GSMA

6 GHz in APAC
Mobile evolution in 6.425–7.125 GHz

The Asia-Pacific region is home to some of the most advanced 5G markets globally. By the end of 2025, 5G is projected to account for more than half of total mobile connections in leading countries such as Australia, China, Japan, Singapore and South Korea. Meanwhile, other major economies such as India and Vietnam are growing rapidly and are expected to catch up by the end of this decade.

As adoption expands so will the demand for spectrum, especially mid-bands for city-wide and indoor capacity. The full availability of the upper 6 GHz band (6.425–7.125 GHz) for mobile networks is crucial to support continued growth and set the stage for next-generation 6G services.

MID-BANDS AND MOBILE DATA OVERVIEW

Data demand is rising | In the future, 6G will use 200–400 MHz channels | **Mid-bands are indoor and outdoor** | Digital development needs macro-cell full-power 6 GHz

In APAC, data per connection between 2024 and 2030 as 5G accelerates

2024 → 21 GB/month per connection to
2030 → 61 GB / month per connection (3x)

Peak 6 GHz trial speeds: 12 Gbps

IN THE GLOBAL SELECTION OF CITIES IN THIS REPORT:

The average economic benefit of **FULL-POWER LICENSED MOBILE IN UPPER 6 GHz** is

7×

GREATER THAN UNLICENSED

58%

of mobile data use is indoors and

42%

is outdoors

84% of indoor connectivity is provided by mid-bands with

16%

coming from low bands

71%

of urban indoor 5G use is provided by 3.5 GHz

Wi-Fi use:

