

## Spectrum refarming: Bharti, Voda, Idea vs Reliance and Tata

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The big cause of angst for India's three large mobile telecommunications companies – Bharti Airtel, Idea and Vodafone – is the 23 April recommendation by the Telecom Regulatory Authority of India (Trai) that the more efficient 900 Mhz (megahertz) spectrum, which the early entrants have, will now have to be "refarmed" or reallocated.

The Big Three have other reasons to be cross, too, including the high reserve prices fixed by Trai ([Read here](#)), but refarming has got their goat, too.

Trai wants refarming of spectrum in the 800 Mhz and 900 Mhz bands to take place "progressively" and early, not later than the due date of the renewal of the current incumbents' licences. "The spectrum available with the service providers in the 900 Mhz band should be replaced by spectrum in the 1,800 Mhz band, which should be charged at the price prevalent at the time of refarming," it has suggested.

The Telecom Commission has asked Trai to explain what "progressive" means. Trai's focus is on re-farming of spectrum in the 900 Mhz band by invoking its authority to change licence conditions. It wants this auction to take place in the first half of 2013.



An all out battle is in the offing. Reuters

Quite expectedly, Vodafone, Airtel and Idea are angry while Reliance Communications (RComm, headed by Anil Ambani), Reliance Industries Ltd (or RIL, led by his older brother, Mukesh Ambani) and Tata Teleservices (headed by [Ratan Tata](#)) are conspicuously quiet on this issue. Silence must mean they are happy or at least not unhappy with this suggestion.

Indeed, these three companies have been urging the government to refarm spectrum in the 800 Mhz and 900 Mhz bands, even though they will be impacted if they are asked to shell out twice the price of spectrum in the 1,800 Mhz band for spectrum in excess of two multiplied by 2.5 Mhz for their existing spectrum in the 800 Mhz band.

Why? Simply put, the competition (Airtel, Vodafone and Idea) stands to lose more than them (RComm, RIL and Tata).

The government wants existing operators to pay for excess spectrum beyond two multiplied by 4.4 Mhz in the case of those using GSM (global system of mobile communication) technology and two multiplied by 2.5 Mhz in the case of those using CDMA (code division multiple access) technology. Dual-technology users like RComm and Tata hold more than  $2 \times 2.5$  Mhz of spectrum in the 800 Mhz band in most circles. The Telecom Commission wants the legal tenability of this move to be examined.

Even more painful to understand is the manner in which pricing of the reformed 900 Mhz has been suggested by Trai. In its earlier recommendations (given in May 2010 and in February 2011), Trai had calculated the price of spectrum in the 900 Mhz band as 1.5 times that of spectrum in the 1,800 Mhz band. This time around it has used a factor of two instead of 1.5. Clearly, Trai has assumed that spectrum in the 800 Mhz and 900 Mhz bands has propagation characteristics that are twice that of spectrum in the 1,800 Mhz band and, hence, twice as valuable. Yet, in its earlier recommendations it had assumed a factor of 1.5 times. The Telecom Commission has asked what has occasioned the change in Trai's position.

Trai has wanted no more than a chunk of 5 Mhz of spectrum to be auctioned in the 1,800 Mhz band immediately because it wants to preserve the balance for implementing the proposal to refarm 900 Mhz spectrum. The Telecom Commission questions this since in many circles more spectrum in the 1,800 Mhz band is available even after accommodating refarming needs.

The Commission says that the refarming proposals would keep a lot of immediately useful spectrum in the 1800 Mhz band idle for long. The presentation made by the Department of Telecommunications to the Empowered Group of Ministers on 1 May indicates that more spectrum than 5 Mhz is available in many circles. As per Trai's own calculations, 162 Mhz in the 1,800 Mhz band and 172.5 Mhz in the 1,900 Mhz band have to be reserved for enabling refarming. The refarming will take place over 10-12 years in stages as not all licences (each with duration of 20 years) expire at the same time.

There are differences between Trai and the Telecom Commission even over the 900 Mhz space. Trai says that since renewal applications have to be made 30 months before the expiry of a licence, it would be in order to hold the auction 18 months before the licence expires so that the winning bidders can have their rollout plans

in place. The Telecom Commission asks how any spectrum in the 900 Mhz space can be auctioned 18 months before the expiry of the licence especially when it says that for the 800 Mhz band, the spectrum has to be progressively refarmed at the time of expiry of the licence. It is difficult to understand this logic.

There are other facets of the reserve price suggested by Trai that the Telecom Commission has questioned. It asks if 1.25 Mhz blocks can have the same per-Mhz reserve price as single 5 Mhz blocks which can be used for 2G, 3G and 4G services as well. It also questions the need for immediately deciding reserve prices for spectrum in the 700/900/2,100/2,300 Mhz bands for which auctions will take place during 2013-14, given that auctions for spectrum in the 1,800 Mhz band will be held in-between.

In its earlier recommendations, Trai had proposed two pricing structures (on a per Mhz basis) for 2G spectrum, one for spectrum holdings below 4.4 Mhz and another for spectrum holdings above 4.4 Mhz. The logic was that spectrum held in small quantities is less valuable because of its relatively smaller usable capacity on account of poor trunking efficiency. The Telecom Commission thus wonders how the same pricing structure (on a per Mhz basis) has been recommended for spectrum blocks of 1.25 Mhz and 5 Mhz.

Consider the reserve price for spectrum in the 700 Mhz band. It seems to have been scaled up four times over that of spectrum in the 1,800 Mhz band. Instead of following its own logic of valuing on the basis of propagation characteristics, as it has done for other bands, Trai has chosen to compare auction prices of European countries on the basis of \$/Mhz/population to arrive at the 700 Mhz auction price factor for India, without considering the other factors such as fragmentation, harmonisation requirements, rollout criteria, and quantum of blocks available, which are of paramount importance in deploying advanced technologies in these bands that might have impacted the price of these auctions and are, therefore, of critical importance.

