

WIRELESS IN EMERGING COUNTRIES – SCENARIO IN INDIA



T.R. DUA, DEPUTY DIRECTOR GENERAL
CELLULAR OPERATORS ASSOCIATION OF INDIA

STATUS OF SPECTRUM IN INDIA



STATUS OF 2G SPECTRUM



➤ GSM

- 900 MHz Band
 - 890-902.5MHz paired with 935-947.5MHz has been earmarked.
 - Additional requirements in 902.5-915 MHz paired with 947.5-960 MHz coordinated on case by case basis.
 - Certain frequency spots in 902.5-915 MHz and 947.5-960 MHz considered for train control & mobile train radio systems for specific locations on a case-by-case basis.
- 1800 MHz Band
 - Requirement in 1785-1805 MHz may be considered for coordination on a case by case basis subject to availability.

➤ CDMA

- 800 MHz Band
 - 824-844 MHz paired with 869-889 MHz has been earmarked.

**ENTIRE 900 & 1800 MHz BANDS NOT AVAILABLE
PRESENCE OF 12 OPERATOR IN EACH SERVICE AREA**

2.1 GHz (As per NFAP-2008):

- 1920-1980 MHz
- 2110-2170 MHz

Extension Band

2.5-2.69 GHz:

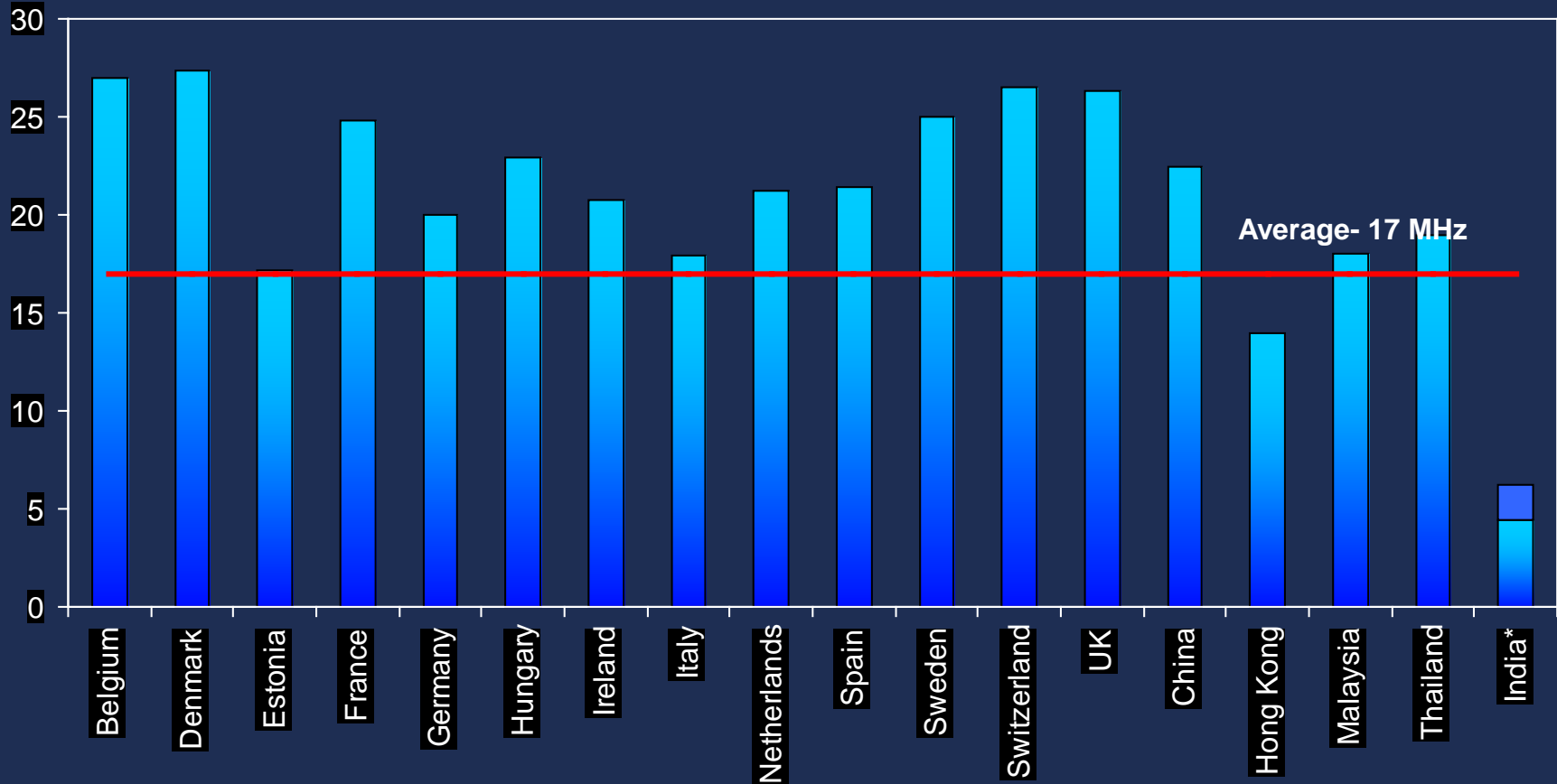
- 2500-2570 MHz
- 2620-2690 MHz

Recently, **WRC-07** identified the following frequency bands for IMT applications:

- 450-470 MHz
- 698-806 MHz
- 2.3-2.4 GHz
- 3.4-3.6 GHz



INDIAN SPECTRUM ALLOCATIONS FAR BELOW INTERNATIONAL BEST PRACTICES



- As per best practice, internationally, GSM operators have ~17 MHz/ operator. Further, this spectrum is allocated /earmarked upfront, upon signing of license
- In India, spectrum is given in tranches, allocation to Indian GSM operators varies between 4.4 MHz to 10 MHz. Average spectrum in India is ~6 MHz/ operator

RECENT 3G & BWA AUCTIONS



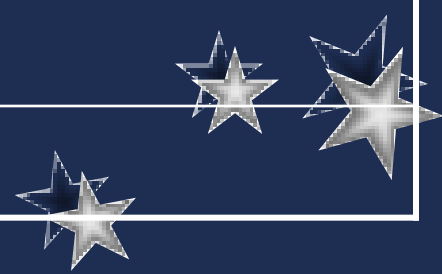
- 3 blocks of 5MHz auctioned in 2.1 GHz band for 3G
