Frequency Bands and choices

Finding Solutions for Europe



Roberto Ercole GSMA

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What we all know?

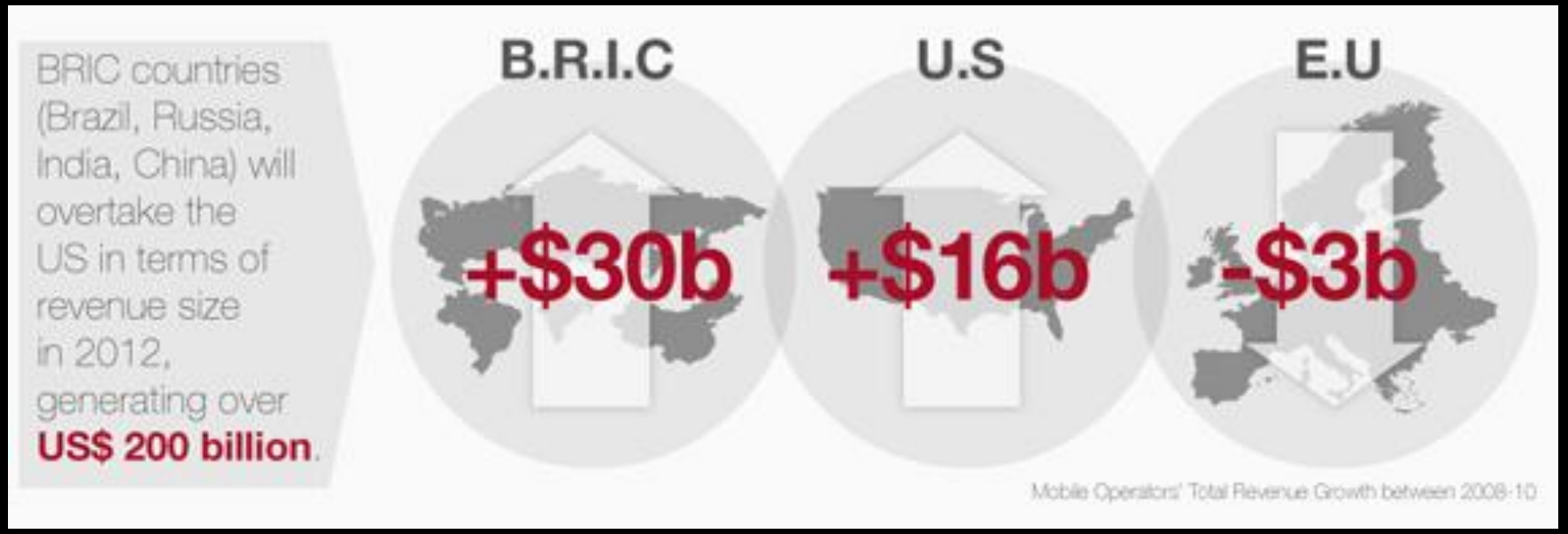
- Everyone knows that demand for mobile data is growing fast – doubling every year in many markets;
- We have heard that many governments have made the connection between spectrum and much needed economic growth;
- How much spectrum and how fast needs to be determined;
- What is clear to the mobile industry is that we need spectrum harmonisation – and this means ideally globally;
- The ITU and WRC offer the best mechanisms for this;
- That means we need to think about candidate bands being submitted to the ITU/WRC15 process for IMT (and timescales which will get traction outside EU).

But what does this mean for Europe?

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How is the world changing?

