TV RAMACHANDRAN

A SOLUTION IN SEARCH OF A PROBLEM

India's move to allocate 6 GHz for mobile may derail broadband growth, stifle WiFi 6E adoption, and hinder digital innovation, slowing economic progress.

The Government of India recently announced its decision to allocate 600 MHz of the upper 6 GHz band to licensed mobile operators. This marks a radical and daringly different step in the telecom world. Globally, the 6 GHz spectrum band (5925–7125 MHz) has emerged as a key enabler of next-generation wireless technologies like WiFi 6E and WiFi 7. While over 84 countries have recognised its transformative potential and delicensed significant portions of this spectrum, India has chosen to stand apart—continuing to use obsolescent WiFi versions and, in doing so, seriously jeopardising its digital leadership ambitions.

Regulatory authorities across 84 nations have delicensed all or part of the 6 GHz band, unlocking access to modern high-capacity WiFi networks. The United States was among the first to delicense the 6 GHz band (1200 MHz) in April 2020, enabling innovations, smart homes, the Internet of Things (IoT), telemedicine, and remote work.

Similarly, South Korea, Canada, Saudi Arabia, Brazil, and most of South America have also delicensed the full 1200 MHz, embracing unlicensed access for ultra-high-speed WiFi. The EU Regulator, CEPT, approved the delicensing of 500 MHz within the lower 6 GHz band of 5925–6425 MHz, with many European nations working towards full delicensing.

The consensus among developed and developing nations is clear: delicensing 6 GHz accelerates digital economies, fosters innovation, and bridges connectivity gaps. India's recent decision, however, puts it out of sync with global trends and aligns it with a non-trusted equipment source, raising concerns over inclusivity, security, and digital development.

It is important to note that 5G networks, primarily relying on the 3.5 GHz spectrum, are already struggling with poorer coverage than 4G. If deployed on 6 GHz, the coverage range would further reduce by nearly 50%, significantly harming the user experience. Clearly,

IN BRIEF

- India's decision to allocate 600 MHz of 6 GHz for mobile operators contradicts global trends, limiting WiFi 6E growth and digital transformation.
- 84 nations, including the US and EU, have delicensed the 6 GHz band to fuel innovation, smart cities, IoT, and faster broadband connectivity.
- 5G struggles with coverage gaps; 6 GHz would further shrink range, making it a poor choice for mobile networks while harming broadband expansion.
- Auctioning 6 GHz for IMT could generate less revenue than delicensing, which offers recurring economic benefits of Rs 3.95 lakh crore annually.
- WiFi 6E and 7 need the 6 GHz band to power smart cities, AI, AR/VR, and IoT, yet India risks missing the broadband revolution by restricting access.
- Reversing this decision before spectrum allocation can align India with global best practices and accelerate broadband for all.

allocating more mid-band spectrum for mobile use is a wasteful strategy.

INDUSTRY INFLUENCE AND THE PUSH FOR IMT

Possibly, the authorities are under tremendous pressure from some deep-pocketed vested interests who seemingly forget that they do not have exclusive licences for every type of telecom service. However, these private sector parties have successfully lobbied for the 6 GHz spectrum allocated for exclusive 5G use. Incidentally, 5G is being used by only about 23% of the subscriber base due to a lack of compelling use cases. However, it has been allocated several hundred MHz in over eight spectrum bands.

The 2000 MHz requirement for IMT, quoted erroneously as the reason for earmarking this additional spectrum band, is required only by 2030 and mainly for 6G. Moreover, there are additional bands like 7125-8440 MHz and 100 MHz in the upper 6 GHz (7025-7125) identified globally for IMT by WRC -23, providing as much as 1415 MHz, which, added to 370 MHz already made available in the 3.5 GHz band and 100 MHz out of the 4800-4990 band. These add up to 1885 MHz that have been earmarked for IMT 6G, which could meet the requirement of a four-operator market, even if there is a high adoption of 5G by subscribers instead of the current small level of just 23%.

It should also be noted that 5G has already been allocated to it, and another 3200 MHz in the 26 GHz band (24.25-27.50 GHz), which is lying unused, has been auctioned. Rather than earmarking the 6 GHz band for IMT and thus going against the global best practice of delicensing 6 GHz for WiFi, R&D, and innovation, India should review its latest decision and make available the delicensed 6 GHz band and facilitate WiFi 6E and 7.