- 2 blocks of 20 MHz auctioned in 2.3-2.4 GHz band for BWA
- Commercial services of 3G to start from 1st September onwards and BWA anytime after allocation of spectrum.
- Public sector operators already given one slot of 3G spectrum in 2.1 GHz band in all 22 circles and have started services.
- Public sector operators also given spectrum (one slot) in 2.5 GHz band for BWA services in all 22 circles and have started launching services.

Huge Response: 9 participants for 3G auctions & 11 participants for BWA auctions

3G AUCTION RESULTS



Sl. No.	Operator	No. of Service Areas	Amount Payable (in USD mn)
1	Aircel Ltd.	13	1,374
2	Bharti Airtel	13	2,599
3	Idea Cellular	11	1,220
4	Reliance Communications	13	1,815
5	S-Tel Ltd.	3	71
6	TATA Teleservices	9	1,240
7	Vodafone Essar	8	2,457



BWA AUCTION RESULTS



Sl. No.	Operator	No. of Service Areas	Amount Payable (in USD mn)
1	Aircel Ltd.	8	716
2	Bharti Airtel	4	690
3	Augere	1	26
4	Infotel Ltd.	22	2,677
5	Tikona Telecom	5	220
6	Qualcomm	4	1,023



3G SERVICES- RELEVANCE FOR INDIA



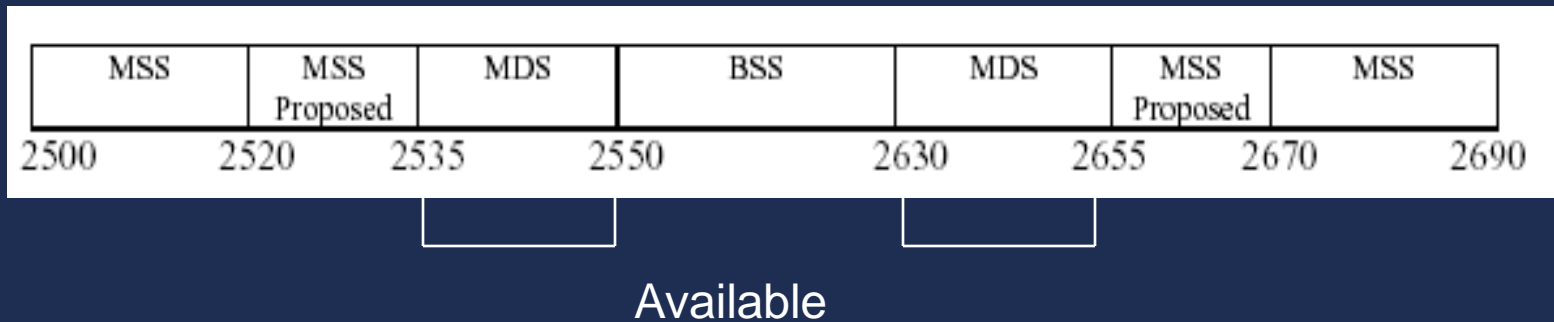
- Will serve as an ideal platform to deliver low cost voice telephony to Indian consumers
- Extremely effective tool in driving penetration to the huge addressable market in the rural areas.
 - Increased economic opportunity through tele-education, tele-medicine, e-governance, etc.
- Facilitate achievement of Government's objectives on broadband
- Cater to the demand for Hi-Speed data services/ video downloads in the urban markets
- Provide Rich Multi-media services with streaming audio and video like video conferencing and location based services
- Will ease spectrum constraints inadequacy on 2G networks & accommodate subscriber growth.



