, whole-of-government approach is required to accelerate and provide a more inclusive digital society.

Asia Pacific

Unique mobile subscribers



2018

2.8bn



67%

PENETRATION RATE
(% of population)

72%

CAGR
2018-25

3.1bn

1.8%

2025

Mobile internet users



2018

1.9bn



45%

PENETRATION RATE
(% of population)

62%

CAGR
2018-25

2.7bn

5.5%

2025

SIM connections

Excluding cellular IoT



2018

4.2bn



101%

PENETRATION RATE
(% of population)

111%

CAGR
2018-25

4.8bn

2.1%

2025

Operator revenues

2018

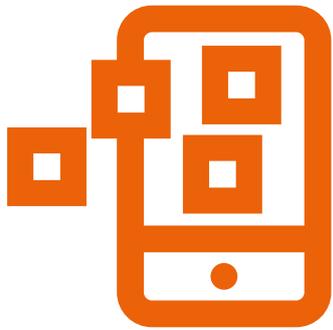
\$400bn

2025

\$433bn

Operator capex of \$574 billion
for the period 2018-2025

64% of which will be on 5G



Smartphone connections

Percentage of connections



4G connections

2018

52%



2025

68%



of total connections

5G connections in 2025
(18% of total connections)

845m

Excluding licensed cellular IoT

IoT connections

2018 ————— 2025

3.5bn

11.0bn



Mobile industry contribution to GDP

\$1.6tn

 2018

5.3%

\$1.9tn

 2023

Public funding

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

\$165bn

2018



Employment

2018

10m



Jobs

directly supported by the mobile ecosystem

Plus 8 million indirect jobs

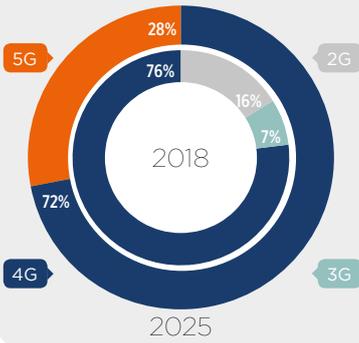


KEY MARKETS IN ASIA PACIFIC



China

TECHNOLOGY MIX



SUBSCRIBER PENETRATION

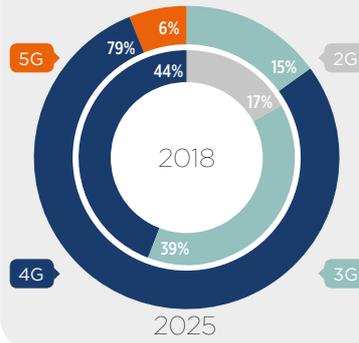


SMARTPHONE ADOPTION



Indonesia

TECHNOLOGY MIX



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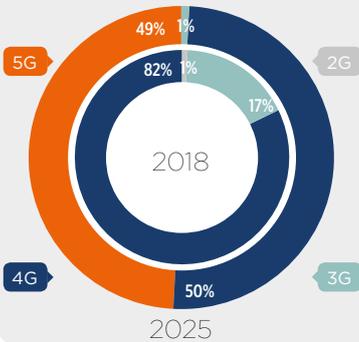


SMARTPHONE ADOPTION



Japan

TECHNOLOGY MIX



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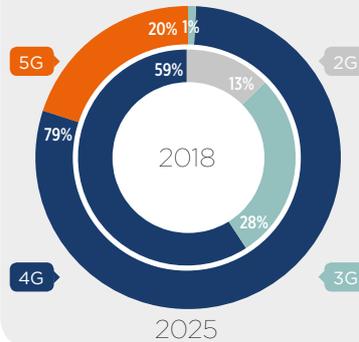


SMARTPHONE ADOPTION



Malaysia

TECHNOLOGY MIX



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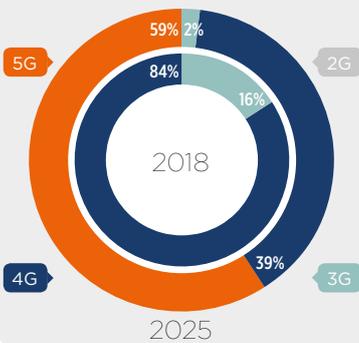


SMARTPHONE ADOPTION



South Korea

TECHNOLOGY MIX



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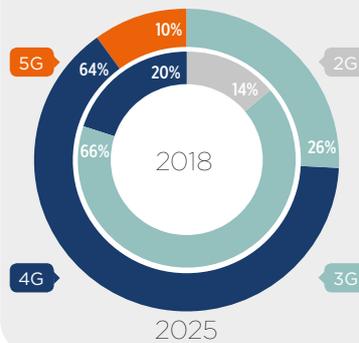


SMARTPHONE ADOPTION



Philippines

TECHNOLOGY MIX



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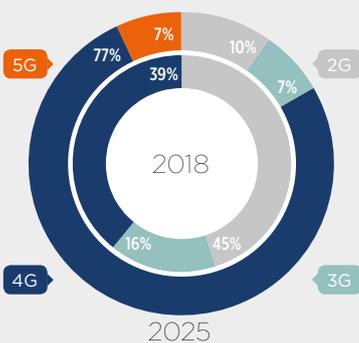


SMARTPHONE ADOPTION



India

TECHNOLOGY MIX



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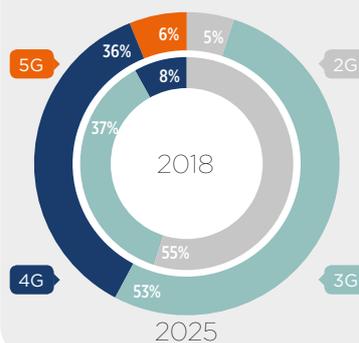


SMARTPHONE ADOPTION



Vietnam

TECHNOLOGY MIX



SUBSCRIBER PENETRATION



SMARTPHONE ADOPTION



Note: totals may not add up to 100% due to rounding.



01 The mobile market in numbers



1.1

370 million new subscribers by 2025

Figure 1

Source: GSMA Intelligence

Subscriber growth past its peak and slowing; but there will still be over 3.1 billion subscribers by 2025

Million

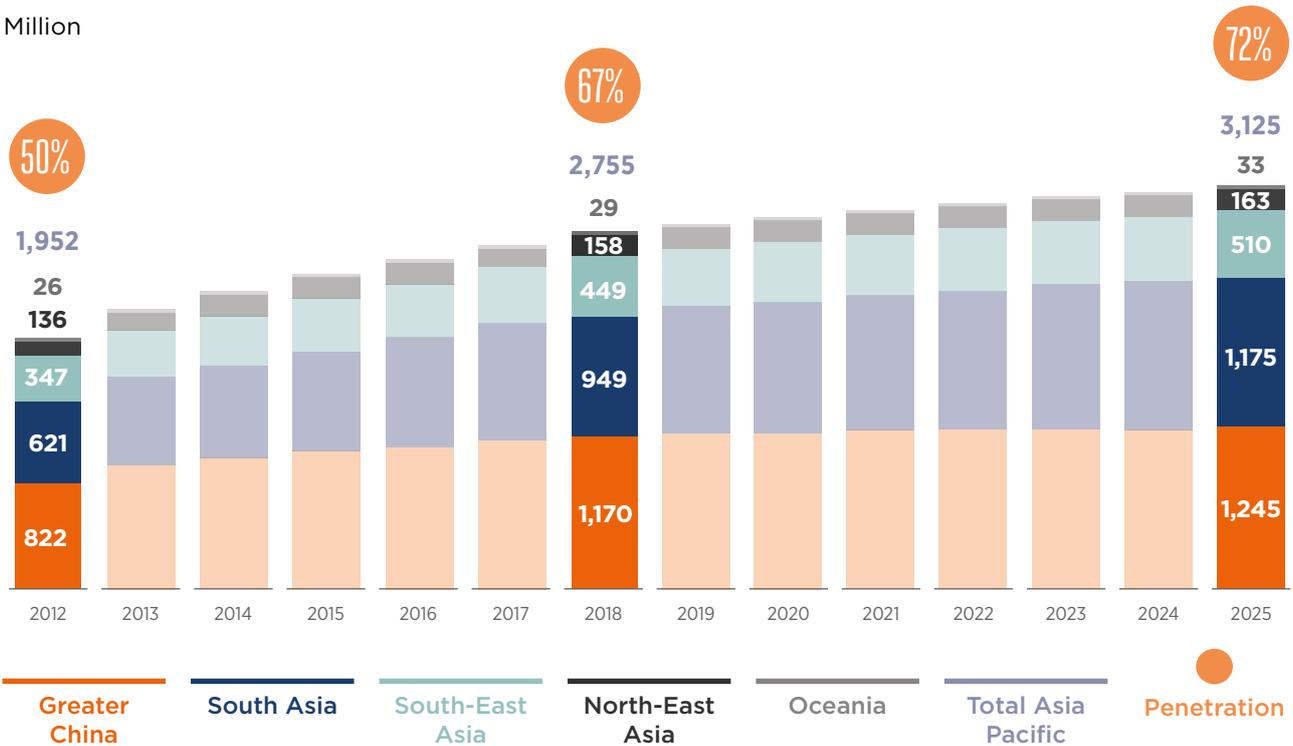


Figure 2

Source: GSMA Intelligence

Two thirds of the population in the region subscribe to mobile services, with variation between sub-regions

Percentage of population

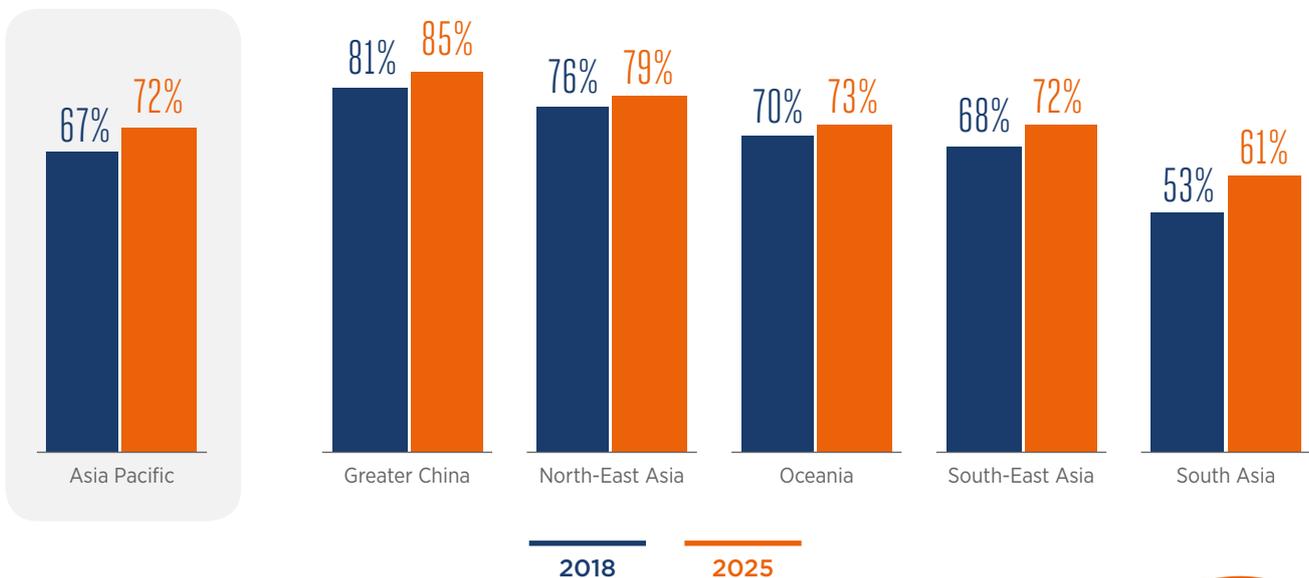
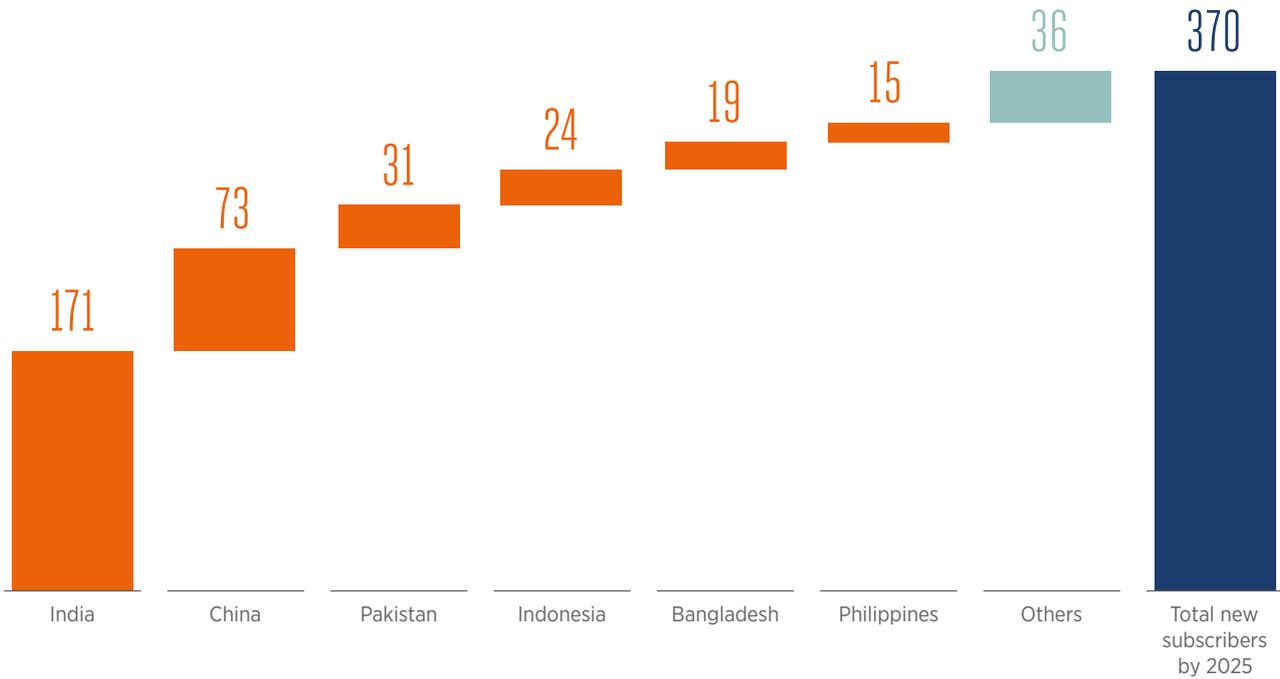