Europe and US no longer the focus of the industry



Mobile Operator Revenue Growth 08-10

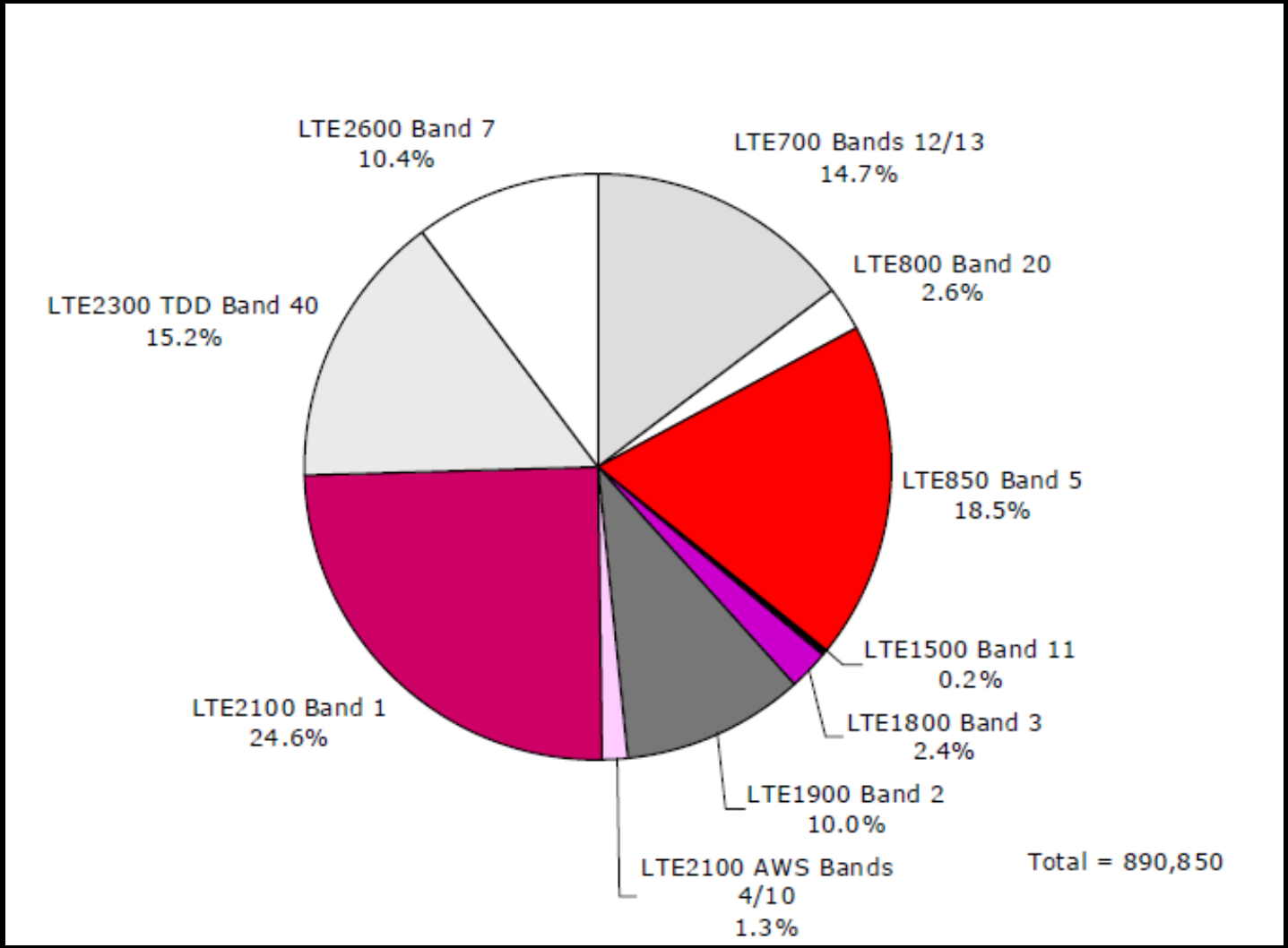
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What has this got to do with frequency bands?

- Because the number of bands a device can accommodate are limited then vendors/operators need to make choices - and because scale translates into costs;
- This creates an environment where effort is focused on certain bands and the others become niche ones, and the danger is what is developed for Europe leaves her isolated and cut off from mainstream investment.
- Think how consumers would feel if they had to wait 3 or 4 years for the latest devices because that is when the global industry got round to them (and if they had to pay more for them);
- But a more global view means EU consumers benefit from this increased scale and innovation;
- However we must realise others won't wait for Europe.

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LTE TRx Market Share by Frequency, 2011 (Units)

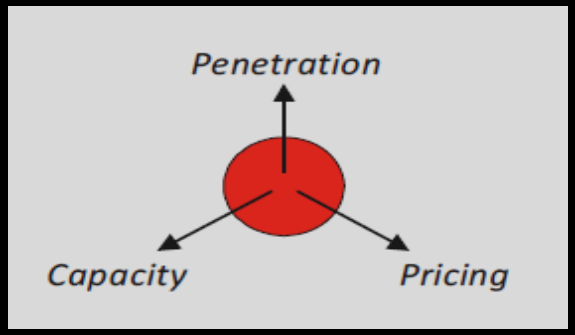


Source: EJL Wireless Research LLC Estimates (February 2012)

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WRC15 - Candidate Bands for IMT

- Need to be in an appropriate frequency range for wide area cellular to promote broadband and hence economic growth;
- Implies spectrum for coverage and capacity - 400 MHz to 5 GHz for wide area?
- That new technologies like LTE need (ideally) wider channels for OFDM – contiguous blocks of 100 MHz?
- That globally harmonised band plans will drive device affordability through economies of scale.
- Spectrum will be needed for coverage and capacity.