2.5 – 2.69 GHz BAND



- ★ Identified as extension band for 3G by WRC
- ★ Present Status in India



- ★ Government guidelines for providing BWA services, states that-
 - **Spectrum to be Auctioned in 2.5, 2.3 GHz bands.**
 - **Each successful bidder to get 20 MHz in 2.3 & 2.5 GHz bands.**
- ★ During the auctions, the private operators have been allocated spectrum in 2.3 GHz however, the state owned BSNL has got spectrum in 2.5 – 2.69 GHz band for BWA services.



CHALLENGES TO OVERCOME



700 MHz BAND FOR MOBILE BROADBAND

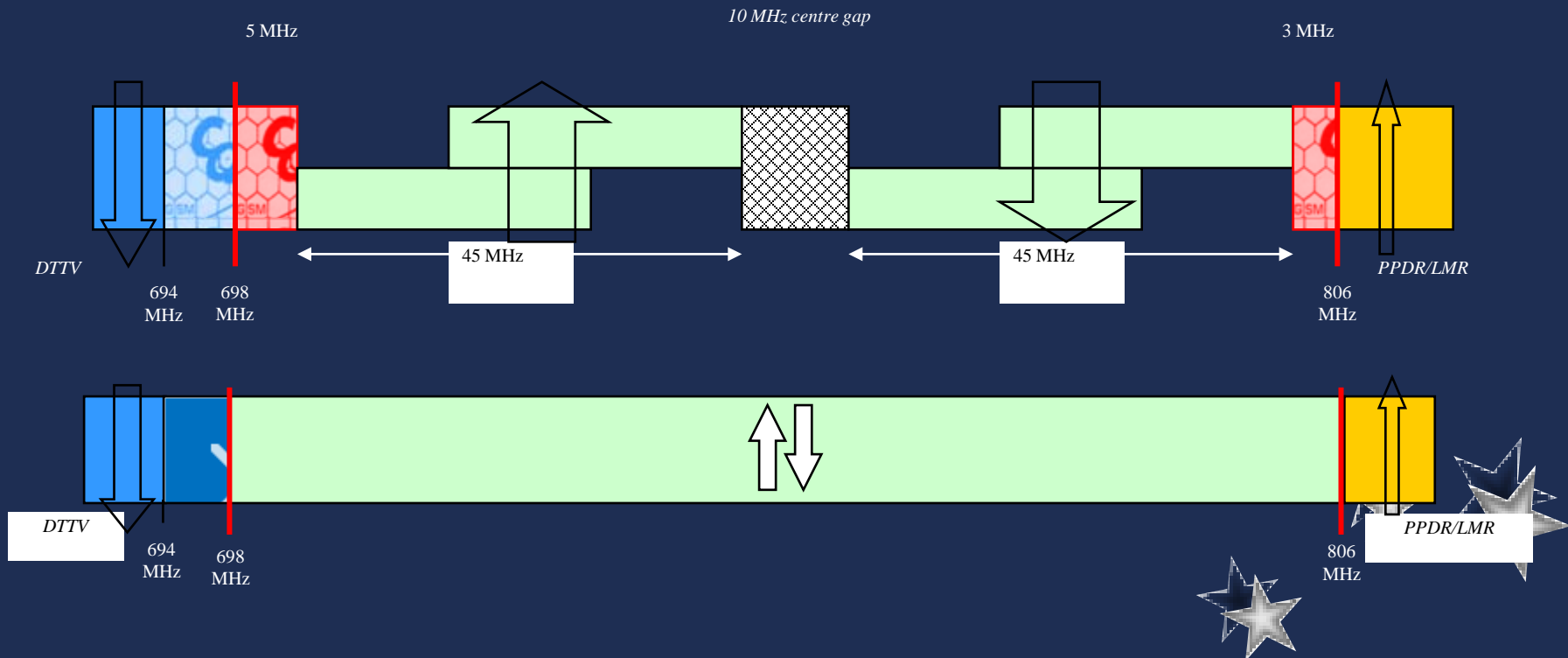
- Since 700 MHz has excellent signal propagation characteristics, less infrastructure is required to provide wider coverage
 - Communication services can be provided in rural areas at lower cost(savings in capex)
 - Will help to bridge the 'digital divide' in India
 - Provide affordable mobile broadband to help develop a knowledge based economy.

