



# Wireless Backhaul Evolution

## Delivering next-generation connectivity

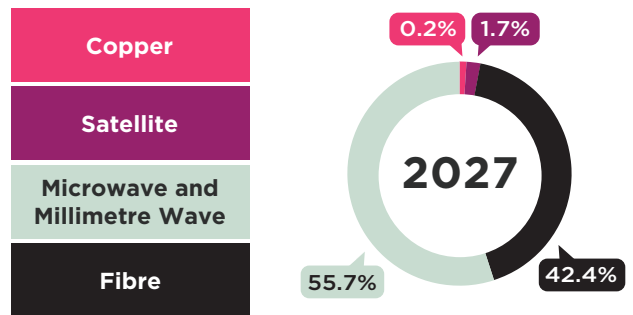


Evolving 4G and 5G networks require significant additional, affordable backhaul spectrum.

Wireless backhaul – using new and refarmed spectrum bands – will be vital as fibre will not be available or affordable in many areas. This will only be possible with the right regulatory decisions.

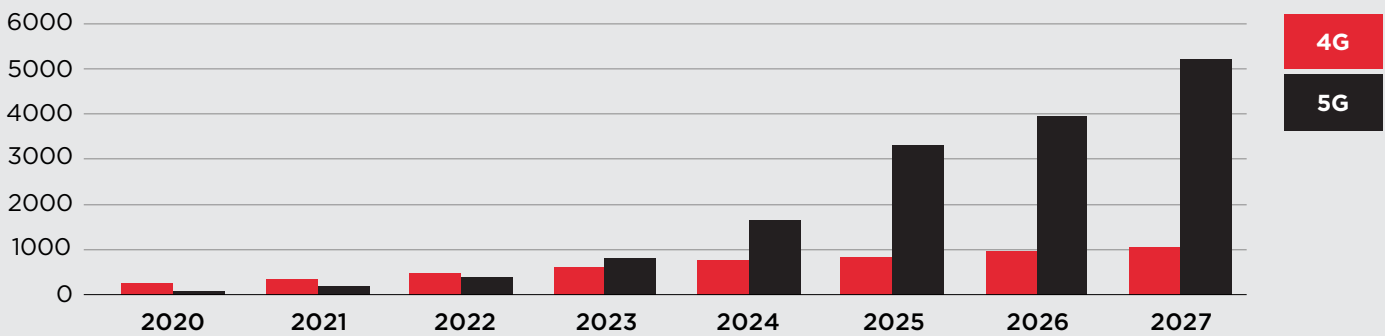
### WIRELESS BACKHAUL DOMINATES

Microwave and millimetre wave backhaul will continue to be used by a majority of global macro and small cell backhaul links from 2021 to 2027. Followed by fibre as the second most popular option.



### MASSIVE 5G TRAFFIC GROWTH NEEDS MASSIVE BACKHAUL

Traffic (Petabytes)



### THE HIGHEST SPECTRUM PRICES WERE:

**22X** higher than the global median



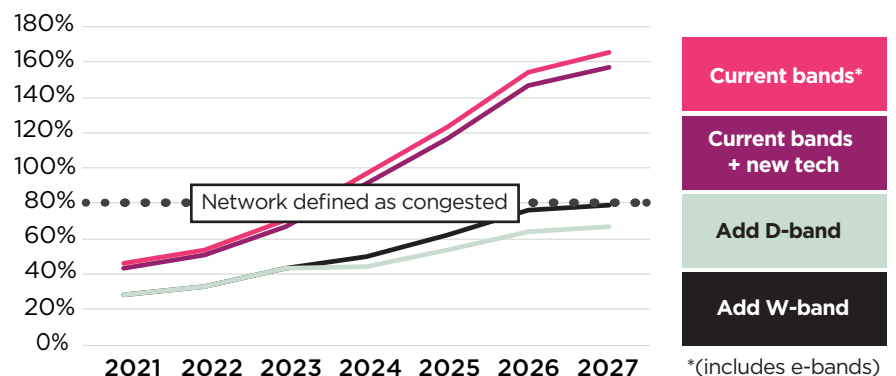
**59X** higher than the lowest priced markets



