



Capacity to Power Innovation

5G in the 6 GHz Band

Spectrum in the 6 GHz range (5925-7125 MHz) provides the bandwidth to allow affordable connectivity for a 5G society.

5G is a pillar of digital transformation. Its integration into our lives and work has the potential to impact communities and economies, and as it delivers transformational services it can boost global GDP by US\$2.2 trillion¹. In 2019, mobile technologies and services generated 4.7% of GDP across the globe. By 2024, the contribution is predicted to increase to 4.9% of GDP. This can only happen, however, if sufficient spectrum resources are in place to provide the capacity for innovation and development.

The 6 GHz range is a mid-band frequency and sits at a balancing point between coverage and capacity, providing the perfect environment for 5G connectivity. Extending the bandwidth of 5G through the harmonisation of 6 GHz spectrum will provide more bandwidth and improve network performance. On top of this, the broad, contiguous channels offered by the 6 GHz range will reduce the need for network densification and make next-generation connectivity more affordable for all.

5G use cases are broad, moving well beyond mobile broadband. They aim to accelerate the digital transformation of all industries

and sectors, unleashing new waves of innovation that will benefit billions. This makes it crucial for the environment, helping to reduce emissions throughout the different industries and promote an era where connectivity replaces carbon. In order to reach all users, however, industries will require the extra capacity that the 6 GHz range offers.

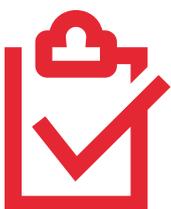
Next-generation Industry 4.0, health care, intelligent transport systems, and virtual reality applications all depend on the bandwidth, coverage and capacity 5G offers. Also, providing fixed broadband via 5G will transform connectivity in areas where fibre is not available. It can reach homes and businesses quickly and affordably compared to fibre.

Research from Coleago Consulting on mid-band 5G spectrum needs in Europe² shows that careful consideration of spectrum demand in the 2025-2030 time frame. This is crucial to meet growing demand, data consumption and the needs of all use cases. The research finds that, in addition to the amount of assigned spectrum by 2025, regulators will need to make 1-2 GHz available for the development of 5G.

¹ https://www.gsma.com/mobileeconomy/wp-content/uploads/2020/03/GSMA_MobileEconomy2020_Global.pdf

² <https://www.coleago.com/app/uploads/2021/01/Demand-for-IMT-spectrum-Coleago-14-Dec-2020.pdf>

To expand the benefits of the 6 GHz range, policy makers should:



- ✓ **Make at least 6425-7125 MHz available for licenced 5G.**
- ✓ **Ensure backhaul services are protected. Backhaul is present in the majority of the countries in the entire band. This is the lowest band widely used and needs to be taken into account.**
- ✓ **Depending on countries' needs, incumbent use and fibre footprint, the bottom half of the 6 GHz range at 5925-6425 MHz could be opened on a licence-exempt basis with technology neutral rules.**

The WRC Opportunity for Development

The 2023 World Radiocommunication Conference (WRC-23) will play an important role in determining future access to the upper 6 GHz range (6425-7125 MHz). It provides the opportunity to harmonise the band across large parts of the planet and help continue development of the 6 GHz ecosystem.

Balanced decisions on the use of this range can allow licence-exempt technologies, when needed, to make use of the lower part of the

band where required while reserving the upper portion at 6425-7125 MHz for licensed 5G.

Both technologies need the space to thrive and mobile operators have a history of maximising the impact of spectrum resources. Support from policy makers is vital to if the value that they bring to economic benefit and societal development is to be maximised.

6 GHz Use Cases

New 5G use cases driven by wide blocks of 6GHz spectrum can bring innovative new use cases and creative applications to society:



Enhanced mobile broadband (eMBB)

Faster, more reliable mobile broadband enables new applications and services. Providing a consistent, high-throughput mobile user experience is one of the central pillars of 5G.



Fixed wireless access (FWA)

5G can connect consumers and businesses at fibre-like speeds away from last-mile fibre. The ability to provide an alternative to fibre cables can drive broadband uptake and lower the costs of connectivity.



Industrial automation

Next-generation automation as well as remote object manipulation are transforming industrial processes. Along with other real-time control applications this will increase efficiency, reduce costs and improve safety.



Health care innovations

5G supports advanced telemedicine including tactile internet capabilities, with remote surgery and smart instruments made possible due to its speed and latency capabilities.



Connected transport

5G enables connected vehicles to communicate with each other, the cloud, and the physical environment to create highly efficient public transport networks.

Capitalising on the 5G Opportunity

Policy makers must play their part to leverage the opportunity of 5G through assigning the 6 GHz band. The integration of 5G into our lives and work will impact communities, create jobs and drive forward economic growth. Its success is crucial for the environment as 5G will support an era where connectivity reduces carbon emissions. 6 GHz capacity can help create a global green economy and provide connectivity to drive the availability of 5G for all.

Read more about the value of 5G and connecting the unconnected:

www.gsma.com/mobileeconomy/wp-content/uploads/2020/03/GSMA_MobileEconomy2020_Global.pdf
cp.gsma.com/expanding-mobile-coverage/