- The possibility to use 698-806 MHz band for mobile communications provides a rare opportunity for providing cost effective wireless broadband services.

Access to harmonized spectrum in UHF is a key to deliver mobile broadband services specially to the masses

700 MHz BAND FOR MOBILE BROADBAND

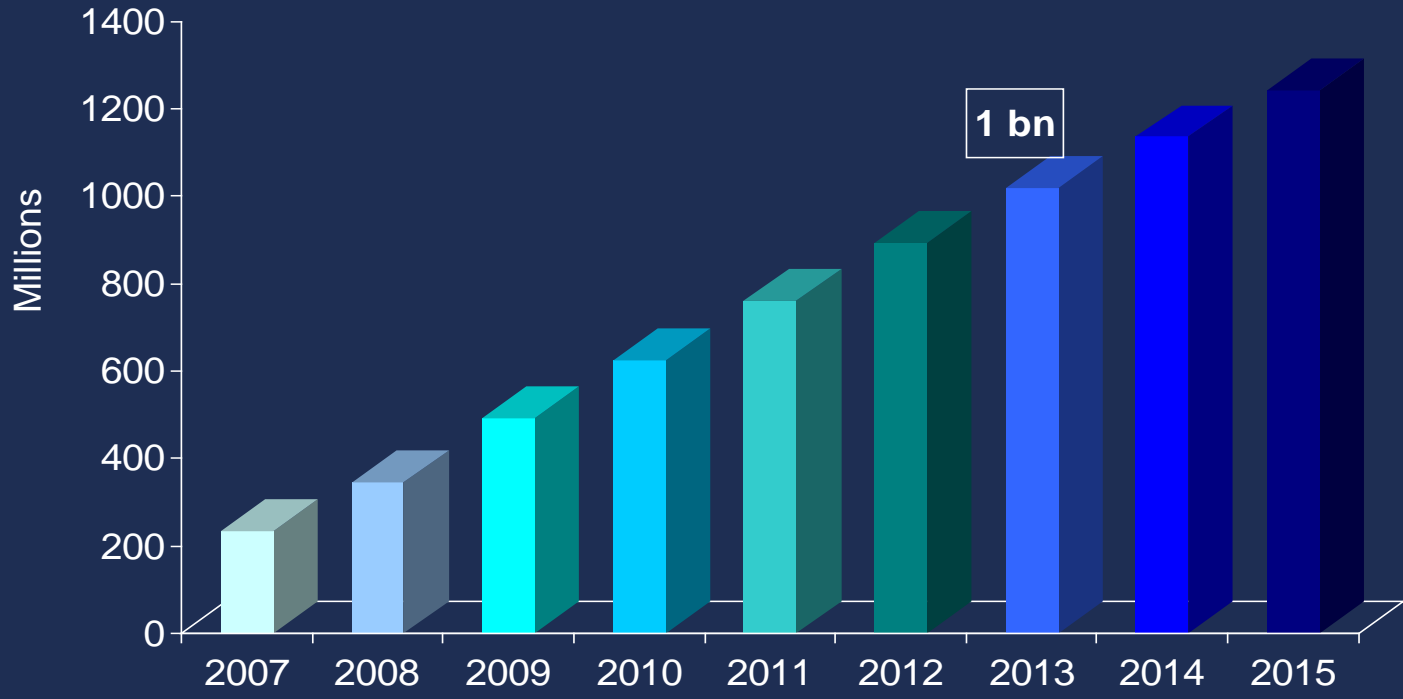
- For 700 MHz band, India Supports FDD or TDD and not the mixed band plan.
- COAI was an active participant of Indian Delegation at the WP5D meeting and previous AWF meetings also where the band plan given below has been finalized by WP5D for Region 3 countries.



We need to overcome these challenges to spread broadband to the entire length and breadth of the country so that its benefits flow uniformly to all the citizens of the country.



COAI PROJECTIONS FOR THE FUTURE



Even @ 10% broadband subs, by 2013, there would be >100 mn broadband subs in the country.



trdua@coai.in

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