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Europe and WRC's

- Need to recognise the emergence not only BRICs but in ITU Region 1 (EMEA +) that Arab and African countries have become much more active;
- They feel the pressure to deliver BB – fixed BB penetration less than 1% in Africa;
- They do not feel bound by CEPT timescales and won't wait (lessons of WRC07 and 12);
- This poses opportunities but risks too – for example on 700 MHz band plan for Europe;
- Development of a second UHF band plan is probably needed by October to maximise influence in the WRC process.
- It also means that Europe should try to identify candidate bands that other regions might adopt, and be willing to compromise to get such agreements;

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Conclusion

- That Europe must recognise the changes of the past decade and use its influence at WRCs to get worldwide allocations (like 2.1 and 2.6 GHz);
- Europe must be sensitive to developing nations timelines, and bring harmonised ITU bands on stream as early as possible to build scale;
- Delays in making bands available in Europe can allow others to “steal a march” and that makes things more difficult in the long run;
- Failure to take account of the emergence of other regions put Europe at risk of becoming isolated and starved of development effort;
- WRC07 and 12 on UHF are examples of the new reality;
- That European consumers will benefit from wider harmonisation of bands – lower cost equipment and more innovation and competition;

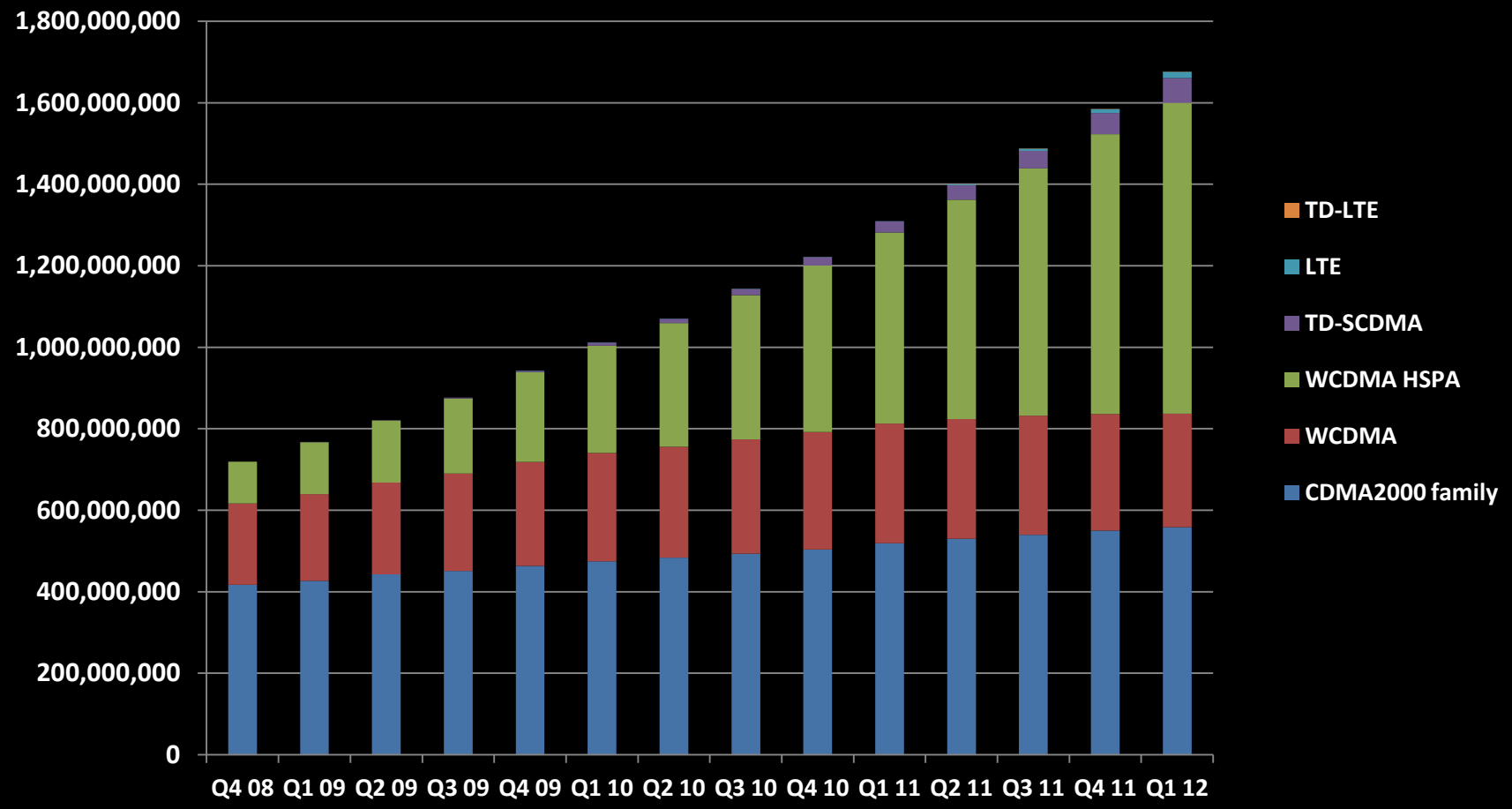
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Supporting Slides