Figure 3

Source: GSMA Intelligence

Two-thirds of new subscribers by 2025 will be from India and China

Million



1.2 5G launches begin, but 4G dominates

Figure 4

Source: GSMA Intelligence

4G became the dominant technology in 2018 and will surpass 70% in 2021. 5G will overtake 3G in 2023

Percentage of connections (excluding licensed cellular IoT)

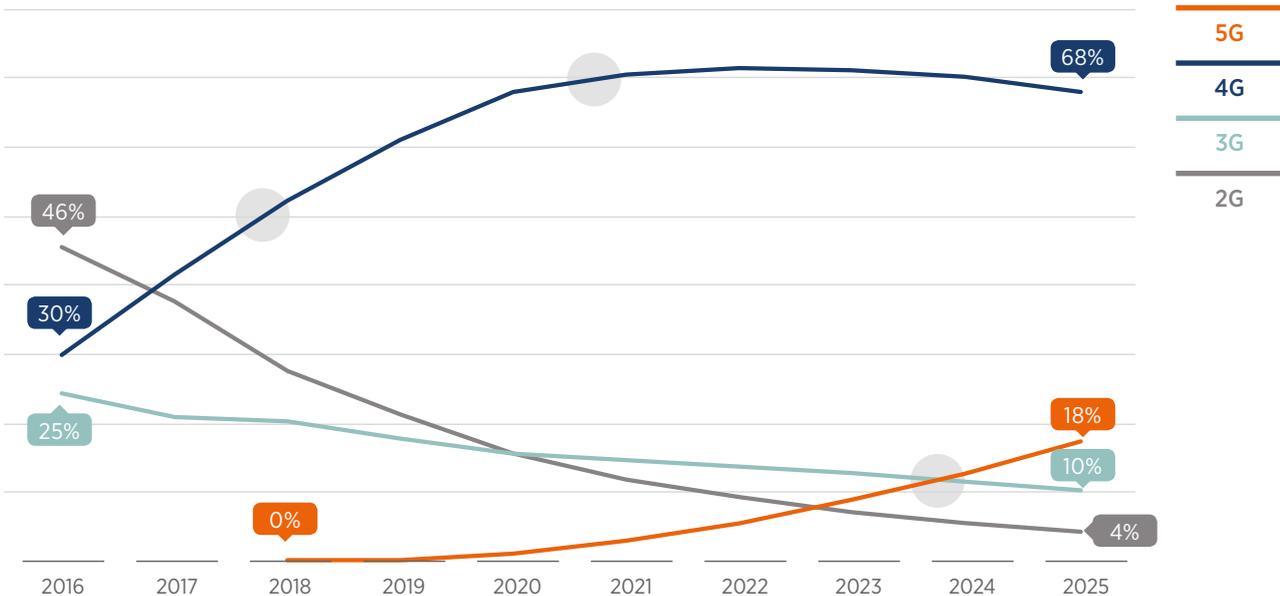
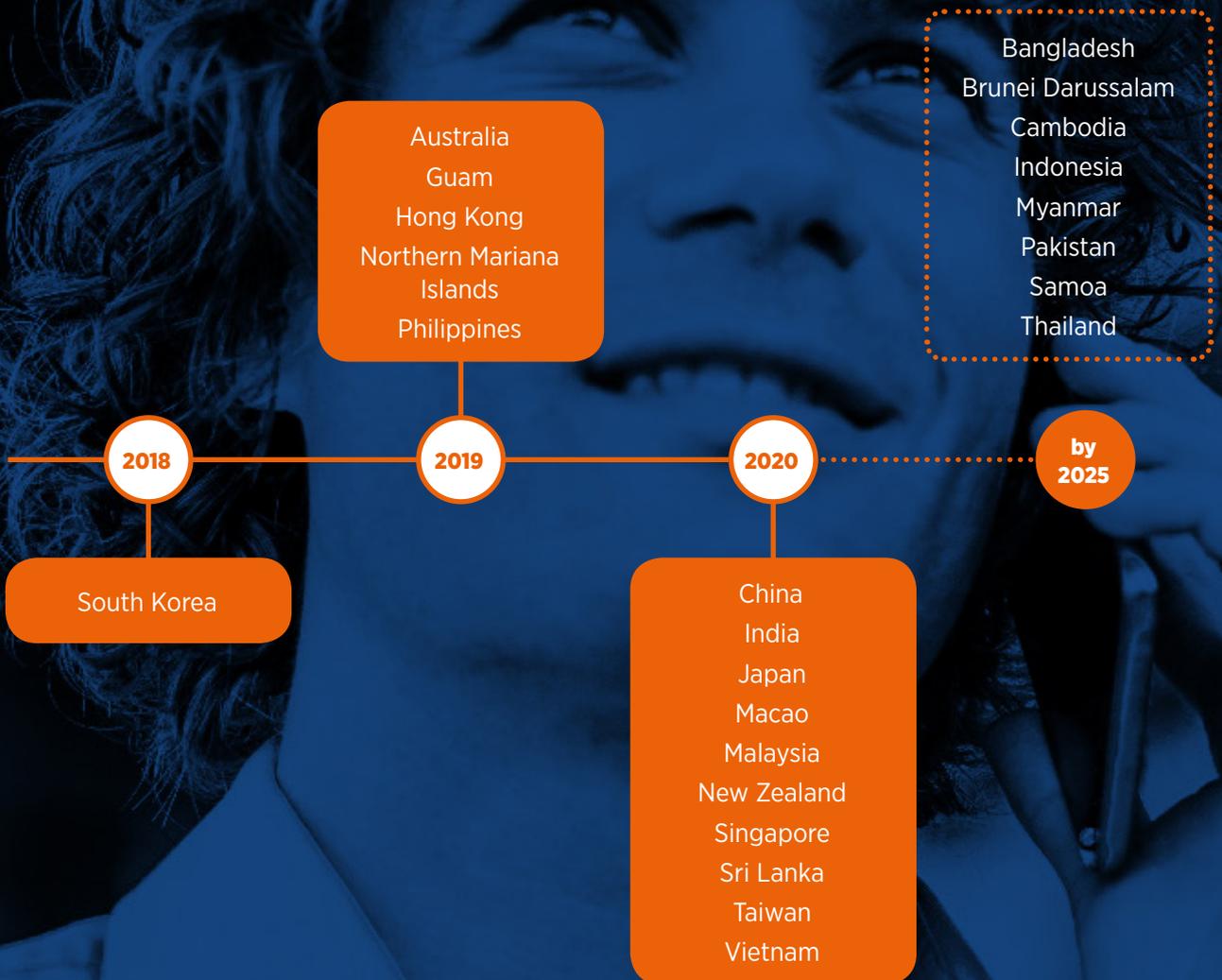


Figure 5

Source: GSMA Intelligence

24 markets in Asia Pacific will have launched 5G by 2025





South Korea's first nationwide 5G network

On 4 April 2019, all three of South Korea's mobile operators – SK Telecom, KT Corp and LG Uplus – launched commercial 5G services to consumers, making South Korea the first country in the world with nationwide 5G availability.¹ This follows the launch of limited-coverage, enterprise-only services on 1 December 2018, also a world first.

The three operators are offering basic and premium 5G tariffs via Samsung's Galaxy S10 5G smartphone², as well as a number of promotional deals and gifts. For South Korean consumers, operators' pricing strategies mean 5G services are less expensive per GB at low and mid-range tiers. The country's strong high-speed fixed broadband infrastructure and Wi-Fi penetration can render a generous mobile data allowance useful but not vital. That said, upgrades to 5G from mid-range 4G packages require that consumers face a price rise, while the promotions and gifts only partially mask what appears an overall increase in charges for top-end plans (SKT will refresh its prices having analysed subscribers' data usage patterns).³

KT predicts that 5G will account for 10% of its mobile subscriber base by year-end 2019. However, it is too early to know how initial pricing announcements will influence 5G adoption. While lower prices may be true for certain tariffs, network performance, coverage and device costs will also influence 5G take-up over the coming years.

In the month following the launch, South Korea's Ministry of Science and ICT (MSIT) announced around 260,000 users had signed up for 5G services.⁴ By the end of May, LG Uplus reported that 5G usage was averaging 1.3 GB per day, up from 400 MB with LTE.⁵



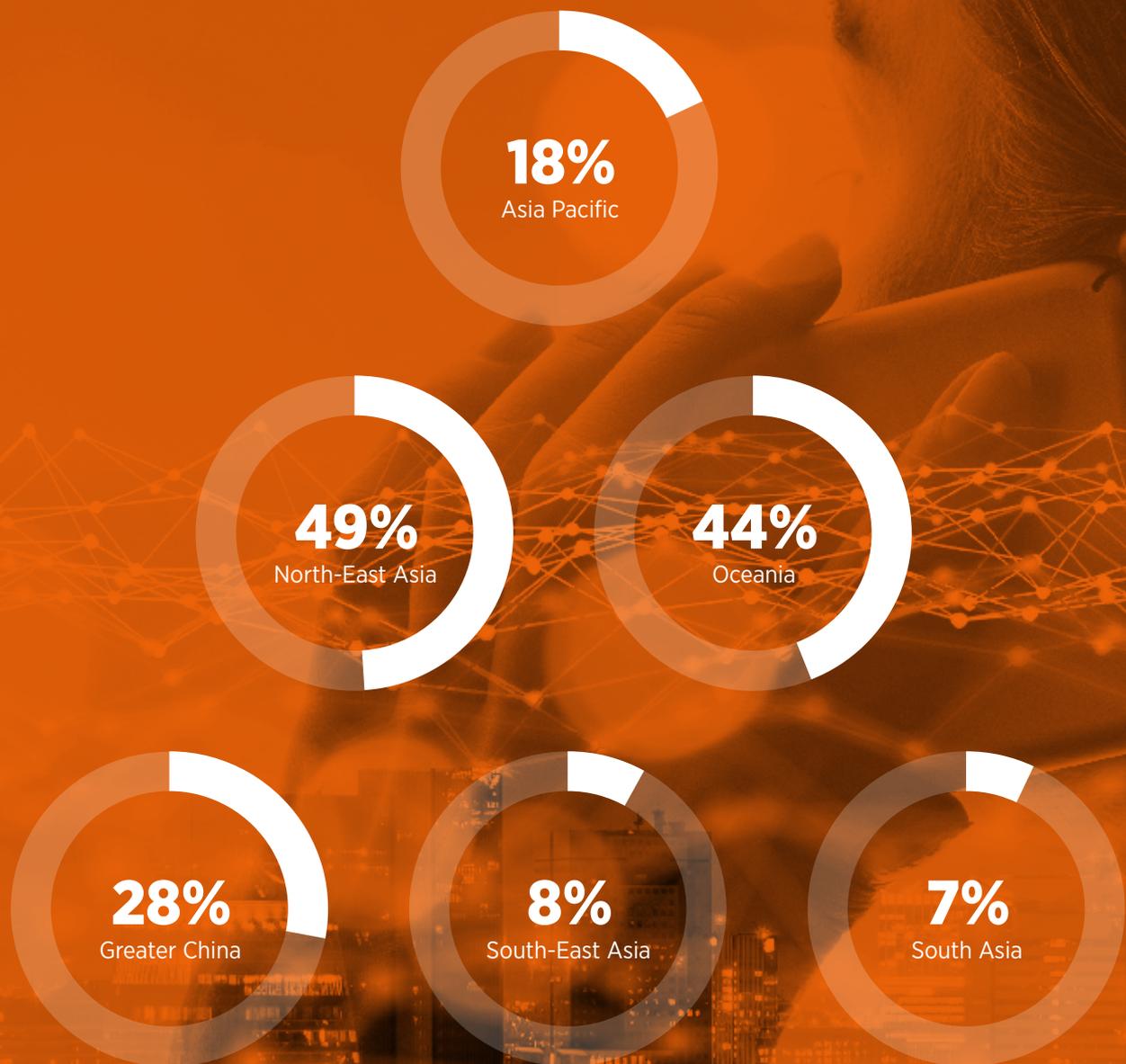
1. A key factor in the nationwide rollout was the regulator mandating infrastructure sharing.
2. One device was announced at launch, with the LG V50 to be added later.
3. For more information, see [5G pricing tactics attempt to gauge consumer demand](#), GSMA Intelligence, 2019
4. "Korea operators amass 260K 5G customers", Mobile World Live, May 2019
5. Data use surges on Korea 5G networks", Mobile World Live, May 2019

Figure 6

Source: GSMA Intelligence

North-East Asia and Oceania will lead in 5G adoption in Asia Pacific

5G as a share of total connections in 2025
(excluding licensed cellular IoT)



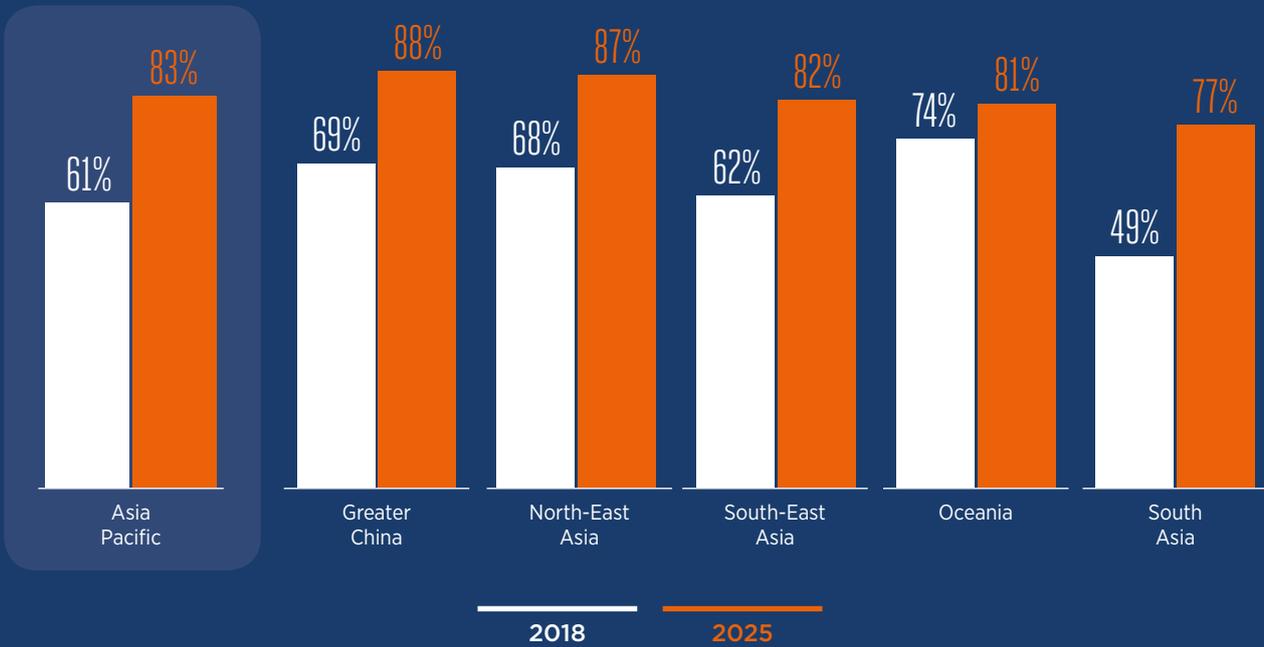
1.3 Consumers continue transition from ‘connected’ to ‘digital’