30%	38%	32%
Wi-Fi 4	Wi-Fi 5	Wi-Fi 6

Technology migration will enhance efficiency

Mid-band 4G download speeds are

3×

higher than on low-bands

3.5 GHz 5G download speeds are 7× times higher than low bands and

2.5×

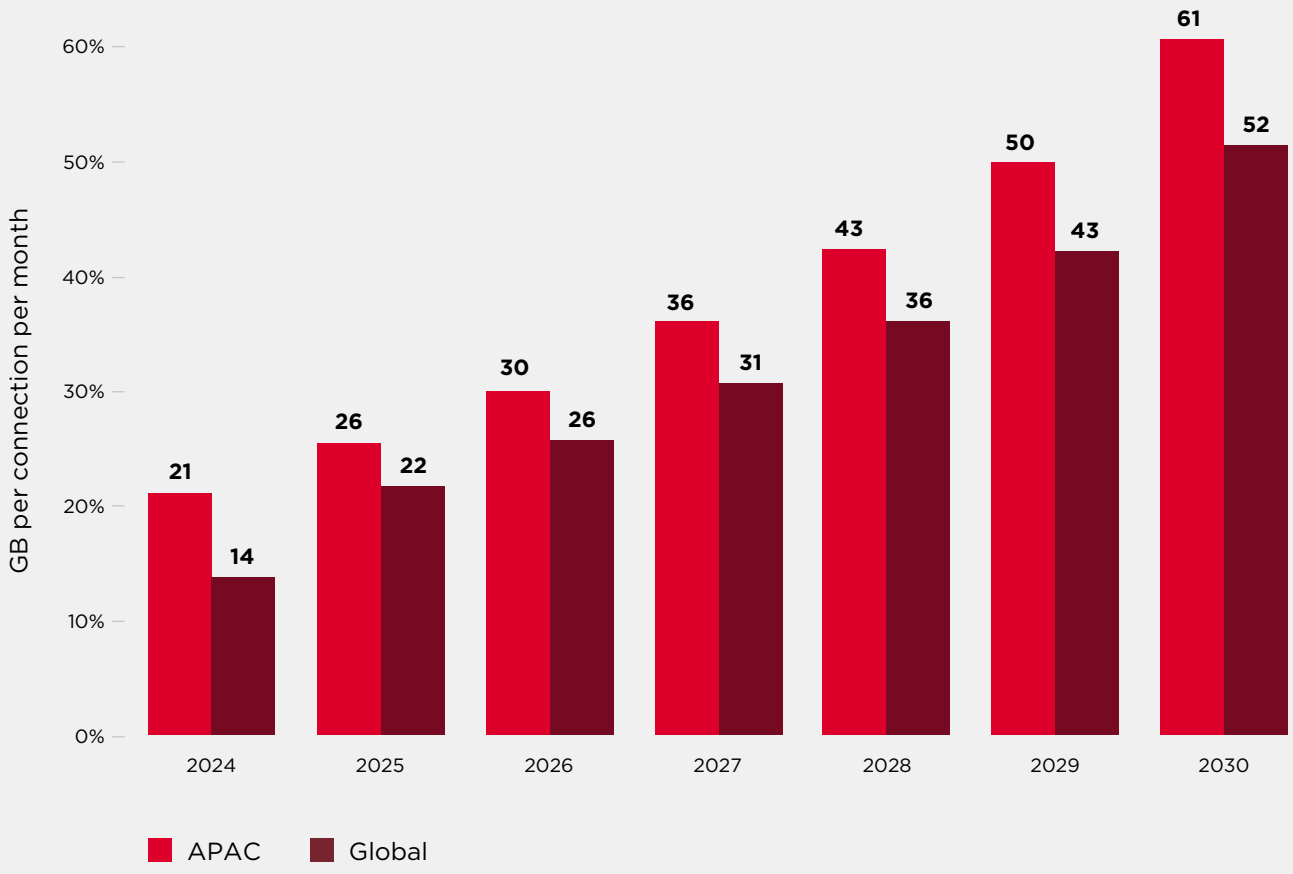
higher than lower mid-bands

Data growth

Mobile and fixed operators will need to manage significant traffic growth on their networks over the next decade. Global mobile traffic growth in 2023 was the largest of any year to date. The 2023 increase alone was greater than the absolute traffic level in 2018. Looking ahead, average data use is expected to be around 3x higher in 2030 than in 2024 in APAC. The absolute increases in network traffic will continue to grow at higher numbers each year – despite lower percentage growth it is important for regulators and policymakers to understand that traffic volumes each year continue to get larger.

Additional mobile spectrum in the upper 6 GHz band can support this growth in APAC.

Figure 1
APAC mobile data usage (GB per connection per month)