ECONOMIC IMPLICATIONS: A MISSED OPPORTUNITY

The adopted stance is also bound to create serious recurrent economic losses on a long-term basis. According to India-specific studies, delicensing the full 1200 MHz 6 GHz spectrum band (if done by 2025) can generate an economic value of an average of Rs 3.95 lakh crore on a recurring annual basis (as against the one-time auction revenue proceeds for IMT of less than a quarter of this value) through various specific consumer surplus and producer surplus benefits and GDP contribution.

India's startup ecosystem, already flourishing with IoT and edge applications, would receive a significant boost with the wider availability of unlicensed 6 GHz spectrum. This would drive economic growth by enabling new businesses, fostering innovation, and improving various sectors. Even if only 660 MHz is delicensed now, India would clearly benefit annually by about twice the possible one-time benefit from the IMT auction.

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It is worth noting that, in Hong Kong (with heavy subscriber density similar to the dense locations of India), the recent auction of 400 MHz of spectrum in the 6GHz band received only a tepid response from four telecom service providers, even though these providers collectively own only 200 MHz of spectrum in the 3.5 GHz band. The 6GHz auction fetched prices just 10% above the reserve price, reflecting poorly on the spectrum's value for mobile, compared to the much higher premiums of 460% and 410% above the reserve price for the 900 MHz and 2300 MHz bands, respectively.

Additionally, 100 MHz of the 6GHz spectrum remained unsold. Again, it is essential to note that many of the world's leading chip manufacturers are supplying chips for the delicensed o 6GHz spectrum use for Wi-Fi. This reflects a lack of interest among global manufacturers in developing IMT devices for the 6GHz band.

Non-allocation of the 6GHz band for WiFi would result in missing the Broadband Revolution in India. Delicensed spectrum has been instrumental in transforming WiFi into the backbone of broadband in urban and rural areas. Many of the intensive and immersive data-heavy apps and services customers demand today require wider, interference-free channels that only the 6 GHz band can provide through modern WiFi 6E and WiFi 7.

Mobile networks cannot consistently and reliably support these data-intensive services. Therefore, without delicensing, India risks stifling innovation across sectors like healthcare, education, and industrial IoT. Nations embracing delicensed 6 GHz are seeing enhanced digital ecosystems. India's recent action could place it at a disadvantage in global competitiveness.

The delicensed 6 GHz spectrum High-Density WiFi Networks are perfect for creating the much-required wireless environments with dense user activity, like smart cities, stadiums, airports, and public transport hubs. Mobile coverage has major limitations in satisfactorily covering such places.

BRIDGING THE DIGITAL DIVIDE WITH HIGH-SPEED WI-FI

High-speed Wi-Fi access is crucial for bridging the substantial digital divide of about 65% in India. Delicensed 6 GHz can provide affordable high-speed internet access to underserved communities. Such modern WiFi, powered by a delicensed spectrum, can be deployed cost-effectively in rural and underserved areas, complementing 5G and fibre rollouts. It would provide significantly faster Wi-Fi speeds, enabling smoother streaming, faster downloads, and more responsive online gaming.

WiFi 6E and WiFi 7 offer lower latency, crucial for applications like advanced video streaming augmented reality, virtual reality and immersive media experiences, and real-time industrial automation. Further, delicensing GHz is essential for building smart cities and enabling intelligent transportation systems, smart grids, and other advanced urban infrastructure.

THE END TO A PROMISING POSSIBILITY?

For nearly four years now, numerous authenticated, fact-filled presentations have been made to justify the allocation of the full 1200 MHz of the 6 GHz band for the benefit of the economy and the general public and to assist R&D and innovation. However, the recent decision negates the unprecedented opportunity for India to lead the world in digital transformation.

Policymakers must recognise the symbiotic relationship between WiFi and 5G and avoid prioritising one at the expense of the other. The Vision Document for 6G released by Prime Minister Narendra Modi in March 2023 highlighted the need for 50 million public WiFi hotspots for 6G by 2030, and a delicensed 6 GHz band would be vital for that. It would enable faster downloads and seamless streaming, democratise connectivity, empower industries, and propel India toward its vision of a digitally inclusive nation. It's time for India to catch up with global best practices and unlock the potential of 6 GHz for all.

Despite the recent decision, it is still possible to remedy the situation. The auction and the physical assignment of the spectrum to IMT have not happened. Even now, India can align with global best practices and take a giant step forward to realise the mission of "Broadband for All speedily".

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