Figure 7

Source: GSMA Intelligence

More than four in five connections will be smartphones by 2025

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



Top three largest smartphone markets globally (2025)

-  **China**
1,469m
-  **India**
983m
-  **Indonesia**
411m

Figure 8

Source: GSMA Intelligence Consumer Survey 2018

Smartphone ubiquity across Asia Pacific is enabling consumer engagement in numerous use cases

Percentage of smartphone users engaging at least once per month

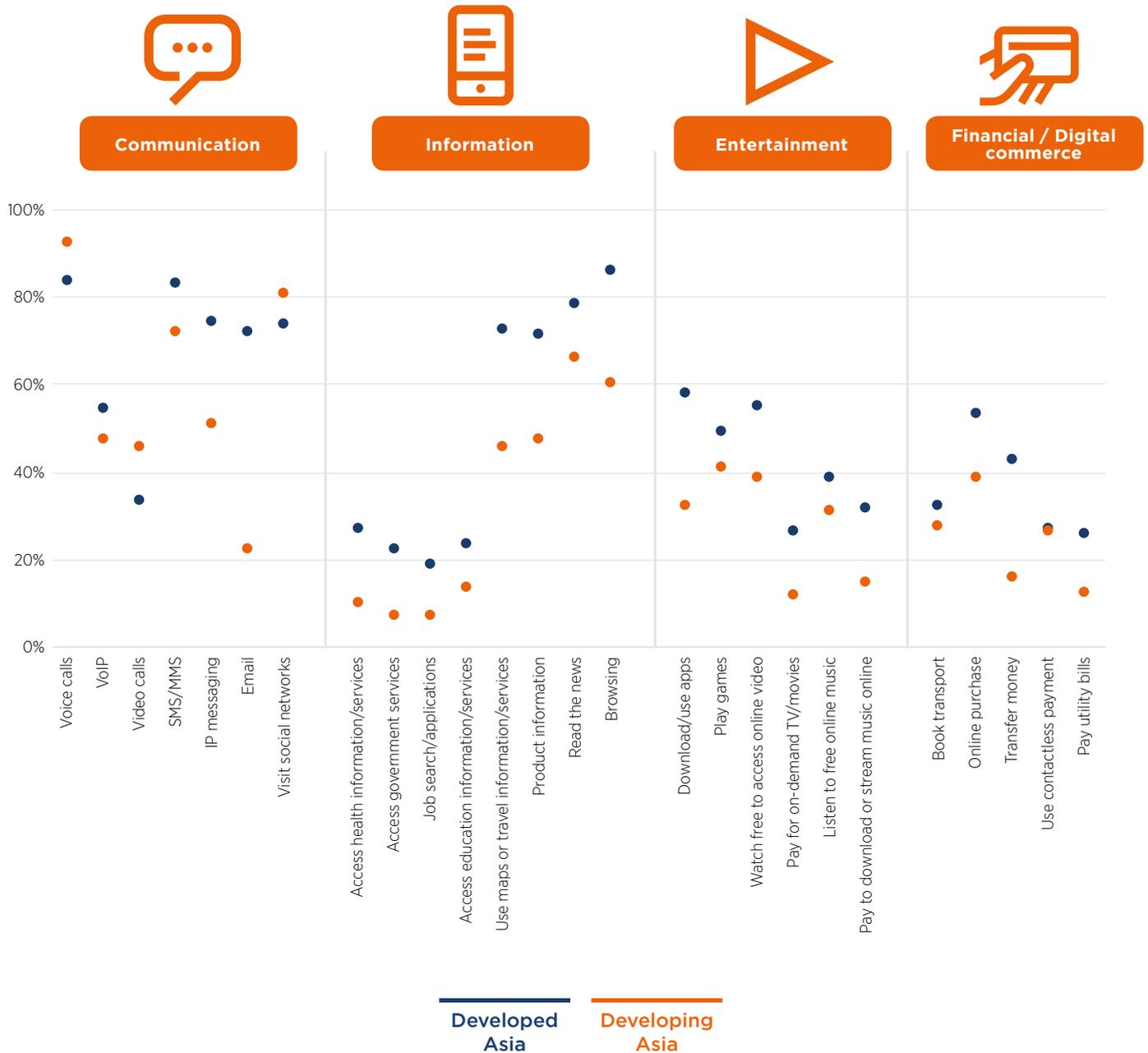


Figure 9

Source: GSMA Intelligence

Some 7.5 billion new IoT connections in Asia Pacific by 2025; smart building and smart home are key growth verticals

Billion

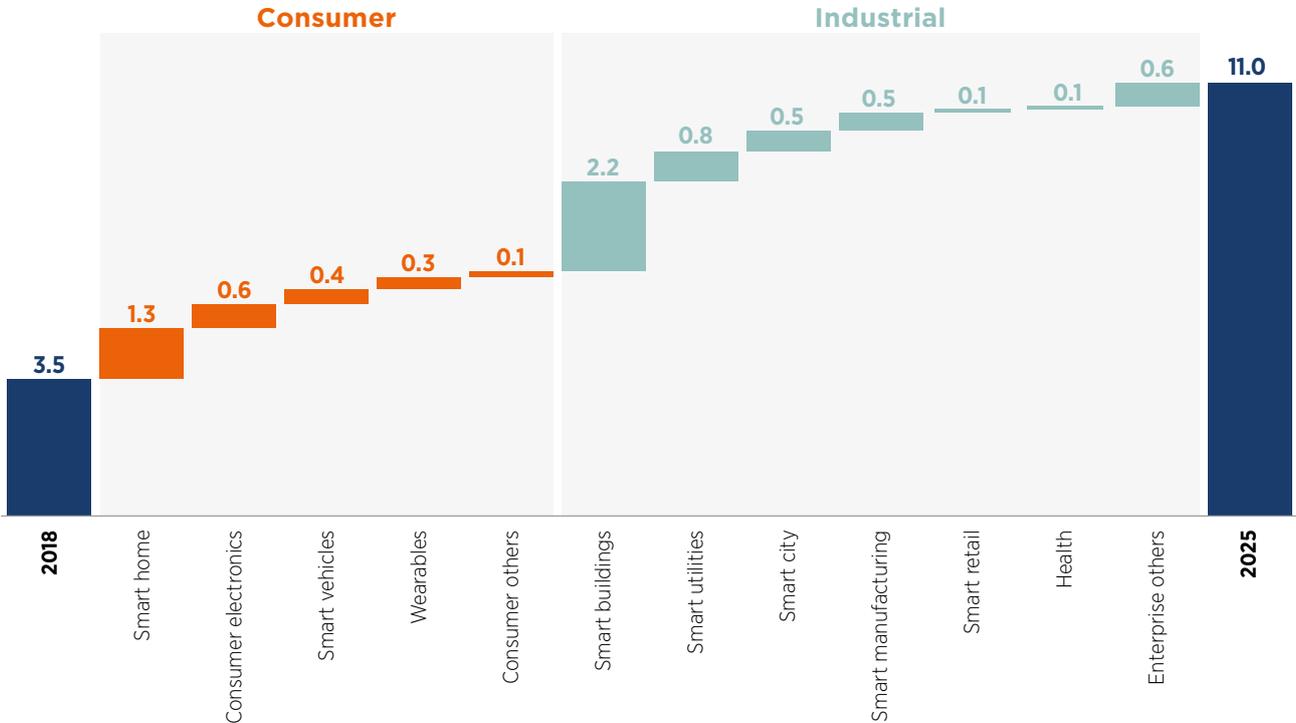
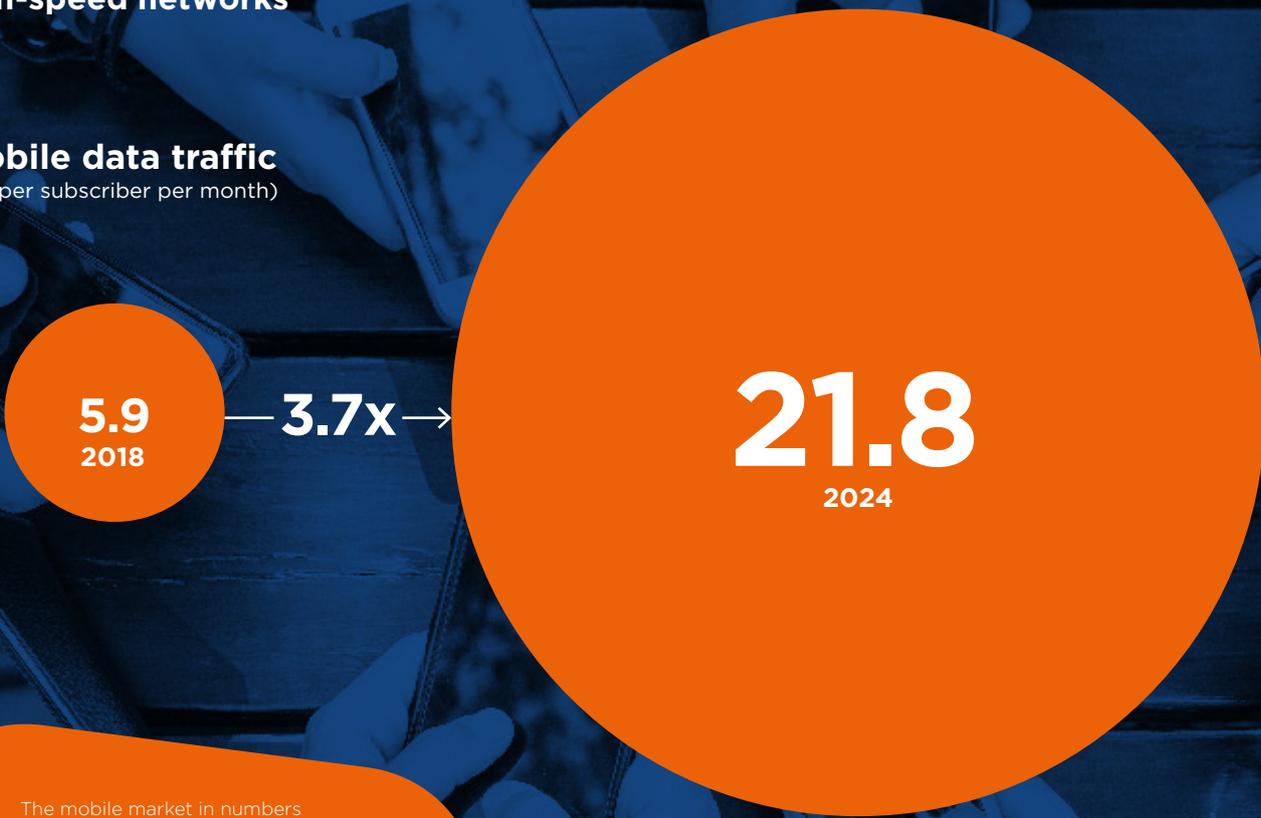


Figure 10

Source: Ericsson, GSMA Intelligence

Mobile data consumption in Asia Pacific will grow four-fold by 2024, spurred by increased smartphone adoption and availability of affordable high-speed networks

Mobile data traffic
(GB per subscriber per month)



1.4 Financial outlook improving, and 5G investment begins in earnest

Figure 11

Source: GSMA Intelligence

Mobile revenue surpassed \$400 billion in 2018; cautious optimism thereafter despite slowing subscriber growth and intense competition

Mobile revenue (\$ billion)