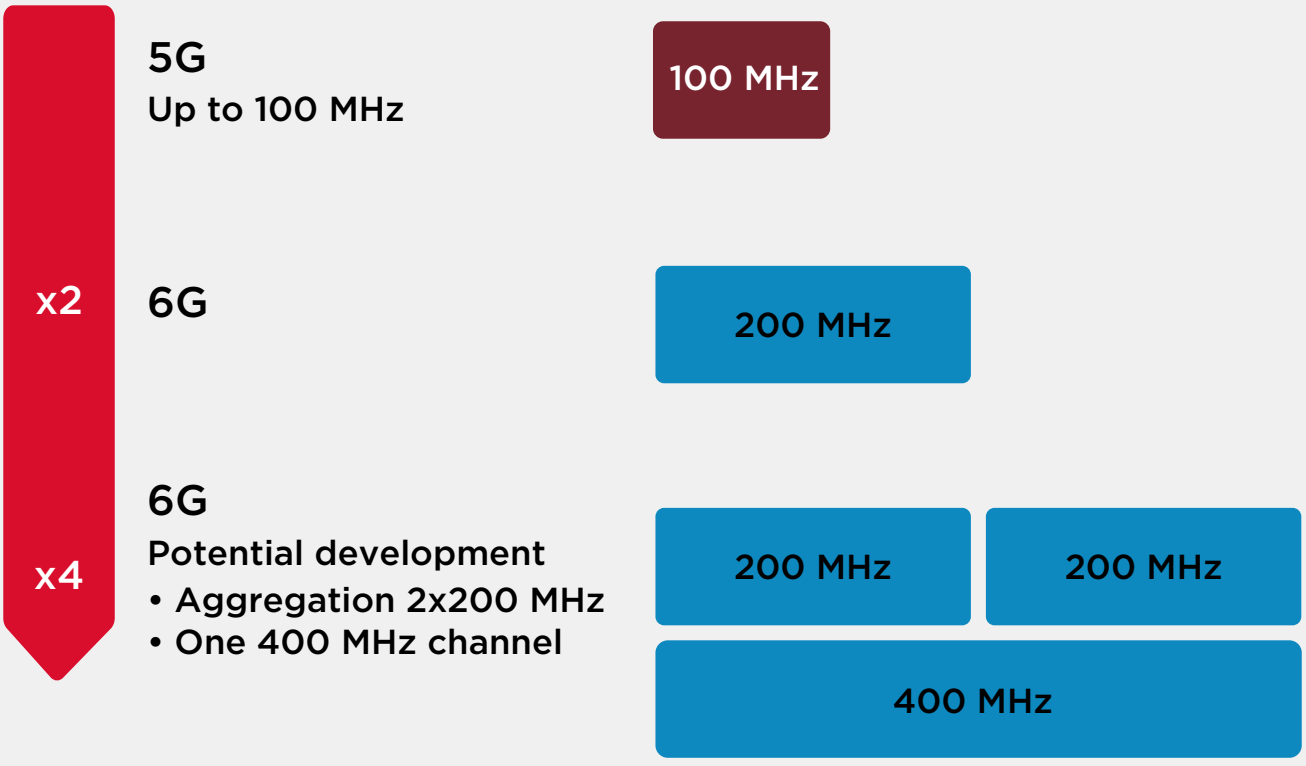
Source: GSMAi

Planning 6 GHz for the future

Each mobile generation has used wider channel sizes than the one before, from 1.25 MHz 2G channels to the 100 MHz channels used for 5G. The 6G era in the 2030s will use 200–400 MHz channels in mid-bands to cater for capacity and speeds required to deliver services and applications.

6 GHz will be able to provide some of this capacity. The 700 MHz available in the upper 6 GHz band can only provide the lower end of the 200–400 MHz range in a typical three-operator market. However, it is still the most likely way to support sufficient channel sizes in APAC.

Figure 2
New channel sizes for new generations



Socio-economic benefits

In 2024, GSMAi studied the potential economic benefits of three different policy options for the upper 6 GHz band in nine countries around the world.

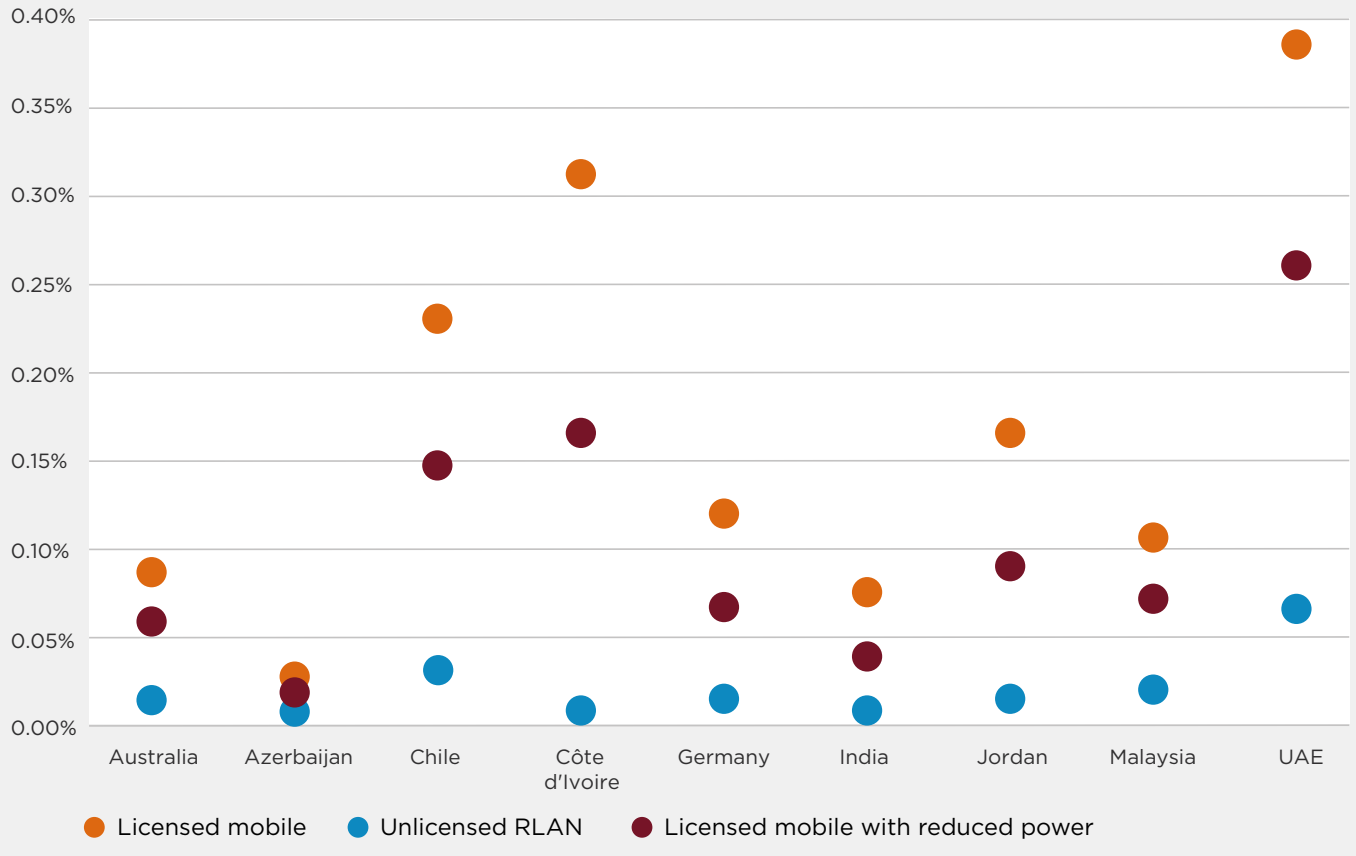
- licensed mobile use (Scenario 1)
- unlicensed RLAN use (Scenario 2)
- enabling shared use by reducing the power levels of mobile deployments (Scenario 3).

