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REGULATORY IMPLICATIONS OF USING SPECTRUM BELOW 800 MHZ

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OUTLINE of the presentation

- IMT-2000 implementation in Africa:
General considerations
- IMT-2000 spectrum – lower frequencies
bands issues
- Conclusion

IMT-2000 IMPLEMENTATION IN
AFRICA : GENERAL
CONSIDERATIONS



Some characteristics of developing countries

- A low income (revenue) per inhabitant (less than 600 US Dollars per annum) and a huge foreign (external) debt ;
- A young population (more than 50% of the population is less than 35 years old) interested in mobile telephony services and wireless messaging ;
- Vast sparsely populated areas : more than 50% of the population live in rural areas ;
- Difficult geographic terrain ;
- High illiteracy rate ;
- Need of basic telecommunications services : most consumers expect narrow band services such as voice communications and electronic messaging ;
- Growth of the use of Internet ;
- Low traffic density.



Mobile market in Africa: key factors

- Africa hold a relatively small share of the global market
- The average penetration rate remains relatively low
- Africa has one of the highest average growth rate
- The African market is characterised by the presence of some international groups: Vodafone, France Telecom/Orange, Orascom Telcom Holding, MTN Group, MSI Cellular Investments
- High level of fixed by mobile substitution
- The number of fixed lines has fallen in certain African countries
- Most of subscribers are prepaid
- Few 3G licences have been already awarded to operators for the use of IMT-2000 spectrum to offer 3G mobile services.



Policy and regulatory goals

- Mean to achieve universal service/access goals
- Provision of new and improved services
- Factor of integration in the Information Society
- Development of connectivity
- Ensure the coverage extension of existing networks
- Quickly provision of voice and non voice services in new regions



Requirements of developing countries

- Flexibility in the use of the identified spectrum
- Sufficient amount of spectrum to guarantee competition in suitable frequency bands in different types of environments: mountains, forests, deserts, coasts...
- Globally harmonised use of spectrum to allow roaming and economies of scale
- Good quality of service at affordable prices,
- Solutions allowing access to basic telecommunications services to the majority of users on most of the national territory, including sparsely populated and low traffic density areas, in a reasonable timeframe and affordable economics conditions
- Large cells sizes
- Networks equipment and terminals at affordable prices
- Smooth transition from first and second generation systems to third generation systems

IMT-2000 SPECTRUM – LOWER FREQUENCIES BAND ISSUES



IMT-2000 spectrum Background

- The ITU has taken a lead role in the development and deployment of IMT-2000
- World Radiocommunications Conference in 1992 and 2000 identified frequency bands for the deployment of IMT-2000 systems and services
- Identification is a recommendation to administrations to use these frequencies for IMT-2000 technologies in an attempt to harmonize use of the bands internationally
- Radiocommunications Assembly approved in June 2003 a Recommendation on Frequency Arrangements for IMT-2000 (ITU-R M.1036)



Terrestrial Frequency Bands identified for IMT-2000

- 806-960 MHz
 - 1710-1885 MHz
 - 1885-2025 MHz
 - 2110-2200 MHz
 - 2500-2690 MHz
- ITU has approved five radio air interface standards (ITU-R M.1457)
 - The decision in which bands IMT-2000 technologies are first deployed depends on regulatory decisions, the market place, and politics



WRC 2003 developments

WRC-03 approved plans for the future development of IMT-2000, and created a new agenda item on IMT-2000 for WRC-07 (agenda 1.4):

- « To consider frequency-related matters for the future development of IMT-2000 and systems beyond IMT-2000 taking due account of the results of ITU-R studies in accordance with Resolution 228 (Rev.WRC-03) »

Res. 228 (Rev. WRC-03) invites further studies of lower frequency bands for IMT-2000:

- « to invite ITU-R to conduct regulatory and technical studies on the usage of frequencies below those identified for IMT-2000 in N°5.317A for the future development of IMT-2000 and systems beyond IMT-2000



Agenda item 1.4 (WRC-07)