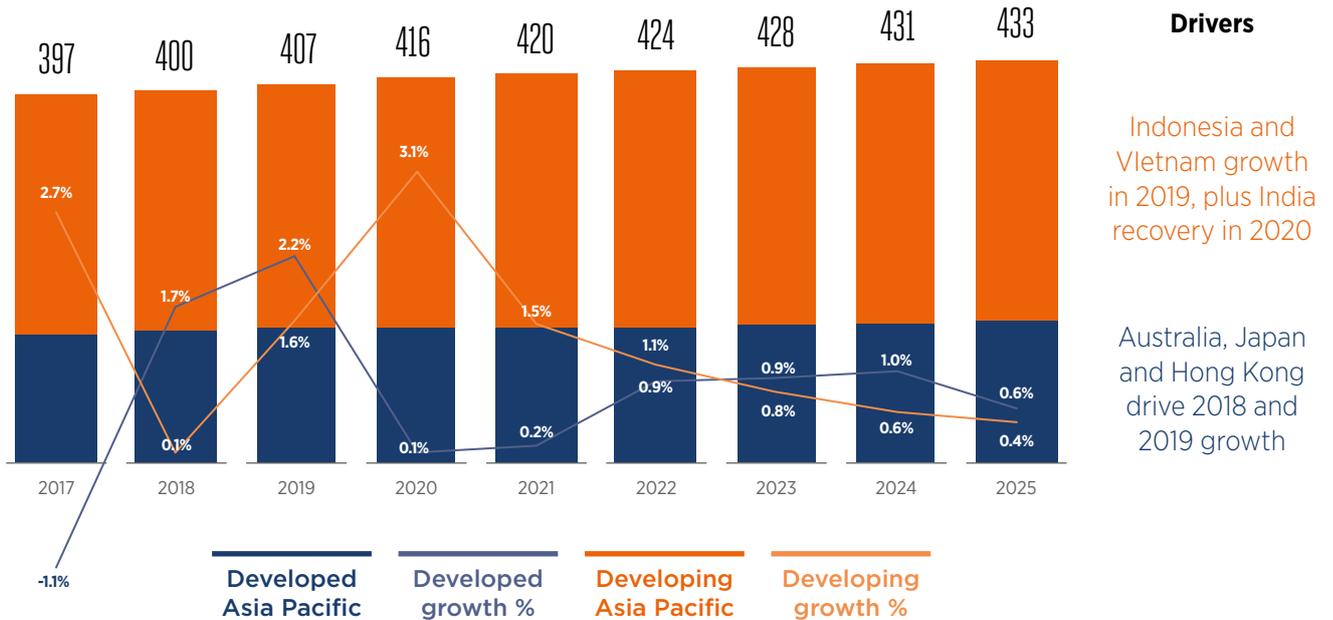
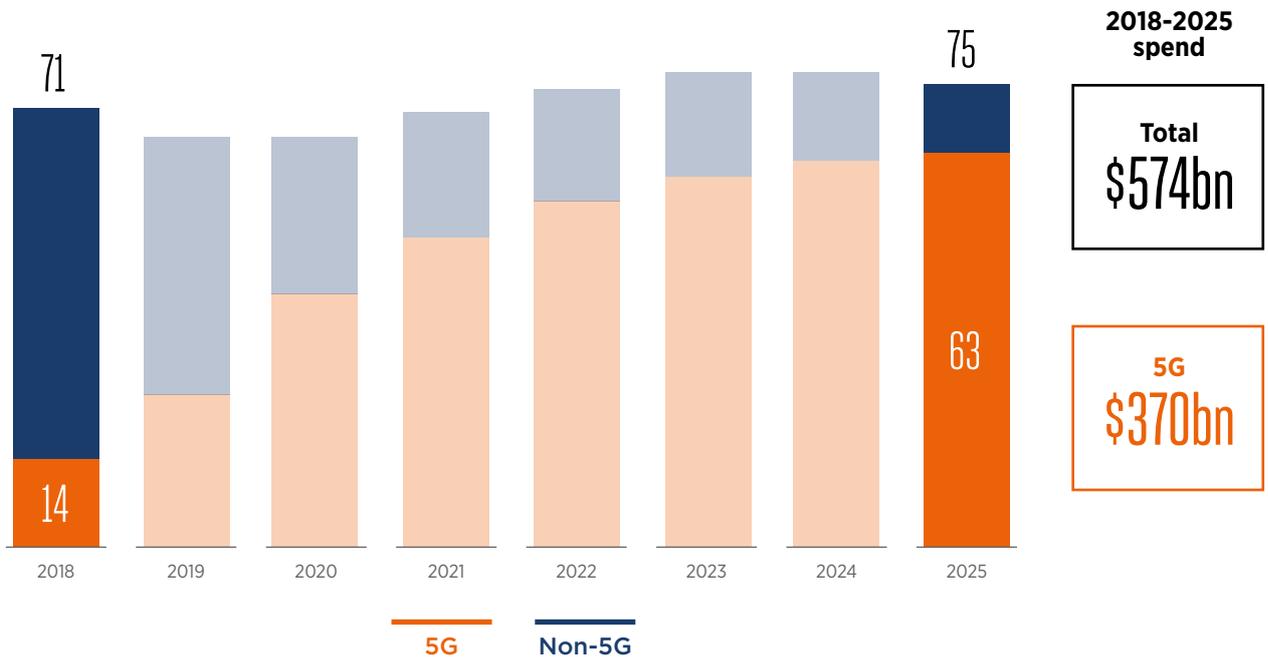


Figure 12

Source: GSMA Intelligence

By 2025, mobile operators in Asia Pacific will invest over \$570 billion in their networks; almost two-thirds will be on 5G

Capex (\$ billion)



02 Mobile contributing to economic growth and addressing social challenges



2.1

Mobile contribution to economic growth

In 2018, mobile technologies and services generated 5.3% of GDP across Asia Pacific – a contribution that amounted to \$1.6 trillion of economic value added. The mobile ecosystem also supported 18 million jobs (directly and indirectly) and made a substantial contribution to the funding of the public sector, with \$165 billion raised through general taxation. By 2023, mobile’s contribution will grow by \$350 billion (surpassing \$1.9 trillion) as countries around the region increasingly benefit from the improvements in productivity and efficiency brought about by the increased take-up of mobile services.

Further ahead, 5G technologies are expected to contribute \$890 billion to the region’s economy over the next 15 years, with key sectors such as

manufacturing, utilities and professional/financial services benefiting the most from the new technology.

Figure 13

Source: GSMA Intelligence

The Asia Pacific mobile ecosystem generated \$500 billion of economic value in 2018, with mobile operators accounting for half

\$ billion, % GDP

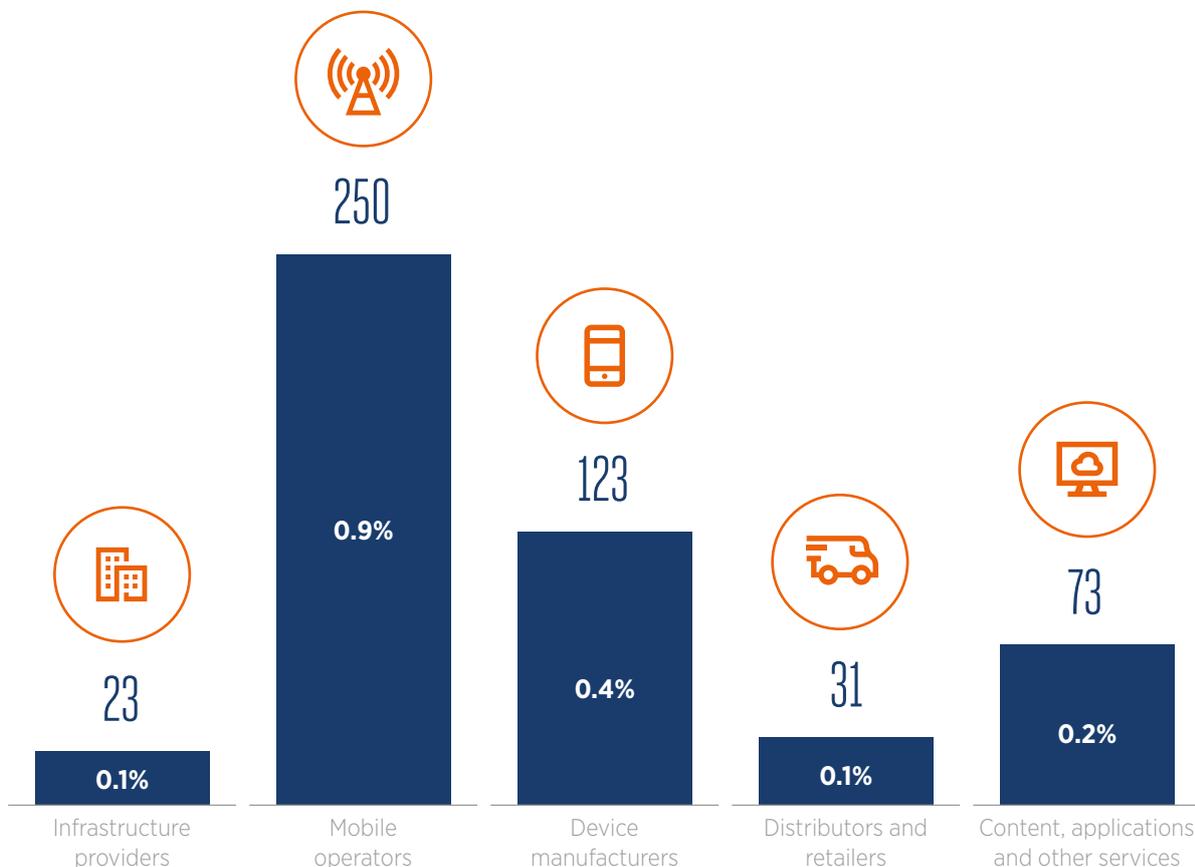


Figure 14

Source: GSMA Intelligence

Additional indirect and productivity benefits bring the total contribution of the mobile industry to \$1.6 trillion

\$ billion, % GDP, 2018

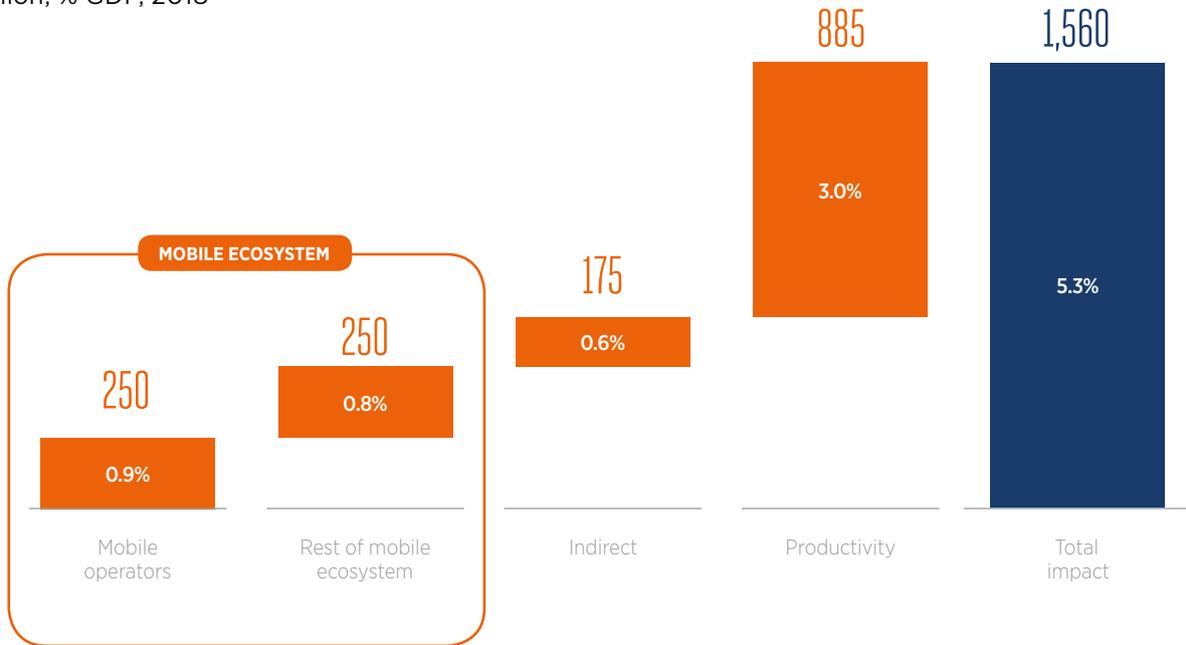


Figure 15

Source: GSMA Intelligence

The Asia Pacific mobile ecosystem directly and indirectly employs over 18 million people

Jobs (million)

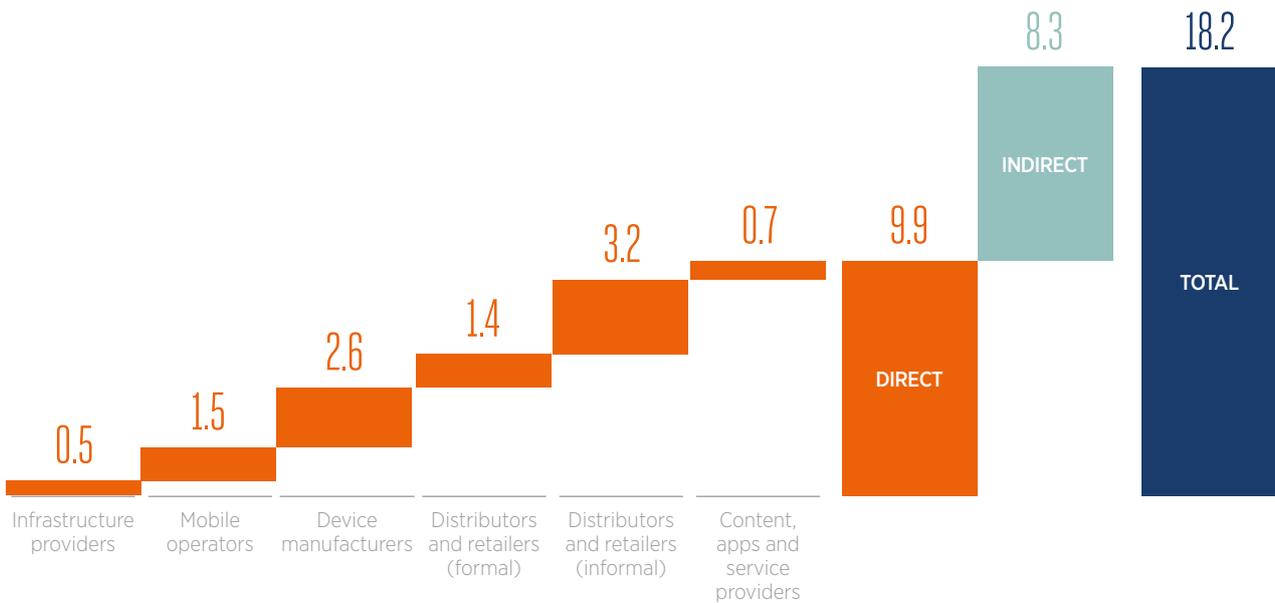


Figure 16

Source: GSMA Intelligence

In 2018, the Asia Pacific mobile ecosystem contributed \$165 billion to the funding of the public sector through general taxation