The greatest economic benefit was always achieved with Scenario 1, where the upper 6 GHz band is assigned to licensed, macro-cell mobile use with standard power levels. This is because mobile networks are more likely than Wi-Fi to face capacity constraints through to 2035, making additional spectrum critical for enhancing network performance and broader economic value.

As shown below, there is scope for more efficient use of Wi-Fi spectrum by deployment of newer Wi-Fi technologies. With more efficient spectrum use, existing unlicensed bands (2.4 GHz, 5 GHz, and lower 6 GHz) are sufficient to handle future Wi-Fi demand.

Shared use approaches that limit power substantially reduce capacity and benefits, while indoor/outdoor usage distinctions lack justification given most mobile traffic originates indoors.

Figure 3
Economic benefits of the three scenarios in nine countries
Proportion of expected GDP in 2035



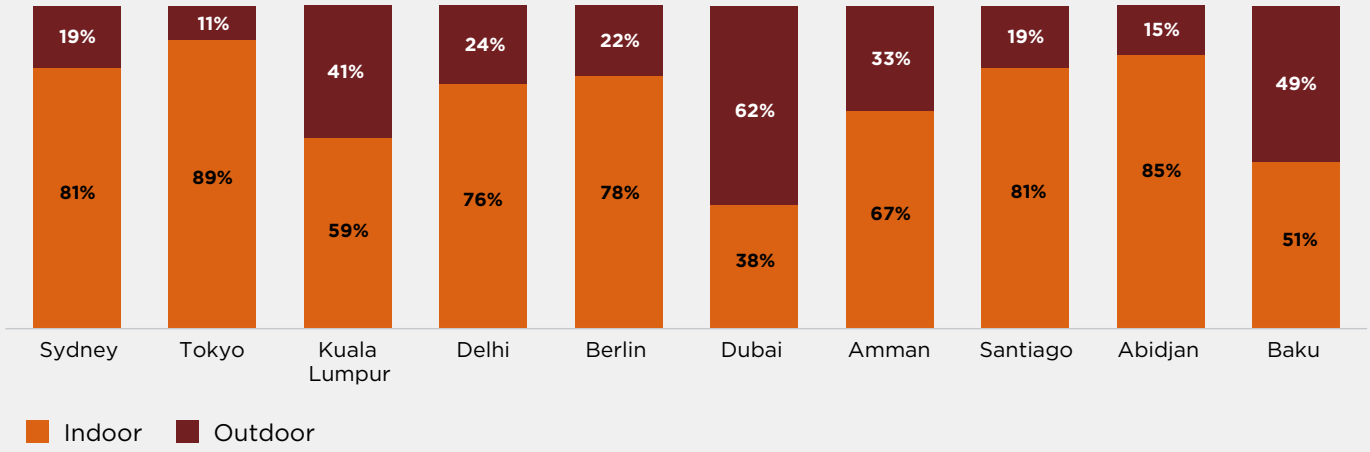
Source: GSMA Intelligence
Note: The results represent the net present value (NPV) of economic benefits over 2023–2035, expressed as a proportion of expected GDP in 2035 for each country.

Indoor-outdoor mobile usage

Data from SpeedTest Intelligence (provided by Ookla), shows that most mobile use is indoors and largely delivered over mid-band spectrum.