Trai also seems to have overlooked the fact that Europe has a far smaller population than India, on the one hand, and that Europeans can afford to pay much more than Indians, on the other. Besides, it has also ignored the fact that the 700 Mhz spectrum band in India does not have any synergies with major markets like those in USA, Europe and China and is unique, just like the 2.3 Ghz band is unique for India. The Telecom Commission wonders whether the 'business case' of the operators has been considered while recommending these prices and asked what the tariff impact would be in the short, medium, and long terms.

There are other aspects of spectrum refarming that the Telecom Commission has not questioned but which, according to industry insiders, need examination. Trai's recommendations suggest a non-incentive based refarming and is difficult to execute, leading to blocking and suboptimal usage of useful spectrum, as already pointed out. A section of the telecom industry suggests that it may have been

smarter to provide incentives to operators to liberalise – that is, use the same spectrum to provide all kinds of services, 2G, 3G or 4G – than to evict them from their current spectrum bands.

That would have enabled Trai to execute liberalisation without service disruption because new players using spectrum in 800 Mhz and 900 Mhz bands will necessarily have to go through the same process of rollout as others have in the past.

If Trai's intentions were to provide a level playing field, it could have created enough incentives to ensure equitable access to new spectrum in the 700 Mhz band (equivalent to spectrum in the 800/900 Mhz bands) by enabling access to only players who took steps to liberalise their existing spectrum in the 800/900 Mhz bands by paying market prices determined by auctions.

Under the current circumstances, what is being blocked is a large quantum available spectrum in the 1,800 Mhz band (amounting to 162 Mhz) and in the 1,900 Mhz band (amounting to 172.5 Mhz) to execute refarming, which can be executed only in stages over a 10-year period.

Considering the fact that Trai has opened only one spectrum block of 5 Mhz for auction in the 1,800 Mhz band and another 2.5 Mhz block in the 800 Mhz band, no more than 44 of the 122 licences cancelled will be able to survive this process. Since the country is divided into 22 telecom circles, this simply means that not more than one GSM operator and one CDMA operator can hope to obtain spectrum when the auction takes place.

Again, the Trai's recommendation will lead to the blocking out of 1,900 Mhz spectrum at the cost of spectrum in the 2.1 Ghz band (for 3G services auctioned in 2010). Otherwise, it could have been possible to make available another four slots of 5 Mhz each in the 2.1 Ghz band immediately for auctions. Also, technical experts claim that services in the 1,900 Mhz band will cause interference in existing 3G services in the 2.1 Ghz band as mixed band deployment (in both the 1,900 Mhz and the 2.1 Ghz bands) has not been practiced anywhere in the world, especially when there are no sufficient 'guard' bands available between the two spectrum bands.

To summarise the contentious issues that remain unresolved, Trai wants a technology-agnostic regime and a liberalised post-auction spectrum regime in which spectrum in any band can be used to deploy any kind of service and any technology. The Telecom Commission believes that it would be premature to do so without providing for guard bands and interference-free operations when different technologies co-exist.

It may be recalled that in India, 3G services in the 2.1 Ghz band are assigned between the 1,954 Mhz and 1,979 Mhz bands and spectrum in the 1,900 MHz band will be adjacent to that at 1,980-1,990 Mhz. The Telecom Commission believes that even the availability of 7.5 Mhz in the 1,900 Mhz band is uncertain and studies on

coexistence of advanced technologies like 3G WCDMA (wideband-code division multiple access) in the 2.1 Ghz spectrum and 3G EVDO (evolution data optimised) in the 1,900 Mhz band are yet to be completed.

There are two other issues around this non-incentive based refarming of spectrum. Trai seems to have been oblivious of the cost implications on service providers on refarming. The number of sites required for deployment will be twice as many, especially in semi-urban and rural areas. Besides, Trai seems to have forgotten to take note of the feasibility of migrating existing devices (using both GSM and CDMA technologies) to liberalised technologies like 3G and LTE, as all devices will not be compatible. The existing CDMA devices, for instance, are not compatible for 1,900 Mhz spectrum.

Finally, Trai, for all its complicated recommendations, has failed to cover all aspects of refarming in terms of the roadmap for release of additional spectrum in the 1,800/1,900 Mhz bands. Some service areas do not have adequate spectrum in the 1,800 Mhz band for supporting refarming of 900 Mhz spectrum and there will be issues of ensuring continuity in providing existing services, especially in rural and semi-urban areas, in case incumbent operators fail to obtain spectrum during the auctions in the 800/900 Mhz bands.

What then is the bottomline? A case has been made by sections of the telecom industry that Trai could have gone in for a regime that rewarded efficiency, penalised inefficiency and ensured that networks rolled out in time. In the current scheme of things, Trai may end up becoming a broker focusing on distribution of resources without applying its mind on how its recommendations will enable and facilitate network deployment.

What could Trai have done to ensure that excessive spectrum accumulation by some players does not take place? It could have imposed a quota at least for the bands below one Ghz, which operators consider extremely valuable. This would prevent excessive spectrum holdings in the hand of a few operators.

All spectrum in the 700/800/900 MHz bands could be aggregated and divided by the total number of players required for ensuring adequate competition; and in no case should a player be allowed to hold more than its quota to prevent excessive spectrum in the hands of a few. This would also give an opportunity for new players to get access to spectrum in bands below one Ghz.

What would have made Sunil Bharti Mittal happy? Answer: if his company, the market leader, was granted permission to participate in these auctions as well. So what if he has more than the prescribed spectrum for his current needs?