\$ billion

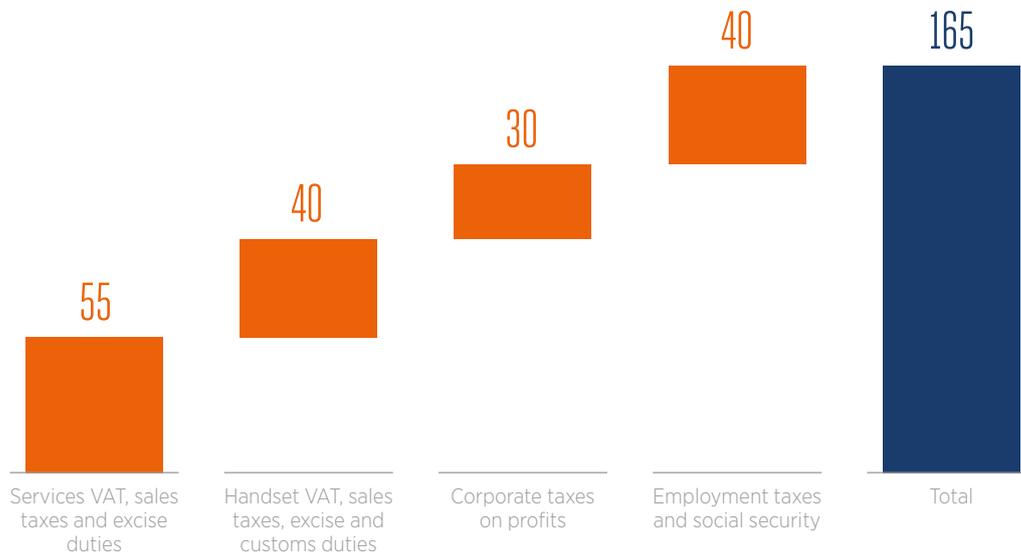


Figure 17

Source: GSMA Intelligence

Driven mostly by productivity gains, the Asia Pacific economic contribution of mobile will increase by \$350 billion by 2023

\$ billion

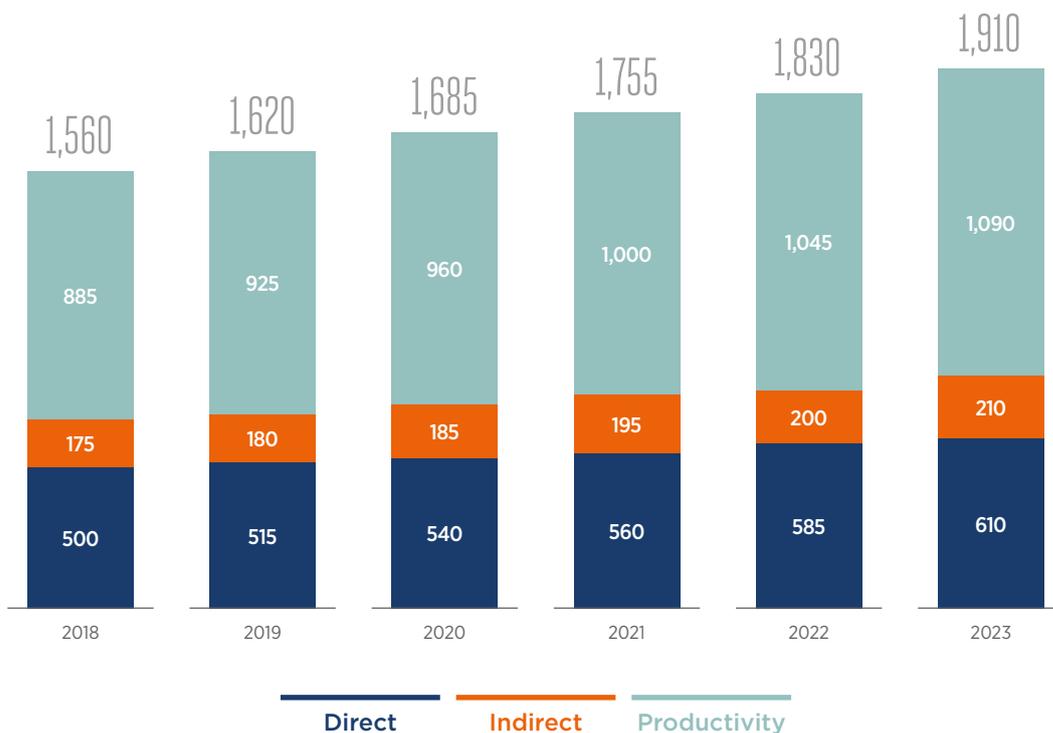
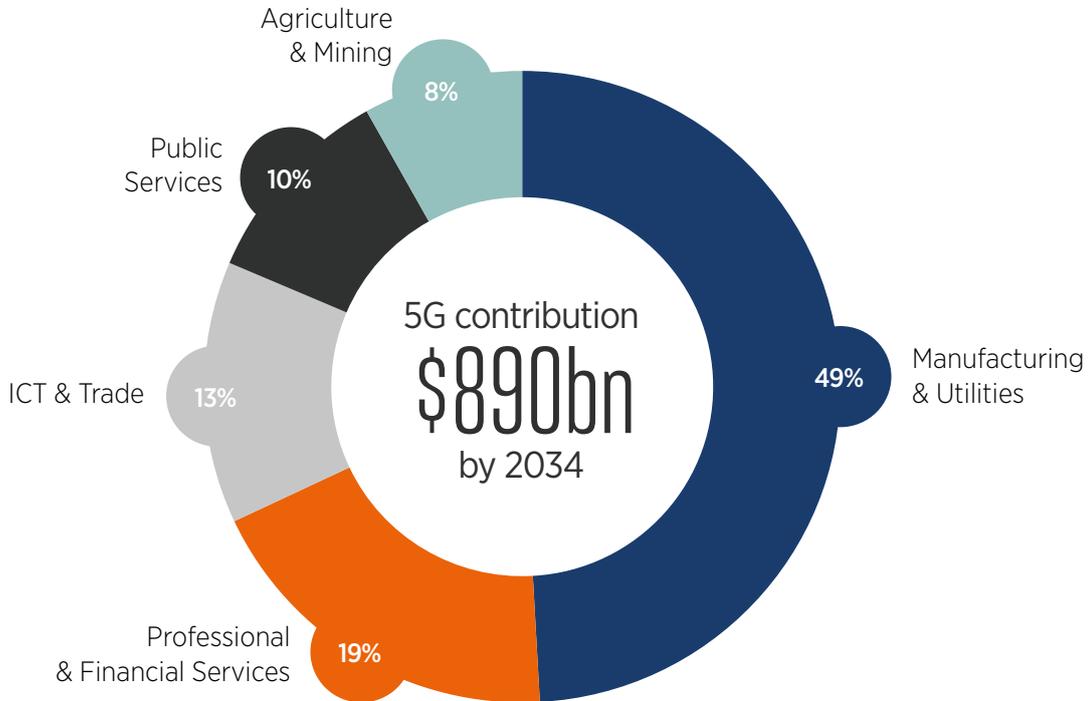


Figure 18

Source: GSMA

5G will make a significant contribution to the Asia Pacific economy



2.2 Expanding the benefits of the mobile internet

At the end of 2018, 1.9 billion people across Asia Pacific were connected to the mobile internet, representing an increase of almost 200 million compared to the previous year. However, 2.3 billion people remain offline. Given that mobile broadband networks (3G and above) cover 94% of the region's population, the 'coverage gap' is not the main issue. This is reflected in the fact that Asia Pacific's Infrastructure score within the GSMA's Mobile Connectivity Index⁶ saw significant improvement over the last year; the region achieved the largest regional increase in average Index score between 2016 and 2017. However, for the 2 billion people

who live within the footprint of a network but do not use the mobile internet (the 'usage gap'), other barriers such as affordability, consumer readiness and availability of content/services are much more pressing.

Over the next few years, as these enablers of mobile internet adoption continue to improve, almost 850 million people across the region will start using the mobile internet for the first time. By 2025, 2.7 billion people in Asia Pacific (more than 60% of the population) will be mobile internet subscribers.

6. For more information see the GSMA report [State of Mobile Internet Connectivity 2018](#) and the Mobile Connectivity Index [website](#)

Figure 19

Source: GSMA Intelligence

Over 2 billion people across Asia Pacific don't use the mobile internet; for most, coverage is not the issue

Percentage of population

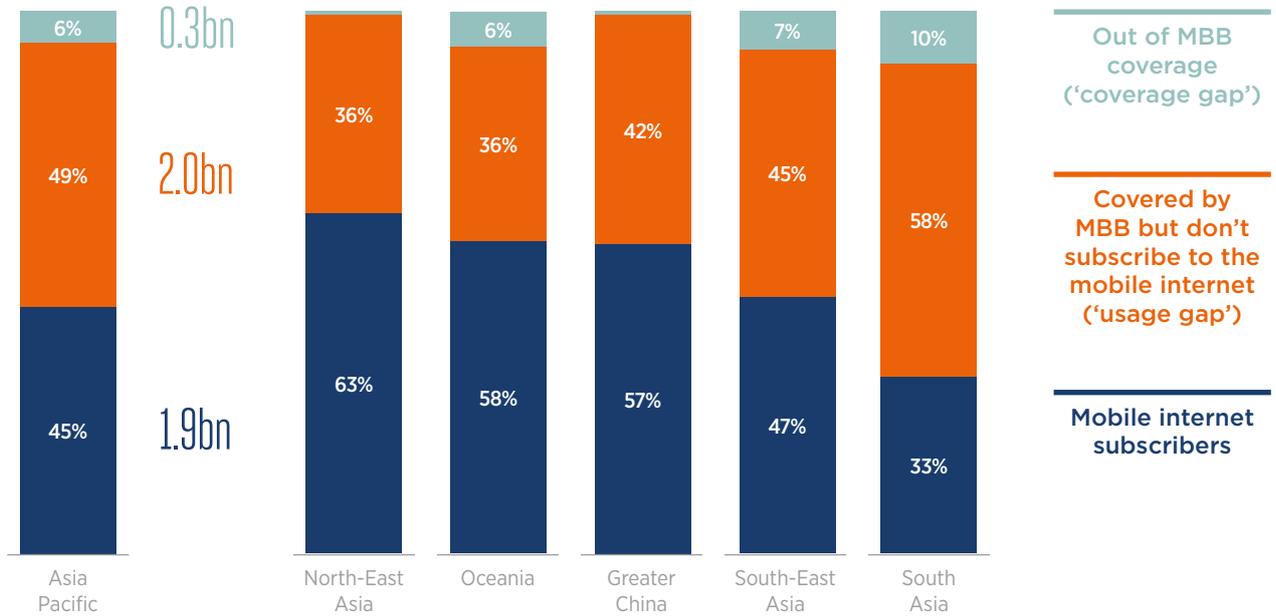


Figure 20

Source: GSMA Intelligence

Asia Pacific is the most improved region in the Mobile Connectivity Index over the last year, primarily due to improved infrastructure

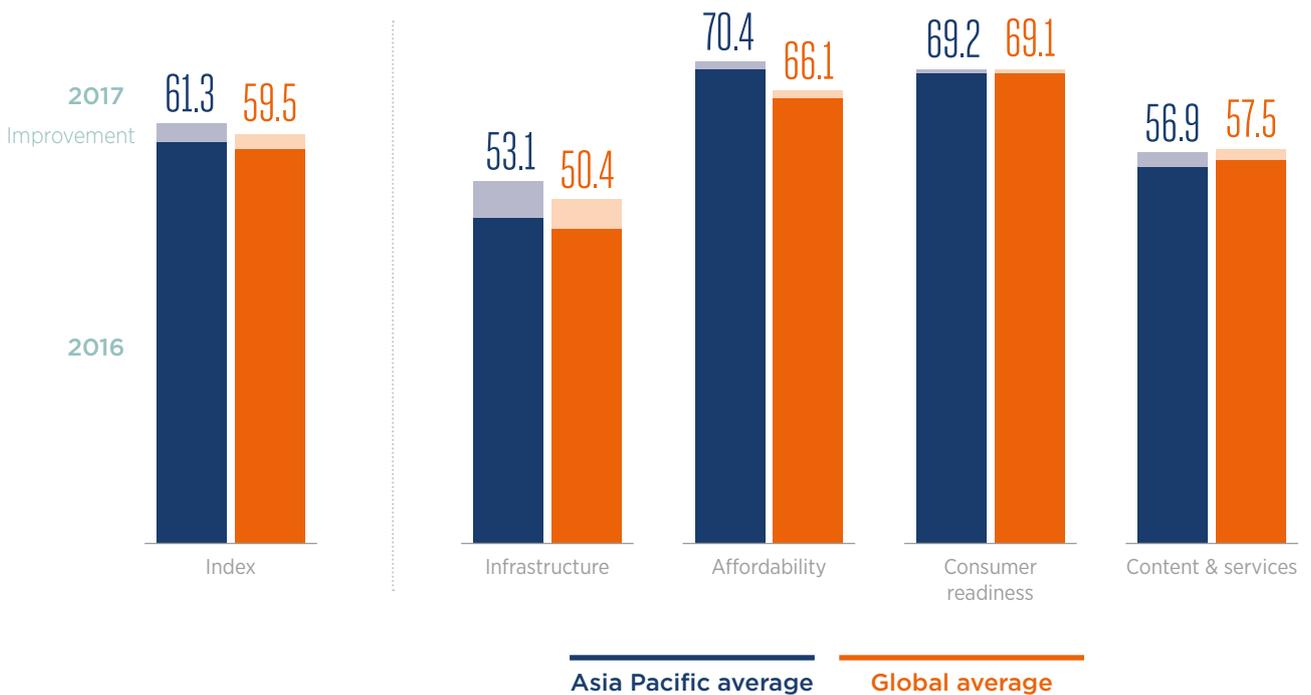


Figure 21

Source: GSMA Intelligence

Mobile Connectivity Index: top scoring and most improved countries in Asia Pacific

Top scoring countries 2017

Australia	88.9	South Korea	83.4
New Zealand	87.8	Hong Kong	80.7
Singapore	86.5		

Most improved countries⁷

	Increase 2016-2017	Key reasons for increase
Vietnam	+4.7	<p>Infrastructure:</p> <ul style="list-style-type: none"> • 4G coverage increased significantly from 5% to 95% • 3G coverage also increased from 77% to 90%
India	+4.6	<p>Affordability:</p> <ul style="list-style-type: none"> • Device cost fell from 3.6% to 0.5% of income • A 500 MB monthly basket fell from 1.5% to 0.5% of income (much lower than regional average and among the most affordable worldwide) <p>Infrastructure:</p> <ul style="list-style-type: none"> • 4G coverage increased from 75% to 86% • Average latencies fell by 30% • Average download speeds increased by around 80% • International bandwidth per user more than doubled
Indonesia	+4.2	<p>Affordability:</p> <ul style="list-style-type: none"> • Device cost fell from 4.6% of income to 1% of income <p>Infrastructure:</p> <ul style="list-style-type: none"> • Mobile latencies fell by a third
Myanmar	+4.0	<p>Infrastructure:</p> <ul style="list-style-type: none"> • 4G coverage doubled to 15% • Average download speeds also almost doubled • Average latencies fell by a third <p>Affordability:</p> <ul style="list-style-type: none"> • A 500 MB monthly basket more than halved to 0.7% of income
Bangladesh	+3.4	<p>Infrastructure:</p> <ul style="list-style-type: none"> • Upload speeds almost doubled • Mobile latencies almost halved • International bandwidth per user increased by a third <p>Content and services:</p> <ul style="list-style-type: none"> • Mobile app development increased significantly

7. Major markets (population more than 5 million)



2.3 Mobile delivering social impact

As the connectivity gap closes, mobile internet adoption will increasingly become the key metric by which to measure the reach and value created by the mobile industry, including its contribution to the UN's Sustainable Development Goals (SDGs). Three years into the 2030 Agenda for Sustainable Development, the mobile industry is increasing its impact across all 17 SDGs as a result of wider mobile reach and better networks. There is also growing

adoption of mobile-based tools and solutions that aim to spur the digitisation of systems, processes and stakeholder interactions across a number of industries, notably agriculture, education and healthcare in low- and middle-income countries. For more information, see the GSMA report [2018 Mobile Industry Impact Report: Sustainable Development Goals](#).