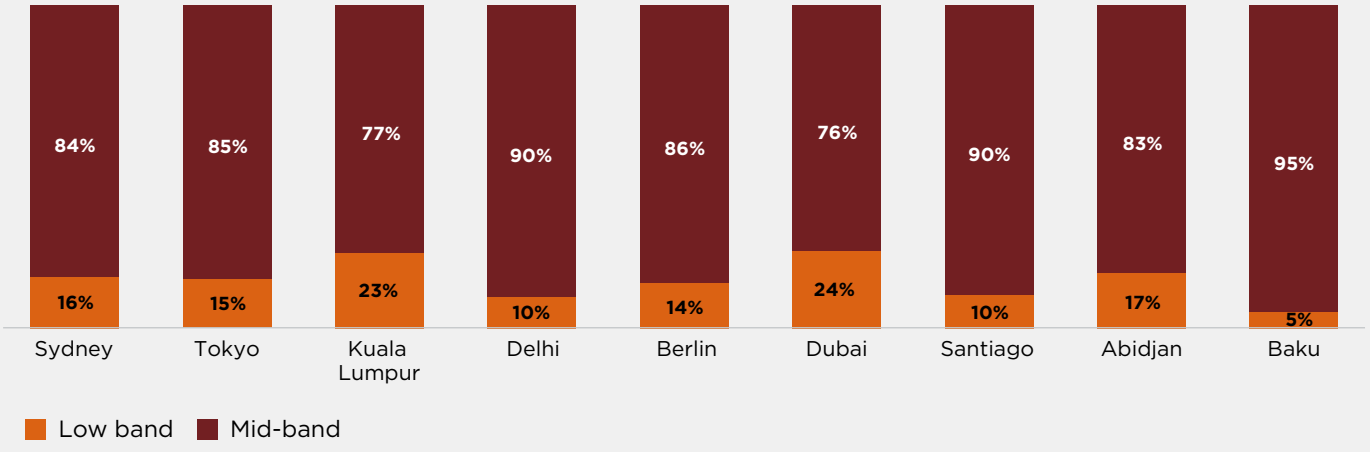
Trials have shown that 6 GHz can deliver comparable indoor coverage to the 3.5 GHz range. Evidence also suggests the upper 6 GHz band can effectively provide an additional capacity layer in urban areas and meet the majority of indoor and outdoor requirements.

Figure 4
Distribution of mobile scans based on indoor/outdoor locations



Source: GSMA Intelligence analysis, based on Speedtest Intelligence data provided by Ookla

