GSMA

# The Impact of Spectrum Set-Asides on 5G

## India

Dedicated set-aside risks spectrum fragmentation with potentially significant economic cost



## Key lessons

**What:** Development of multiple approaches to private networks, including network slicing, spectrum leasing and consideration of dedicated set-aside

**Why:** Provision of different incentives to catalyse Industry 4.0

**How:** Encouragement of interested enterprises to engage with operators

**Impact:** Risk of potentially large economic cost by considering further dedicated set-aside for private networks

## Overview

- India's Department of Telecommunications (DoT) aims to encourage the roll out of private networks through different approaches, including allowing cooperation on network deployments and spectrum leasing.
- As industry users and mobile operators are starting to cooperate on private networks, the initial indications are promising that the developed framework is setting sufficient market-driven incentives for cooperation and collaboration.
- Separately, open, non-discriminatory market-based processes may also allow for the acquisition of the required assets, as evidenced by industry user Adani Group acquiring 26 GHz spectrum in the 2022 auction.
- At the same time, the DoT is considering a set-aside in 3500 MHz, 4900 MHz and 28 GHz, proposed by the telecom regulator TRAI – but this appears to be a significant risk as it may take away spectrum from key mobile bands, risking multi-billion economic losses by further fragmenting already limited mobile spectrum holdings in India.

## Background

The Indian Department of Telecommunications (DoT) wants to create 'a holistic approach towards emerging digital technologies...and catalyse Industry 4.0'. Private networks play an important role in this endeavour and India is pursuing a multi-pronged strategy to support their growth.

Prior to the recent spectrum auction, the DoT implemented three different approaches, based on TRAI's recommendation, by stating that:

- Private networks can be deployed through 5G network slicing of mobile operator's networks.
- Isolated private networks can be established by mobile operators.
- Mobile operators and enterprises can engage in spectrum leasing to enable private networks to be deployed autonomously.

There was no spectrum set-aside for private networks in the auction. However, one of the winning bidders was the Adani Group, an industry player focused on transport logistics and energy utility, which acquired 50 – 100 MHz in the 26 GHz band in six licence areas for INR 2.12 billion (US$25.8 million) having plans to implement private network solutions, including enhanced cyber-security, for its own businesses.

In addition, TRAI has also recommended the set-aside of specific spectrum in the 3500 MHz, 4900 MHz, and 28 GHz bands subject to demand studies to understand market interest. DoT has undertaken a demand-assessment and it is understood that applications have been received from several companies. Based on further analysis of the demand received by DoT, spectrum could be awarded to enterprises directly or administratively at the price determined by TRAI and the DoT.

## Main lessons

As of December 2022, seven private networks have been deployed in India. These successful launches illustrate strong future potential and include the first 5G private network deployed by Bharti Airtel for Bosch , and the recent '5G for Enterprise' solution at Mahindra's Chakan manufacturing facility, India's first 5G enabled Auto manufacturing unit .

In the 2022 auction, the Adani Group illustrated that the current policies allow for the deployment of private networks through acquiring spectrum in open, market-based, non-discriminatory processes. This was done in direct competition with mobile operators without preferential treatment for either party. As per the company's statement, the company now plans to deploy private network solutions, including enhanced cyber-security, for its own businesses initially which can be further extended to other customers.

These market-based initiatives contrast with the final option considered by the DoT based on the recommendations of sector regulator TRAI – namely to set aside spectrum in the 3500 MHz, 4900 MHz, or 28 GHz bands. This interventionist measure carries a significant risk of further fragmenting spectrum bands in India – a market already marred with high spectrum costs and less amount of holdings by operators, holding back the evolution of the mobile market.



**Flexible approach to private networks**



**Non-discriminatory market processes**



**Cooperation encouraged (between MNOs and verticals)**



**Risk of spectrum fragmentation**

## Final impact

With its current policies, the DoT has developed a policy framework that has created initial market interest, fostered cooperation between mobile operators and industry users, and incentivised participation of new players in the 2022 spectrum auction. Although it is too early to judge the success, the framework enabled private network solutions without the need for dedicated set-asides in key mobile bands.

The 2022 spectrum auction illustrated the significant interest in 3500 MHz and 26 GHz spectrum bands by mobile operators. All bands considered by the DoT for the set-aside are likely to play a vital role in providing future capacity on Indian networks. With the mobile data ecosystem contributing an estimated $136 billion to the Indian economy, the economic cost of further fragmentation could be in the billions.

Only an open award process in these bands can now allow both mobile operators and industry users to compete on a non-discriminatory basis for the remaining spectrum. While providing a level playing field for operators and industry players alike, the DoT must ensure that licence conditions are not favouring any party, efficient spectrum use is guaranteed (e.g. through 'lease-it-or-lose-it' clauses) and any further fragmentation is avoided.

2. https://www.airtel.in/press-release/07-2022/airtel-deploys-indias-first-private-5g-network-at-bosch-facility
3. https://www.airtel.in/press-release/12-2022/airtel-partners-tech-mahindra-to-deploy-captive-private-network-at-mahindras-chakan-facility