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How Mobile Broadband has grown (IMT)



connections

Source: Wireless Intelligence

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Timings – global IMT spectrum (AI 1.1)

- The proposed date of the WRC is November 15 – the reports on which decisions will be made will be needed by June 2014 – this means that:
  - Candidate IMT bands and do sharing studies (450 MHz to 5 GHz) – [Wifi above 5 GHz];
  - Methodology and data to support spectrum estimates;

- Work will be done ITU WP5D feeding into Joint Task Group (4,5,6,7)
  - There will be 5 meetings before the CPM (meeting to finalise the report for the WRC) – last meeting July 14.

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Governmental view of broadband benefits

Table 2.1: Comparison of example countries

Country	Year	Name of the Plan	Vehicle	Horizon	Goals	Benefits
US	2009	Broadband Stimulus Program	Stimulus Program	Short term	Raise national average	National recovery
Germany	2009	National Broadband Plan	Two phase plan	Medium to long	Dual targets of penetration	GDP growth and jobs
Republic of Korea	rolling	ICT Master Plan	Broad consensus	Long term 5 yr stops	Global leadership	National growth
Japan	rolling	i Japan Strategy	Broad consensus	Long term	Global leadership	National growth
New Zealand	2010	UFB and RB initiatives	Broadband Plan	Medium term	Economic development	National growth
Australia	2010	NBN Plan	Nat'l B'band Network	Medium term	Infrastructure platform	National growth
Dominican Republic	2007	eDomenicana	Universal service	Short to medium	Extend infrastructure	National development

Source: Author's research

Source - ITU Report :
"Trends in Telecommunication Reform 2012"

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	Universal Broadband Access Policy Framework				Public Funding Model, State Sees Itself As:		
	Broadband Programme	**Targets and Service Details**	**Estimate of Investment Expenditure**	**Tackling Unserved Areas**	**Financer of Infrastructure**	**Owner/ Operator of Infrastructure**	**Demand Stimulator**
Australia	New NBN	≤ 100 Mbits/s for 90% by 2018; ≤ 12 Mbit/s for the remainder	Yes (Est. A$46 billion)	Yes	Yes	Yes	-
Germany	Federal Gov. Broadband Strategy	1 Mbit/s nationwide by 2010; ≥50 Mbit/s for 75% by 2014	Yes (Est. €36 billion)	Yes	Partly	-	-
Finland	National Broadband Strategy	1 Mbit/s for 100% by 2010; 100 Mbit/s for 99% by 2015	Yes $131m (est.) total NGN project cost	Yes	Partly	-	Yes
United Kingdom	Digital Britain	2 Mbit/s as a universal service by 2012	Yes	Yes	Partly	-	-
Japan	Next Generation Broadband Strategy 2010	"Ultra High Speed" for 90% by 2010	Yes	Yes	-	-	Yes
Sweden	Breidbandsstrategi for Sverige	100 Mbit/s for 40% by 2015; for 90% by 2020	No (Est. € 864 million)	Yes	-	-	Yes
Korea (Rep.)	Ultra Broadband Coverage Network	100 Mbit/s for 14 million users by 2012; then Gbit/s upgrade	No	No	Partly	-	-

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Spectrum Crunch according to ITU rec.

Predicted Spectrum demand in the year 2020	Predicted total (MHz)	Region 1		Region 2		Region 3	
		Identified (MHz)	Shortfall (MHz)	Identified (MHz)	Shortfall (MHz)	Identified (MHz)	Shortfall (MHz)
Before WRC 07	1 720	693	1 027	723	997	749	971
After 07	**MHz**	***400+***	***700***	***200+***	***800***	***+200***	***800***

Need to add in UHF and 2.3/2.4 GHz all Regions as well as C band in R1

Also need to consider developments like femto cells, wifi offload etc

Source (prior wrc07): Swedish/Finnish input to WRC07 – doc 127. Uses spectrum demand model developed by WP5D for WRC07

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