Figure 5
Distribution of 4G and 5G indoor scans by spectrum band



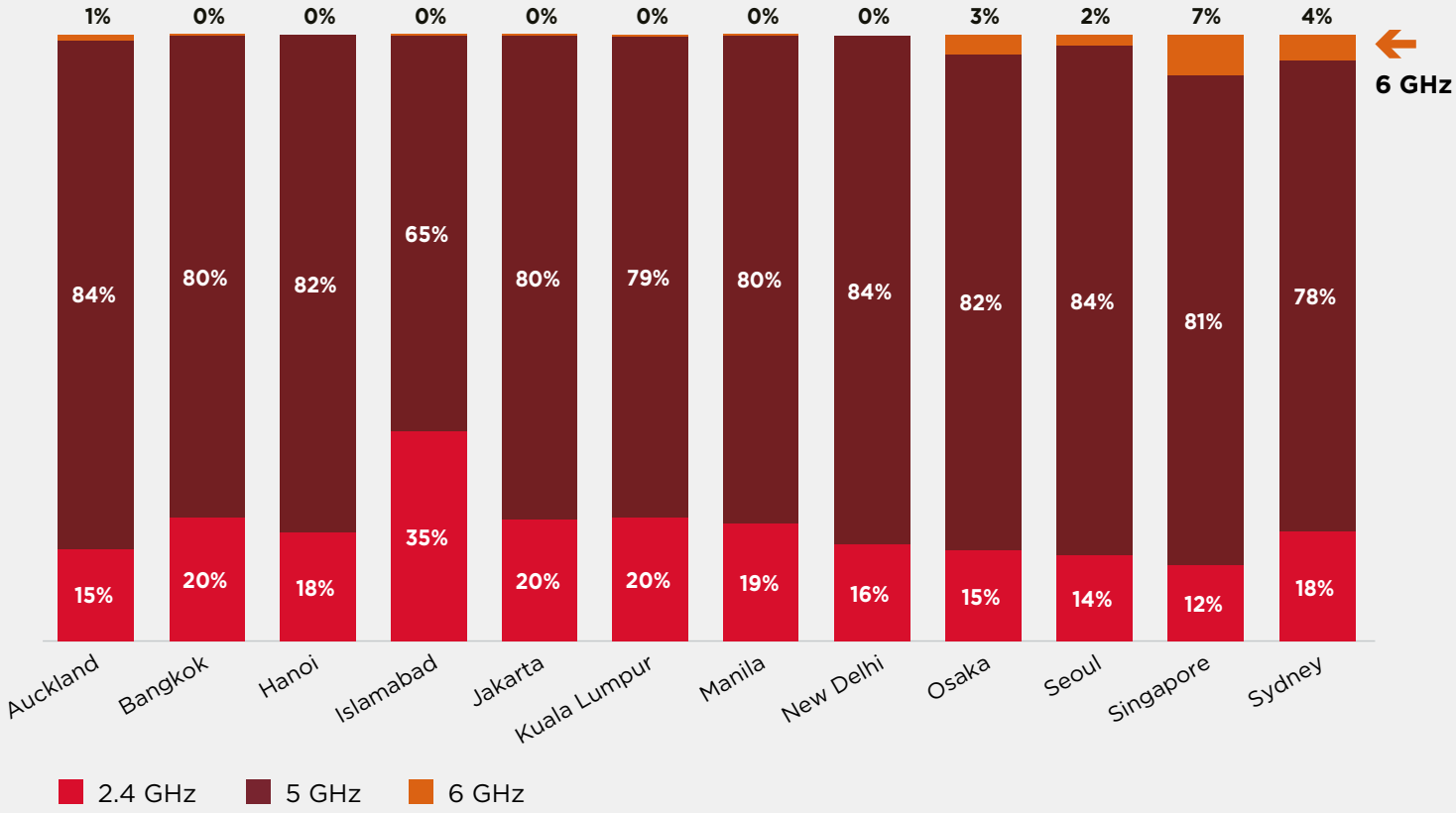
Source: GSMA Intelligence analysis, based on Speedtest Intelligence data provided by Ookla
Note: Low bands refer to frequencies below 1 GHz, while mid-bands refer to frequencies above 1 GHz excluding mmWave bands. Insufficient data on low bands in Amman.

A clear pathway for Wi-Fi evolution in lower 6 GHz

Data gathered by Ookla across APAC during Q2 2025 in 12 cities shows that some countries had almost no scans using Wi-Fi 6E across the 6 GHz band.[1] Others only have single-digit percentages of total Wi-Fi scans in the 6 GHz. Even in South Korea, the only APAC country to have opened up the entire 6 GHz band (6.425–7.125 GHz) for Wi-Fi, just 2% of Wi-Fi 6/6E scans in Seoul were using this band.

Spectrum in the 2.4 GHz and 5 GHz Wi-Fi ranges is carrying the majority of today's APAC Wi-Fi traffic, leaving the band 5.925–6.425 GHz open to the future evolution of Wi-Fi technology.

