



National Perspective on 5G Pricing in India

Perspective

India – a vibrant market with 3 large Mobile Service Providers as well as numerous small Virtual Network Operators catering to more than a billion subscribers.

Explosive Growth in the Mobile Data Usage in India in the recent past.

Right To Use Spectrum auctioned in India to the Access Service Providers since 2010. Six auctions have been conducted so far in the 700 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz and 2500 MHz bands.

Mix of 2G, 3G and 4G technologies currently in use, although a majority of the population is now using 4G services.

Spectrum to facilitate Government's objective of 'Digital India'.

Fifth Generation spectrum – the frequency bands

Internationally, there is a growing interest in use of the 3300–3600 MHz band for Mobile Broadband (MBB).

China's Ministry of Industry and Information Technology (MIIT) issued the frequency plan for the 3300–3400 MHz, 3400–3600 MHz, and 4800–5000 MHz bands for IMT-2020 (5G).

In **Japan**, the Ministry of Internal Affairs and Communications (MIC) has declared that the official 5G bands in the archipelago are 3700 MHz, 4500 MHz and 28 GHz.

In **Europe**, 5G preparatory work has focused on the 3400–3800 MHz spectrum range.

Australia has focused initially on the 3400 MHz band. The Australian Communications and Media Authority (ACMA) has also made public its plans to auction the 3600 MHz band for 5G use.

5G Spectrum in India - 3300-3600 MHz Band

The Telecom Regulatory Authority of India (TRAI), the regulatory authority for the Telecom Sector in India, has given its recommendations in August 2018 on valuation and auction of various bands.

Based on the developing International consensus, 3300-3600 MHz band has been identified as the preferred band for roll-out of 5G services in India.

Large amount of spectrum available.

Auction of this band is being planned in 2020.

Factors affecting valuation

- ❓ Although the RF spectrum is a limited natural resource, depending upon the use and geographical location, it may or may not be “scarce”.
- ❓ Some uses (for example, frequency bands for cellular mobile services) may have competing entities for the same frequencies/ bandwidth within a geographical location, thereby making it both scarce and more valuable. On the other hand, many uses (such as specific point to point links, terrestrial or satellite) do not have such demand, and therefore spectrum for these uses may neither be “scarce” nor command a “market price”.
- ❓ Thus, valuation of spectrum is determined to a large extent on the physical characteristics of spectrum, as well as extrinsic factors, specially the use it is put to, and socioeconomic and regulatory factors.

5G Valuation Issues

Valuation of spectrum differs with context and time period in which it is valued.

Demand and supply position

Recognition of poor device ecosystem

Lack of appropriate revenue forecast

Challenge of estimating 5G network rollout.

No last discovered price – being put to auction for the first time in India.

Lack of adequate comparable data points for international benchmarking

Valuation Methodologies used by TRAI for other bands

TRAI arrives at an average per MHz valuation band-wise based on the following:

1. Last Auction Determined Price duly Indexed
2. Production Function Model
3. Producer Surplus Model
4. Revenue Surplus Model
5. Multiple Regression Approach

Thereafter the following two parameters are considered for arriving at a reserve price:

- a) 80% of the Average (Simple Mean) of above 5 Valuations, and
- b) Last Auction Determined Price duly Indexed

It is higher of the two above in LSAs where spectrum was sold.

It is simply 80% of the average valuation where no spectrum was offered in the last auction.

It is lower of the two above where spectrum remained unsold.

TRAI's Valuation Methodology for 5G Band

For the 3300-3600 MHz band (5G Spectrum), which is being put to auction for the first time, 1800MHz band has been used as a reference point for valuation.

Taking 1800MHz band as FDD coverage as reference, the 3300-3600MHz band TDD coverage has been estimated around 30% of the 1800MHz FDD coverage.

Accordingly, TRAI has recommended that the reserve price of the 3300-3600MHz band should be 30% of the reserve price of 1800MHz band.

The 3300-3600MHz band is unpaired, so the reserve price is further halved.

5G Auction Prices in other countries vis-a-vis TRAI prices

	Italy (Final)	United Kingdom (Final)	South Korea (Final)	India (Reserve)
Auction Time	Oct'18	Apr'18	Jun'18	to be held
Auction Price per MHz per Pop (PPP)	EUR 0.51	EUR 0.17	EUR 0.23	EUR 0.086 (Reserve Price)
Auction Price per MHz per Pop per year (PPP)	EUR 0.03	EUR 0.0085	EUR 0.023	EUR 0.0043 (Reserve Price)

1. It is observed that Reserve Price per MHz per Pop (the standard unit of measurement world-wide) for the similar spectrum band in India is 83% lower than the prices discovered in the latest auction in Italy, 49% lower than the auction prices discovered in Great Britain and 63% lower than the auction prices discovered in South Korea.
2. If the spectrum assignment duration is taken into consideration, the Indian Reserve Price per MHz per pop is 86% lower than the prices discovered in the Italy auction, 49% lower than the prices discovered in the Great Britain auction and 81% lower than the prices discovered in the Korean auction.

5G Auction Prices per pop

	Price per MHZ (EUR m)	Price per MHZ per POP (PPP)	Price per MHZ per POP per year (PPP)
Ireland	0.17	0.04	-
Czech Republic	0.20	0.04	-
UK	8.85	0.17	0.0085
South Korea	8.56	0.23	0.0230
Spain	2.19	0.07	-
Latvia	0.13	0.14	-
Italy	21.73	0.51	0.0268
Finland	0.20	0.04	-
India (Reserve Price)	115.49	0.086	0.0043

Source: GSMA Intelligence & Rewheel Research

5G spectrum prices in India – some takeaways

1. Price per MHz per Pop (the standard unit of measurement world-wide) for the similar spectrum band in India is 83% lower than the price discovered in Italy, 49% lower than the auction prices discovered in Great Britain and 63% lower than the auction prices discovered in South Korea.
2. If the spectrum assignment duration is taken into consideration, the Indian Reserve Price per MHz per pop is 86% lower than the prices discovered in the Italy auction, 49% lower than the prices discovered in the Great Britain auction and 81% lower than the prices discovered in the Korean auction.
3. ICRIER in its report has stated that reserve price for 5G spectrum set by TRAI is much above the international benchmarks; however, no specific example has been given.

Enabling Steps for 5G Roll-out

Lower Upfront payments and Liberal Payment terms spread over a period of 18 years.

Considering the nascent stage of the 5G device ecosystem, no separate roll-out obligations for 5G spectrum have been prescribed.

The Lock-in period for the 5G spectrum acquired has been kept low (2 years).



THANK YOU