Res. 228

- “invites ITU-R to conduct regulatory and technical studies on the usage of frequencies below those identified for IMT-2000 in N° 5.317A for the future development of IMT-2000 and systems beyond IMT-2000 ”
- Recognises “the need, in many developing countries and countries with large areas of low-population density, for the cost-effective implementation of IMT-2000, the future development of IMT-2000 and systems beyond IMT-2000”
- Additional spectrum will be decided at WRC-07
- ITU-R WP 8F is responsible for preparation of this agenda item
- This preparatory work also included issue of the lower frequency



Example of possible frequency bands (1/2)

450-470 MHz

- Allocated to mobile services on a primary basis
- CDMA2000 standard defined for this band
- Commercial networks launched
- Band already assigned to digital mobile networks in some countries (Norway, Romania, Russia, Sweden...)
- 20 MHz bandwidth available



Example of possible frequency bands (2/2)

470-790 MHz

- Preferred portion: 470-600 MHz
- Bands or part of the bands allocated to Broadcasting service
- RRC 04/06 will establish a digital frequency plan terrestrial TV broadcasting in ITU Region 1 and other areas of Region 3 (174-230 MHz and 470-863 MHz bands)
- Transition from analogue to digital TV broadcasting is expected to released a substantial amount of spectrum due to higher spectrum efficiency of digital technology (so called « digital dividend »)
- Action necessary at RRC 06



Key critical factors in choosing the frequencies

Particular emphasis should be put on the following aspects :

- Coverage extension
- Harmonisation
- Technological evolution
- Digital divide



Coverage extension

- In African countries, operators continue to deploy 2G systems.
- Coverage extension
 - When deploying 3G systems, the issue of extended network coverage beyond the one permitted by 2G have to be taken into account
- Solutions
 - Different solutions are studied in ITU
 - One of these solutions consists in identifying at WRC-2007 a frequency band below those that have already been identified for terrestrial mobile systems
- Characteristics of the band
 - Below 600 MHz
 - Globally harmonised
 - Available in most countries
 - Sufficiently wide to allow competition between operators



Harmonisation

- Main objective :
 - Deployment of mobile services, in particular 2G services today and 3G services in the future, in numerous countries, in harmonised frequency bands that would be identified by the WRC of the ITU for IMT-2000
- Global harmonisation is essential for our countries since it justifies all efforts and investments made for establishing 3G as a global system
- Harmonisation is the way to global roaming and provide economies of scale
- Harmonisation effort should continue in the framework of the ITU and in particular at the WRC
- This efforts should lead to the future availability for mobile systems (pre-IMT-2000 or IMT-2000) of all frequency bands harmonised by the WRCs



Technological Evolutions

- The technological evolutions of 3G (called « future development of IMT-2000 and systems beyond IMT-2000 » by ITU) are also envisaged in a globally harmonised manner
- The schedules of these evolutions must remain compatible with the current development of mobile services and the evolution process should allow a smooth transition of 3G capacities and functionalities (compatibility and inter-operability between pre-IMT-2000 and IMT-2000 systems)



Digital divide

- Mobile communications have become a major contributor to the Information and Communication Society
- The wish is expressed for the World Summit on the Information Society (WSIS) :
 - to recognise mobile services as a means allowing developing countries to enter in the Information Society
 - to recommend to manage and use the radio frequency spectrum in accordance with the principles of non-discrimination and global harmonisation



At last

African administrations were:

- some of the first in the world to recognize the benefits of lower frequency bands for IMT-2000 coverage
- Leaders in advancing the international dialogue at the last WRC that considered the benefits that can be gained in utilizing lower frequency bands for advanced wireless
- Have always been at the forefront of the push for the allocation of bands below 600 MHz for IMT-2000

Therefore,

- The ongoing work of ITU-R WP 8F provides an important opportunity for the African continent to advance earlier positions taken at previous ITU meetings as the ITU-R considers bands for identification at the next WRC
- African administrations should submit responses to the ITU-R Questionnaires on candidate frequency bands for the needs of region to be reflected in the important decisions made concerning the need for additional bands to be identified for IMT-2000 and its future development.



Conclusion

- IMT-2000 has an important part to play in the achievement of the objective of universal access/service and the economic development of our countries
- Taking into account the needs of the developing countries is essential in the development of IMT-2000
- Identification of bands below 800 MHz is necessary to allow a quick and cost-effective deployment of IMT-2000
- IMT-2000 are an important factor for the integration in the Information Society

Thank you