Figure 6
Distribution of Wi-Fi 6/6E scans by band



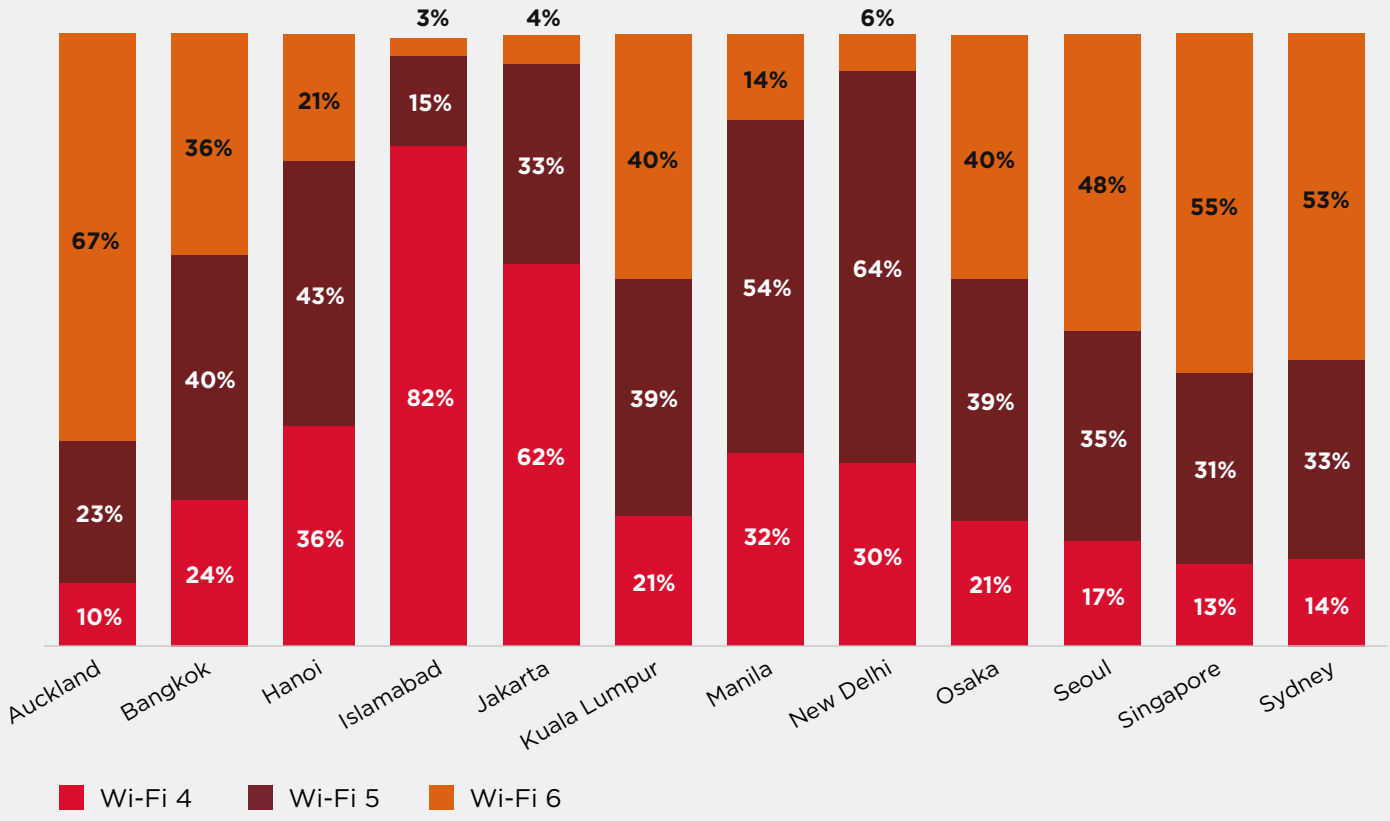
Source: GSMA Intelligence analysis, based on Speedtest Intelligence data provided by Ookla

1 Across the 12 markets, the majority have made available the lower 6 GHz (5.925-6.425 GHz) available for unlicensed use, including Wi-Fi, as of Q2 2025, with the exception of India. In South Korea, the entire 6 GHz (5.925-7.125 GHz) was made available for Wi-Fi in 2020.

Distribution of Wi-Fi scans by technology

Today, much of APAC still relies heavily on older Wi-Fi technologies, especially in developing markets where around a quarter or more scans remain on Wi-Fi 4, reaching as high as 82% in Islamabad. Wi-Fi 5 usage is also extensive, ranging from 15-64%. The usage of the more spectrally efficient Wi-Fi 6 varies from 3-67%, with higher usage among more advanced APAC markets.