Figure 22

Source: GSMA

Examples of companies driving socioeconomic growth across Asia Pacific



EXAMPLES

India: CashUp runs a USSD-based money transfer platform that allows users to make direct bank-to-bank transfers. It is available in three languages – English, Hindi and Tamil.

Myanmar: Impact Terra is a mobile platform that provides smallholder farmers with farming information and best practices to help improve productivity.



EXAMPLES

Indonesia: Ruangguru is a freemium learning management system that helps students prepare for exams using content tailored to the national curriculum. It also helps teachers crowdsource educational content and distribute it to students.

Philippines: Learntalk is an on-demand, live video English tutorial platform for educational institutions and businesses, accessible on a mobile or online. It uses adaptive learning classes to match students' education levels and interests.



EXAMPLES

Pakistan: Brighterlite provides high-quality solar home systems to low- and medium-income households, who can pay for their monthly rentals via USSD.

Vietnam: MimosaTek is an IoT platform that integrates sensors into agricultural equipment to increase crop yields, reduce risks and expenses, and save water and energy.



EXAMPLES

Cambodia: Joonak is a last-mile logistics and delivery service that allows merchants to track sales and generate reports through a web-based order management system.

Sri Lanka: Online Cabs is a mobile-based taxi booking service available through USSD, SMS and location API.

Various: Go-Jek is an on-demand transport, logistics and lifestyle platform, offering consumers access to ride-hailing, food delivery and payments/ financial services.



EXAMPLE

Indonesia: Fishery is an automated aquaculture feeding device which senses food intake at fish and shrimp farms, adjusting food supply to avoid overfeeding.

03 Key trends shaping digital societies



Digital technology is evolving rapidly, leading to the emergence of new services and applications that are transforming the way people live, work, play and communicate. 5G is, of course, on everyone's minds. After years of hype and speculation, 5G is now here, bringing with it the promise of a whole host of new services and opportunities.

However, since it is still several years away in many countries of the region, 5G is not the only topic of discussion. Other critical components of a digital society, such as payments and identity, are developing rapidly. Through a concerted and

collaborative effort by all the main players, from governments and operators to internet players and startups, these services are laying the foundations for measurable economic, social and cultural value across Asia Pacific.

3.1

5G: looking beyond the hype

5G is already a reality in Asia Pacific, but the traditional operator business model remains under pressure. Many operators are already looking to expand beyond their traditional telecoms businesses to explore new revenue streams in a fast-changing competitive landscape, with the added challenge of how to fund the incremental investments for 5G networks.

Three factors will affect the speed at which 5G is adopted in specific markets and the value that it will generate:

1. **Opportunities:** most operators around the world see the provision of enhanced mobile broadband (eMBB) to the consumer market as the core commercial proposition in early 5G deployments. eMBB refers to data-driven use cases that require high data rates across wide areas, with 5G initially deployed in many regions to provide higher speeds and additional network capacity in urban areas. In addition, in some markets 5G-based fixed wireless access (FWA) services will be deployed, offering a potentially lower cost and faster means of expanding high-speed services to households and businesses (compared to fibre to the home/building deployments).

Enterprise use cases that use massive IoT and/or ultra-reliable, low-latency communications to transform existing verticals (such as manufacturing, utilities, healthcare, retail, agriculture and automotive) could gain scale at a later stage. Further use cases could be developed, with the potential to revolutionise industries and consumer experiences.

2. **Cost considerations:** 5G networks are distinct from previous generations because of the level of heterogeneity, flexibility and automation inherent in their design. The cost dynamics of 5G networks will therefore not only be influenced by traditional network factors such as capacity and coverage but also by factors such as network flexibility and network ownership. Some of these are already being addressed in 4G networks (for example, NFV/SDN for network flexibility and edge computing for low-latency capabilities), but their impact on the cost of 5G network rollout and operations is less clear.

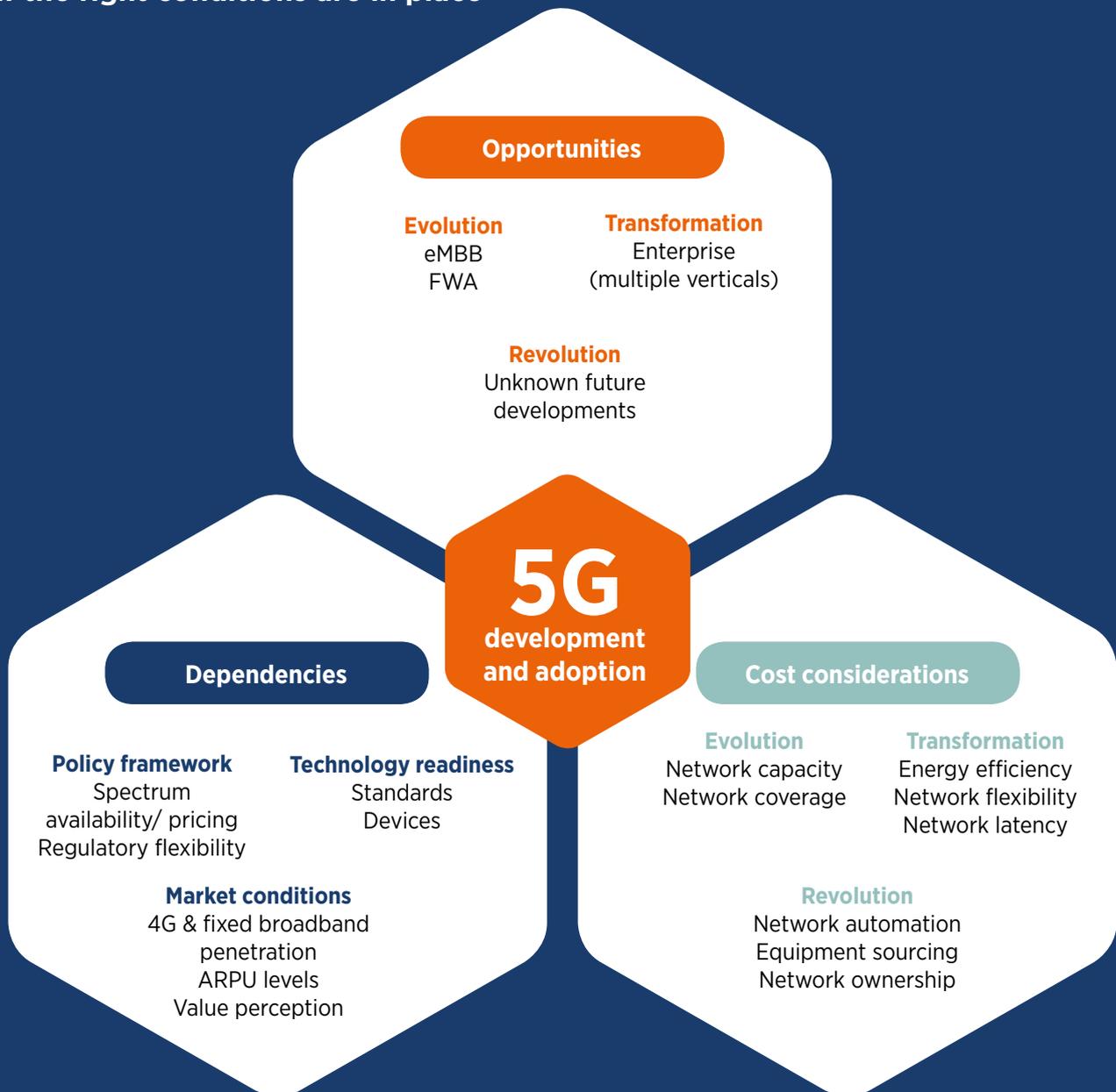
To date, the industry landscape has generally been shaped by infrastructure-based competition among operators (with networks built by established equipment vendors and managed by engineers). The 5G era will potentially see the introduction of new models of network ownership and new ways of building networks (such as more widespread adoption of open source software and hardware) and new network management approaches (using AI-based automation, for example).

3. **Dependencies:** a number of factors are required for the development of 5G services, including a supportive policy framework, the completion of all the necessary standards and the widespread availability of 5G devices. The rate of 5G adoption will also reflect prevailing local market conditions including competitive dynamics, legacy network availability, the affordability of devices and connectivity, and customers' perception of value.

Figure 23

Source: GSMA

5G is an inevitable network evolution, and will create significant opportunities if the right conditions are in place



Across the region, 5G has different levels of standing on national agendas. Many developed markets, such as South Korea, Japan and Australia, are keen to be global leaders in 5G, with much made about the potential of new innovative services and connected devices running on 5G networks. Half of total connections in these countries will be running on 5G by 2025 (having overtaken 4G).

The rest of the region is being more cautious. In many developing countries, 4G will still dominate out to the middle of the next decade, accounting for 70% of connections by 2025. In these markets, 4G is still relatively new, and operators are yet to recoup the significant investments they made in rolling out the technology. Additionally, subscribers here are less likely to migrate to a more expensive 5G service when 4G or even 3G networks provide a ‘good enough’ service for the majority of their needs.

Figure 24

Source: GSMA Intelligence

Developed Asia Pacific markets will be global 5G leaders. 5G opportunity in the rest of the region is more long term, with significant room left for 4G

Percentage of connections, 2025

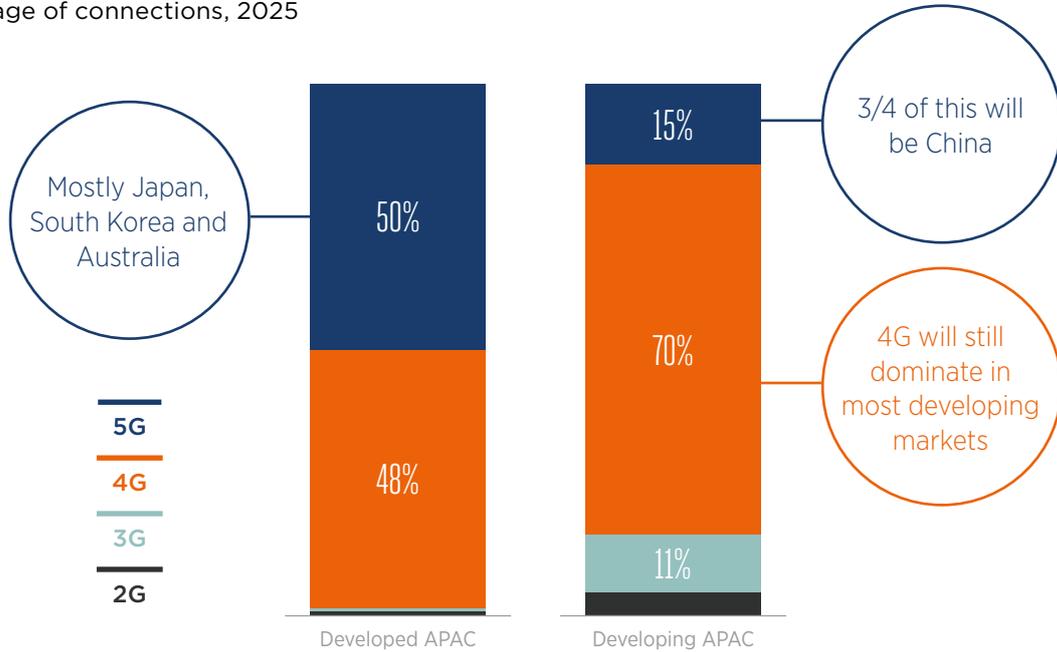


Figure 25

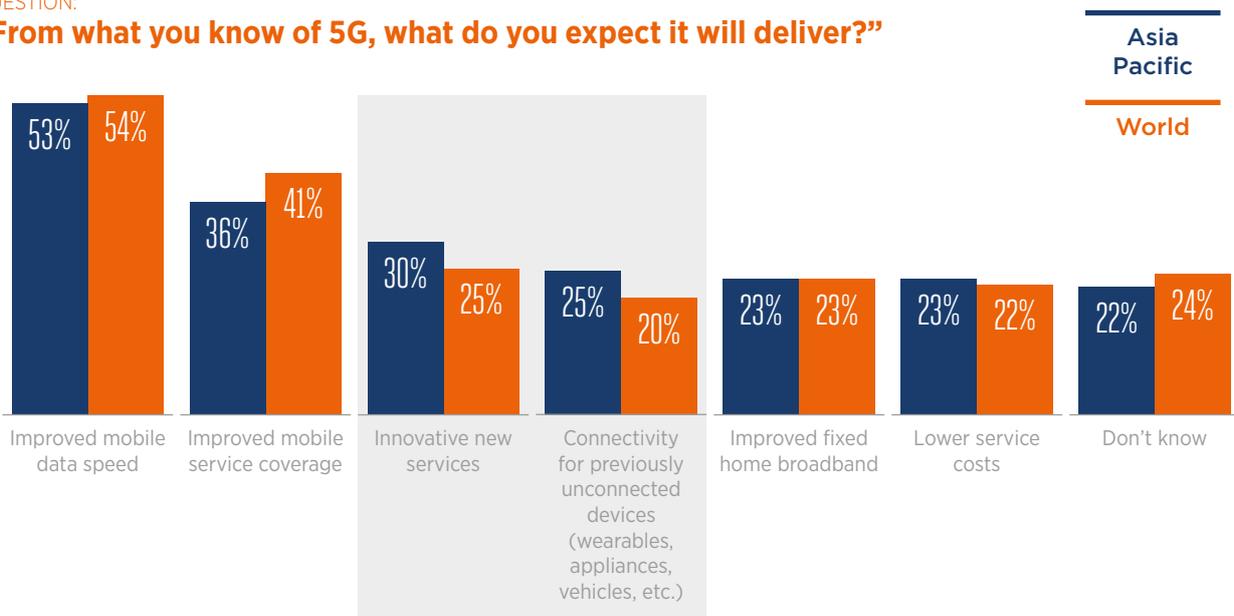
Source: GSMA Intelligence Consumer Survey 2018 (developed markets only)

Perceptions of 5G in developed Asia Pacific broadly in line with rest of world, but with more optimism around new services and connected devices

Percentage of respondents

QUESTION:

“From what you know of 5G, what do you expect it will deliver?”