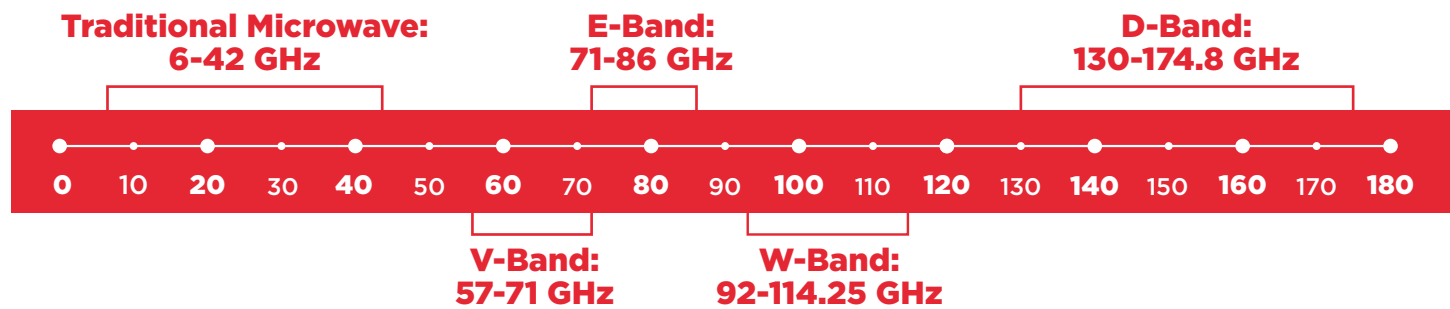
### CONGESTION ISSUES LOOM LARGE

Deploying additional backhaul links using existing and new bands, in addition to making the maximum use of the latest technical solutions, is necessary to manage overall traffic. On the face of ABI Research's analysis, most networks in urban areas will be congested within 3 years without new backhaul bands

Overall Network Congestion (%age)



## WHAT NEW BANDS ARE NEEDED TO POWER THE FUTURE OF MOBILE?



### TIMING AND CHANNEL SIZES ARE KEY



E-band spectrum is needed as soon as possible



W-band and D-band are expected to be needed by 2024/2025



The E-band, D-band, and W-band are expected to support channel sizes of up to 2 GHz compared with 7/14 MHz to 224 MHz in traditional ITU microwave bands



Reports of V-Band usage is underwhelming due to the unlicensed scheme as it creates higher risks of signal interference

Traditional microwave bands are still required and will need some flexibility to accommodate wider channels. In particular, widely used backhaul links in the 6 GHz need to be protected to ensure future 5G growth

### THE GSMA'S FIVE POLICY RECOMMENDATIONS COVER IMPORTANT TOPICS SUCH AS SPECTRUM ACCESS, LICENSING TERMS, AND PRICING



New backhaul bands are needed to support evolving network requirements and growing traffic



Current backhaul bands will still play an important role but need support to maintain relevance in the 5G era - especially through wider channel sizes



Regulators need to carefully consider the most effective backhaul licensing terms approaches, terms and conditions



High backhaul spectrum prices present a barrier to mobile network evolution, improved coverage and more spectrum efficient backhaul technologies



Regulators should, in consultation with the industry, ensure the timely availability of a sufficient amount of affordable backhaul spectrum under reasonable licensing approaches, terms and conditions

### AN IN-DEPTH LOOK AT BACKHAUL FOR MOBILE NETWORKS

The GSMA and ABI Research "Wireless Backhaul Evolution - Delivering next-generation connectivity" takes an in-depth look at all aspects of mobile backhaul.

#### Read more:

[www.gsma.com/spectrum/resources/wireless-backhaul-spectrum](http://www.gsma.com/spectrum/resources/wireless-backhaul-spectrum)

#### And find all the GSMA's reports and positions on 5G spectrum at:

[www.gsma.com/spectrum/5g-spectrum-guide](http://www.gsma.com/spectrum/5g-spectrum-guide)