Figure 7
Distribution of Wi-Fi scans by technology



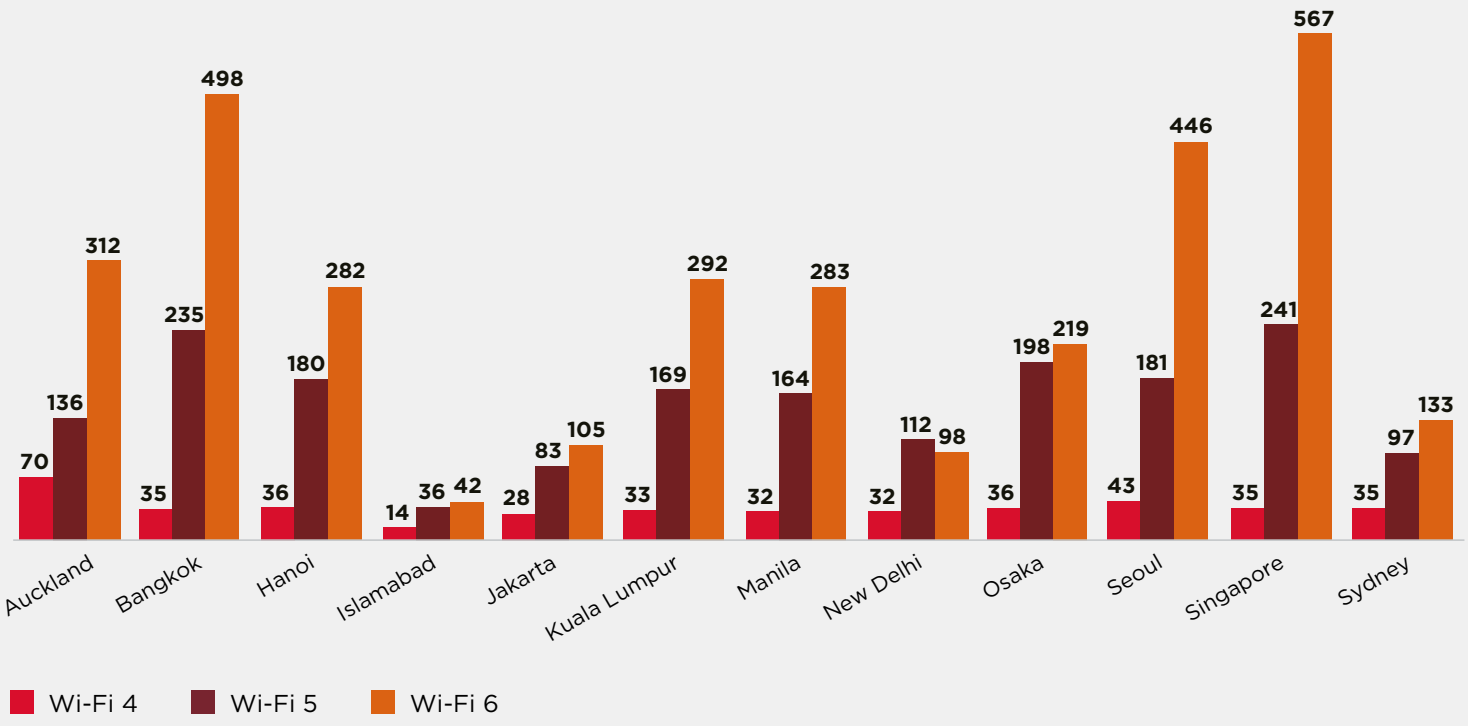
Source: GSMA Intelligence analysis, based on Speedtest Intelligence data provided by Ookla

Median Wi-Fi download speeds by technology (Mbps)

Recent data also highlights the impact newer Wi-Fi technologies can have on delivering faster speeds using existing spectrum bands. While the lower 6 GHz band (5.925–6.425 GHz) is a new expansion band for Wi-Fi to evolve into, Wi-Fi 6 today is providing fast user experiences using largely 2.4 GHz and 5 GHz spectrum.

Upgrading to the latest Wi-Fi 6 technology allows for greater efficiency, while optimising indoor deployments (for example, with additional access points, mesh network solutions and using Wi-Fi boosters) can also improve Wi-Fi quality.

Figure 8
Median Wi-Fi download speeds by technology (Mbps) in 12 APAC cities



Source: GSMA Intelligence analysis, based on Speedtest Intelligence data provided by Ookla

Conclusion

Licensed 6 GHz spectrum can ensure that mobile connectivity will support APAC's digital goals going into the 2030s. The spectrum capacity in the lower 6 GHz band is available for Wi-Fi evolution in APAC.

It is now time to ensure that mobile is given the same potential with fair and balanced regulation that allows licensed mobile access to the full upper 6 GHz band at 6.425–7.125 GHz.

6 GHz highlights

- Licensed 6 GHz capacity is required to support increasing customer demand at speeds outlined in the International Telecommunication Union's vision for 5G. It will also be required for 6G.
- Spectrum capacity needs for future deployments should consider channel sizes of 200–400 MHz.
- Mobile networks are already densified, but 6 GHz can enable the growth of sustainable mobile capacity on existing macro-cell sites.
- Timely availability of 6 GHz, at reasonable conditions and price, will drive cost-efficient network deployment, help lower the broadband usage gap and support digital inclusion.
- There is scope to improve the efficiency of unlicensed Wi-Fi spectrum use, with upgrades from Wi-Fi 4 and Wi-Fi 5 to the latest technologies and the lower 6 GHz band is an almost entirely unused space in which Wi-Fi can evolve.
- The full upper 6 GHz (6.425–7.125 GHz) should be made available to full-power macrocell IMT, without any additional power restrictions or sharing mechanisms.