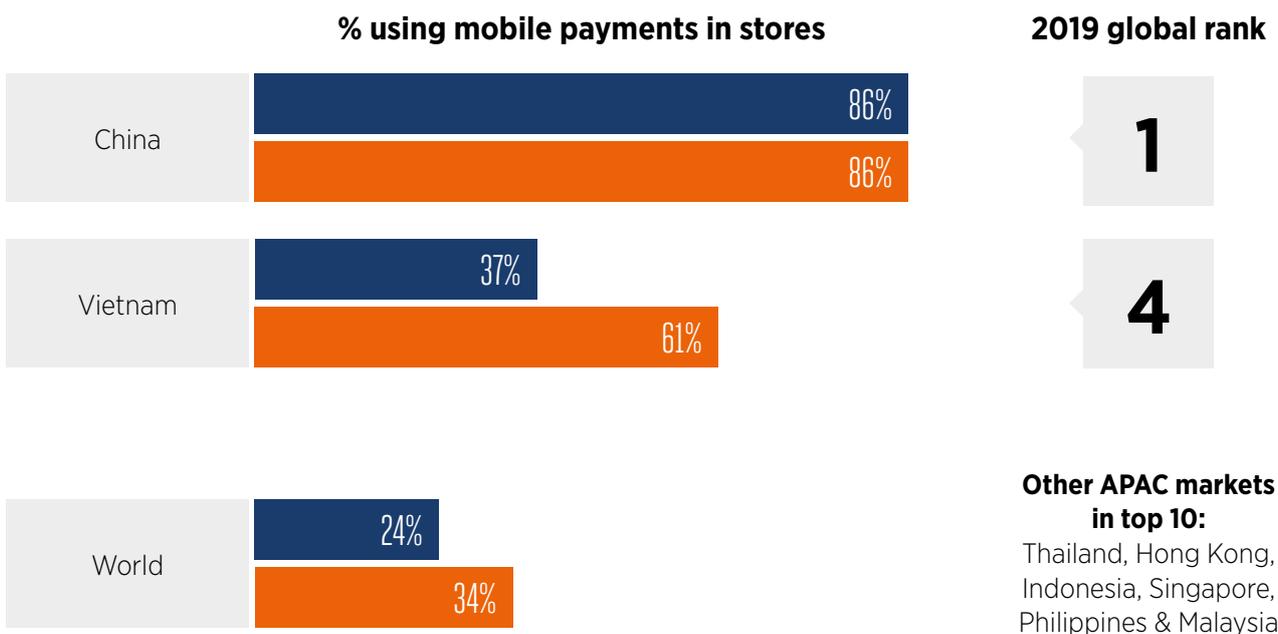


3.2 Payments platforms gain traction across Asia Pacific

Figure 26

Source: PwC Global Consumer Insights Survey 2019

Asia Pacific is leading the shift to mobile payments: the region is home to eight of the top ten countries



2018

2019



The leader: China

In China, mobile payments have become ubiquitous: the rapid rise of smartphone adoption, QR codes, retailer buy-in and the network effects from life platforms (WeChat and Alipay) have set in train a virtuous circle of engagement and growth. Tencent's WeChat app has around 1.1 billion monthly active users, around 90% of whom use WeChat Pay, its integrated mobile payment platform.⁸ Meanwhile Alipay, from Alibaba's Ant Financial, has more than 700 million active users in China alone.⁹ For comparison, Apple Pay has around 250 million users globally.

These platforms allow Chinese consumers to shop, chat, split bills among one another, share discounts and codes based on purchases, and securely purchase items – all within the same application. Both services have plans to expand to other markets, initially catering to Chinese tourists, though it is yet to be seen whether market conditions and regulatory environments will enable adoption elsewhere to proceed as smoothly as it has domestically.

The most improved: Vietnam

Vietnam is the fastest-growing global market for mobile payments. Keen to accelerate their use, the Vietnamese government passed a resolution in January 2019 to promote the use of cashless technologies. The government has recommended that establishments, including schools, hospitals and electricity, water, sanitation, telecoms and postal companies, prioritise electronic and mobile payments, and collect bills and fees via cashless means. Meanwhile the State Bank of Vietnam has been asked to develop solutions that promote the

use of e-wallets, ensure widespread implementation of the QR code standard, and find ways to remove limitations on electronic transactions.¹⁰

The private sector is also playing its part. In October 2018, Grab, a Singapore-based on-demand transportation and mobile payments platform, partnered with Vietnamese payment startup Moca to launch GrabPay by Moca, a mobile wallet integrated into Grab's app aimed at providing reliable and affordable financial services for the Vietnamese population.

8. "One photo shows that China is already in a cashless future", Business Insider, May 2018

9. "China's Alipay now has over 900m users worldwide", China Daily, November 2018

10. "Vietnam wants urban residents to pay bills without cash", VnExpress, January 2019



Can Asian mobile operators play in mobile payments?

The mobile payments push is a huge opportunity for mobile operators in South East Asia, who so far have not seen the same success for mobile money as in Sub-Saharan Africa.

While South East Asia has seen significant growth (registered mobile money accounts grew by 38% year-on-year in 2018, the fastest of any region¹¹), operators in the region are largely playing catch-up. OTTs in Asia have seen success because they reinvented payments to sit on integrated life platforms alongside a suite of other services, while start-ups such as Grab have entered the scene and achieved first-mover advantage. In a contrasting scenario to Sub-Saharan African operators, which have realised the need to diversify their mobile money proposition to stay ahead, South East Asian operators need to do the same just to be competitive.

Such diversification could mean expanding beyond basic peer-to-peer cash transactions and offering adjacent financial services (savings, credit, insurance, wealth management etc) and dedicated enterprise solutions. Operators could also look to open up their APIs to build a merchant and developer ecosystem; could explore different means of monetisation; and could embrace partnerships with third parties to help overcome regulatory barriers.¹²

Figure 27

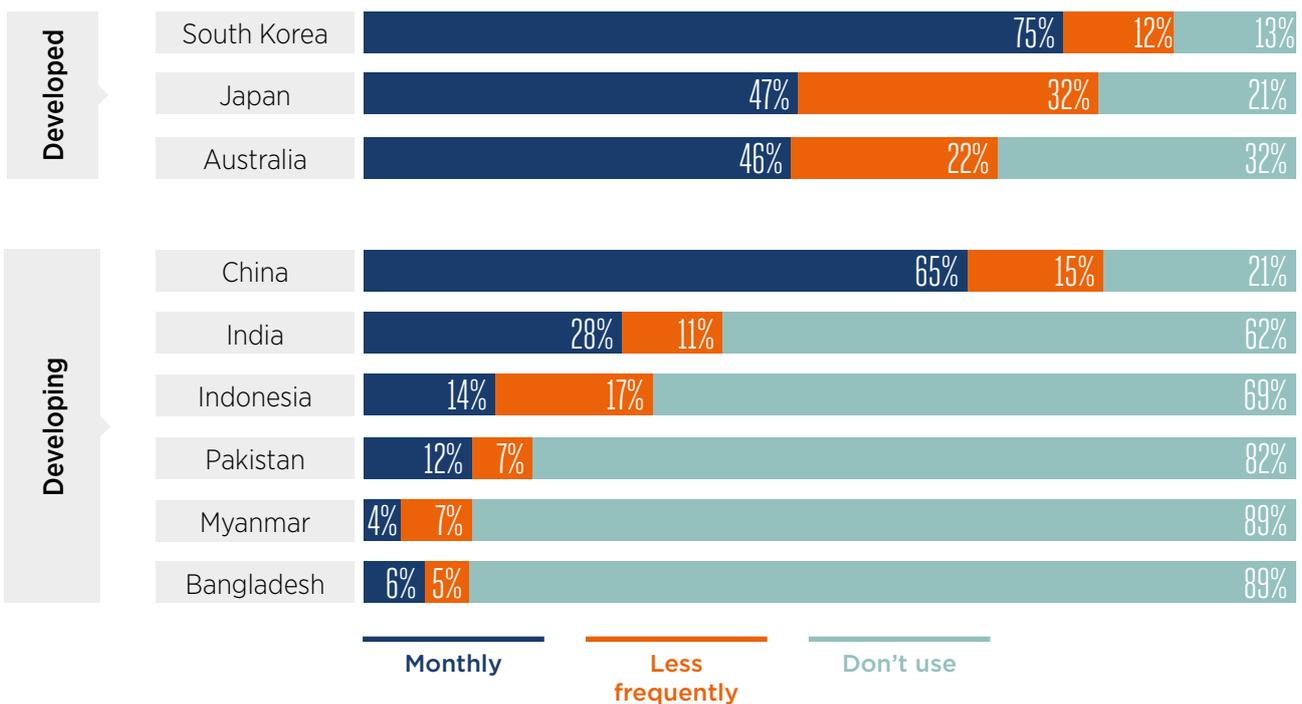
Source: GSMA Intelligence Consumer Survey 2018

E-commerce is largely ubiquitous across developed Asia Pacific; China aside, usage in developing Asia Pacific is still nascent

Percentage of smartphone owners

QUESTION:

How often do you order and/or purchase goods online using your smartphone?



11. GSMA Mobile Money

12. "Can Asian MNOs play in mobile pay?" Mobile World Live, May 2019

3.3 Identity is essential to a digital society

Figure 28

Source: GSMA

Identity is a critical precondition for effective participation in a digital society



Figure 29

Source: GSMA Intelligence

Benefits of well-developed digital identity programmes are multi-faceted¹³



13. For more information, see [Digital identities: Advancing digital societies in Asia Pacific](#), GSMA, 2018



Trust is crucial if citizens are to adopt digital identity services: privacy, security, data protection and cybersecurity are all essential in building and maintaining trust.

- **Privacy, security and data protection:** there is growing demand for security and trust by consumers before adopting services based on their digital identities. Properly designed privacy and security safeguards will help gain citizens' trust, while ensuring that the flow of data is not unduly impaired, whether at the national level or across borders.

In Asia Pacific, of the 50 countries that mandate SIM registration, only 22 have a data protection and/or privacy framework (six are considering implementing one).¹⁴ It is important that privacy and data protection rules strike the right balance between protecting consumers and encouraging the development of a digital society.

- **Cybersecurity:** new technologies such as distributed ledger technology (DLT) or Keyless Signature Infrastructure (KSI) – commonly known as blockchain – may help to allay security concerns via their decentralised structures that are difficult to hack or alter. If structured with privacy by design and by default, blockchain technology should address security concerns in complex, multi-party transactions via decentralised structures that better enable users to control what – if any – personal information they share with particular parties.

Various countries in Asia Pacific such as Thailand, Japan and the Philippines are developing blockchain-based digital ID programmes.

14. [Access to Mobile Services and Proof-of-Identity: Global policy trends, dependencies and risks](#). GSMA, 2018

3.4 Startups driving innovation and opportunities for collaboration

Figure 30

Source: CB Insights

Asia Pacific’s unicorn list comprises 112 companies, with new entrants in Japan and the Philippines

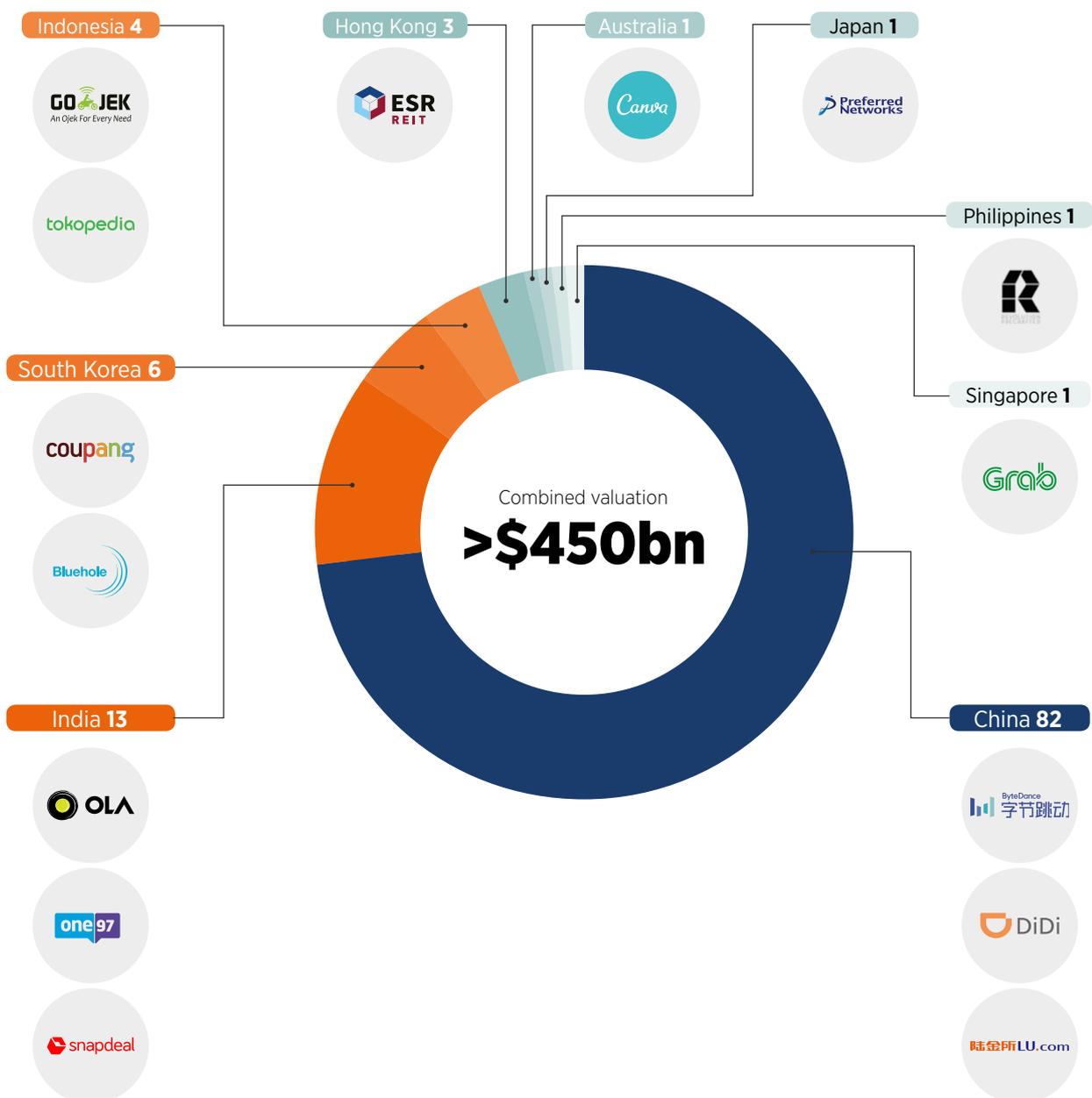


Figure 31

Source: GSMA Ecosystem Accelerator

Mobile operators and start-ups have certain assets and needs, which overlap to create potential synergies or opportunities for collaboration

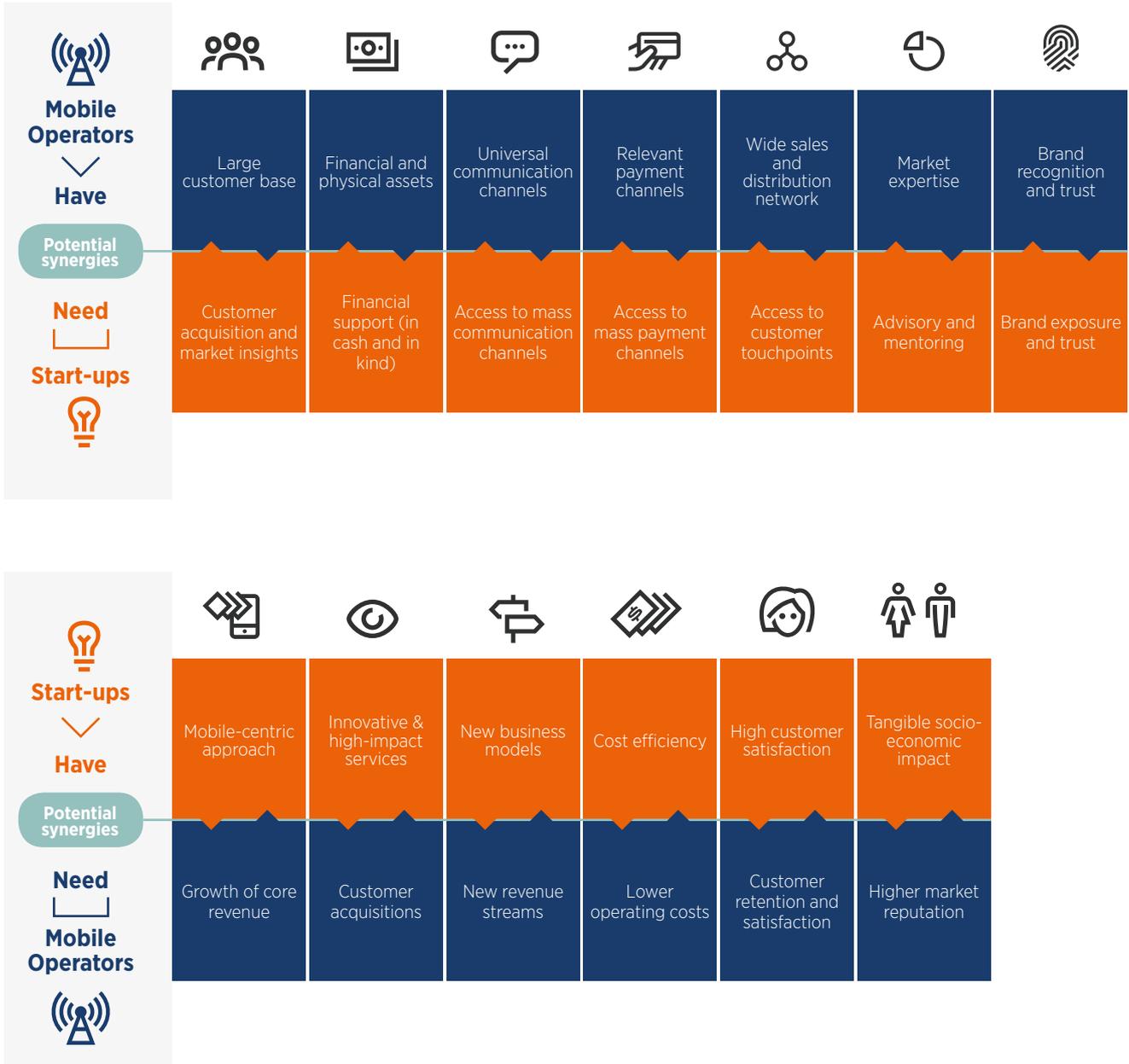
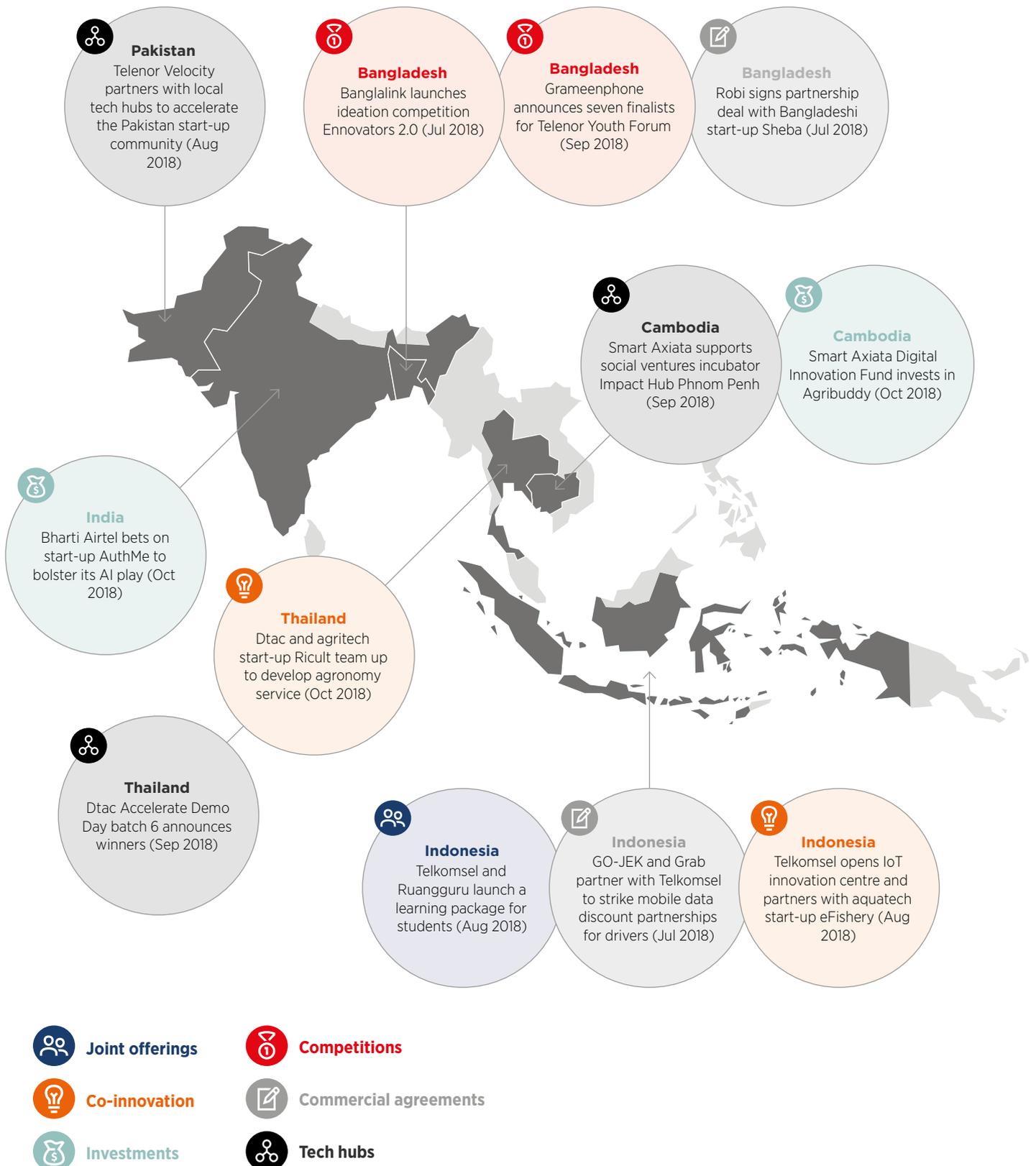


Figure 32

Source: GSMA Ecosystem Accelerator

Collaboration can unlock commercial opportunities while delivering a strong socioeconomic impact for local populations and businesses





04 Policies for digital advancement



Mobile internet uptake is spreading rapidly across Asia Pacific, and smartphone ubiquity has resulted in consumers continuing to transition from connectivity to digital services. However, the size and diversity of the region mean countries are at different stages of digital development. Consequently, the policy frameworks for a digital society vary across the region as national governments address their own unique challenges.

For some Asian markets, 2019 will see 5G become a reality as mobile operators move from development and testing to commercial deployment. For many countries in the region, however, 5G deployment is several years away so 4G will remain pivotal to the

development of a digital society. Meanwhile, other critical components, such as payments and identity, are evolving rapidly, and governments will need to ensure they continue to develop policies that are modernised and relevant.

4.1

Laying the regulatory groundwork for 5G

5G connectivity promises a new wave of product and service innovation, particularly in enterprise and vertical sectors. On the road to 5G, governments and regulatory authorities have a choice: actively shape a favourable business environment that allows mobile operators to roll out 5G more quickly and broadly, or wait until operators can justify 5G deployment under current regulatory conditions (which risks holding back the digital advancement of the country).

A key priority for governments is allocating sufficient spectrum for 5G. Compared with previous mobile generations, 5G requires larger contiguous blocks of spectrum to achieve its potential: each operator needs access to 80-100 MHz of contiguous spectrum in mid-range radio frequencies (e.g. 3.5 GHz) and 1 GHz in millimetre wave bands (e.g. 26 GHz). Millimetre wave mobile bands will largely be agreed in 2019 at the World Radiocommunication Conference, where the GSMA recommends support for the 26, 40 and 66-71 GHz bands.

In Asia Pacific, there is a need for stronger collaboration between government and industry in planning for spectrum releases, namely the use of spectrum roadmaps or spectrum outlooks. These consultative processes are an effective way to ensure spectrum supply meets demand in a timely manner, as well as enabling mobile infrastructure planning and investment to take place according to realistic timelines. The result is increased benefits for government in reaching connectivity objectives,

reducing access barriers for industry in deploying mobile services, and empowering consumers with applications and services.

Authorities in Asia Pacific should avoid using spectrum licensing for mobile services as a tool for fiscal gains. Instead, the focus should be on lowering barriers for investment in mobile infrastructure – contributing to long-term national economic benefit rather than seeking short-term fiscal revenues.

Authorities should also not deviate from the use of exclusive licences as the mechanism for providing spectrum access. Without the guaranteed, exclusive use of specified bands, operators would not be able to justify the long-term investment that mobile networks require. Spectrum sharing frameworks can play a complementary role, but they must avoid undermining the potential of 5G.

Complex planning procedures involving multiple layers of approval can significantly delay 5G site deployment, which requires a denser distribution of base stations, small cells and advanced antenna systems. Governments are encouraged to adopt a national code for new mobile sites and modification of existing sites, implemented by local authorities. Small cells meeting predefined criteria, considering their low visual impact, should be allowed with minimal administrative burden and be exempt from planning requirements. Governments should also facilitate access to public sector sites for operators to deploy network equipment, making buildings and street furniture accessible to mobile operators.

4.2

Promoting trust, trade and innovation

To reap the benefits of a mobile society, there has never been a greater need for governments to develop policies that foster trust in the digital environment. Data privacy frameworks that protect citizens' data together with a national digital identity system provide the foundation of trust. Mobile operators are a trusted party and are able to provide convenience, privacy and security through identity management in the digital world.

Data privacy frameworks must also allow data to flow across borders in ways that support trade and innovation. Governments in Asia must accelerate the progress of the evolution and convergence of data

privacy frameworks that enable data to flow while maintaining a level of protection.

Regulatory sandboxes that create an environment for private companies to experiment with new technologies are one approach governments may wish to explore. For example, a regulatory sandbox that allows personal data to be transferred from one country to another in a controlled environment would help mobile operators, internet players and start-ups develop new products and services that would boost growth of the digital economy across the region.

4.3

A new approach to policy setting

The rapid growth of digital societies across the region highlights the need for governments to adapt their approach to policy development: an agile, whole of government approach is required to accelerate and provide a more inclusive digital society. Public administrations typically operate in silos, resulting in policies that are sector specific, but providing advanced mobile digital services requires collaboration across sectors such as automation, energy, health and agriculture. To enhance the prospects for a better, mobile-enabled digital society, governments should adopt a cross-sectorial approach to policy setting.

Competition and cooperation among digital players has been a key driver of the digital economy, so policy-makers must allow the markets to develop and consolidate. Governments may have concerns that consolidation will lead to a reduction of investment by operators; however, the evidence points to increased investment. Larger operators enjoy economies of scale that help when it comes to extending coverage and undertaking network upgrades. They also have greater financial strength – due to larger profit margins and improved access to complementary assets and commercial partnerships – and expect higher returns from their investments. Policy-makers must ensure their competition policy frameworks remain relevant for the digital economy, while market assessments based on market definitions that are forward-looking should be the basis for intervention.

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