TV White Space (TVWS)
GSMA Position and Perspectives

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AGENDA

GSMA overview

Mobile broadband: situation and forecast

TV White Space: basic principles

GSMA view and position
GSMA BY THE NUMBERS

MEMBERSHIP

800 mobile operators in over 220 countries

230 associate members

PRESENCE

Offices in 9 countries serving every region

MOBILE REACH

6.6 billion mobile connections

3.2 billion individual subscribers

Staff based in 26 countries representing 36 nationalities
MOBILE BROADBAND
SITUATION AND FORECAST IN THE ARAB STATES
**MOBILE MARKETS IN THE ARAB STATES**

**Significant growth** in the number of mobile connections

- The Sub-Saharan Africa region is the fastest growing region
- The MENA region is the second-fastest growing telecoms market globally

**High penetration** and **sustained growth** in mobile connections

- Mobile penetration has increased rapidly in the past 12 years, from just 3% in 2000 to 105% in 2012, representing an average annual growth rate of over 32%
- Today there are more than 391 million connections in the region

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Average annual growth in the number of mobile connections (2002–2012)

- **Asia Pacific**: 22%
- **Eastern Europe**: 21%
- **Latin America**: 21%
- **North America**: 10%
- **Sub-Saharan Africa**: 36%
- **Western Europe**: 6%
- **Arab States**: 32%

Source: GSMA intelligence

Mobile connections, population and mobile penetration in the Arab States (2000–2017)

- **2000**: 10 million connections, 600 million population, 2%
- **2017**: 600 million connections, 1300 million population, 140%

Source: GSMA intelligence
Mobile, using licensed spectrum, has a significant economic and social impact on the Arab States

Overall estimated economic impact of mobile:

- In 2011, the supply-side impacts were estimated at 2.9% and 4.2% of GDP in North Africa and the Middle East, respectively
- The benefits of mobile technologies on improvements in efficiency and productivity are estimated at 2% of GDP across the Arab States
- The mobile industry has contributed more than 1.2 million full-time jobs across the Arab States in 2011
- Allocating additional harmonised spectrum to mobile broadband could create 5.9 million additional jobs by 2025

Source: Mobile Economy 2013
TV WHITE SPACES
BASIC PRINCIPLES
**TV WHITE SPACE: BASIC PRINCIPLES**

**DEFINITION**
White space comprises spectrum that is **not used at a particular time and geographic location**. Traditionally the focus has been on TV white space, which consists of unused spectrum in the television broadcasting bands.

**CONCEPT**
It is normally unused due to the necessary geographical separation between TV stations using the same frequency channel and due to unused spectrum by regional TV stations.

**REGULATORY FRAMEWORK**
The TV white space scenario often relies on the **licence-exempt model** with “no individual rights of use” as well as “no individual frequency planning/coordination”. As a consequence, the TV White Space implementation is on a **non-interfering / non-protected basis**.

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TV WHITE SPACE: BASIC CHALLENGES

How to determine whitespace accessibility
- Balance between reliability and availability
- Adequately protecting incumbent services

How to measure interference
- Statements such as “this equipment shall not cause harmful interference…” does not help
- Need agreed monitoring interference method

White Spaces

**Signal strength**

Frequency

How to detect incumbent services
- Sensing
- Dedicated Pilot Channel (CPC)
- Geolocation & database

How to prevent security problems
- Data can be manipulated to create or enlarge spectrum for whitespace use
SPECTRUM HARMONISATION MATTERS

- Need to consider market harmonisation to achieve long term benefits
- Importance of following international spectrum allocations that have been endorsed at the WRC conferences

SPECTRUM FOR MOBILE

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Licensing Regime

Exclusive access remains the main regulatory approach for mobile broadband spectrum — guaranteeing quality of service, safeguarding against interference and providing a higher degree of market certainty to create incentives for investment.

The TV White Space licensing regime should not jeopardize the future of the UHF band including:

- The implementation of the Digital Dividend
- The impact on the preparation process for WRC-15 since the UHF band is going through a number of changes
- Future spectrum investment due to uncertainty about licenses and their commercial viability

TV white spaces would not guarantee high-quality mobile data services due to:

- Non-homogeneous geographical coverage and fragmented bands
- Quality of service issues due to the interference risk (where work is ongoing) and best effort nature of the service
- Device issues surrounding availability, cost and technology due to bands and uncertain market
Uncoordinated spectrum sharing could be counterproductive to global harmonisation and reduce the economies of scale in device manufacturing.

**ACCESS TO ADDITIONAL SPECTRUM**

Urgent need to secure additional spectrum especially sub 1GHz band to support growing mobile data usage in the Arab States. Operators could gain access to complementary spectrum for mobile broadband — in IMT-identified bands.

**IMPORTANCE OF HARMONISATION**

Spectrum needs to be harmonised to enable low cost mobile equipment, roaming and to minimise interference. The WRC-15 will be a key milestone for the future development of harmonised mobile broadband.

**LICENSING REGIME**

Exclusive access remains the main regulatory approach for mobile broadband as there are no question-marks surrounding deployment (unlike whitespace) creating an incentive for further investment.
Digital Dividend Toolkit
www.gsma.com/digitaldividendtoolkit
An online resource offering the latest policies, perspectives and best practices for securing and implementing Digital Dividend spectrum for mobile broadband.

Digital Switchover Guide
www.gsma.com/spectrum/digital-switchover
An interactive tool that describes how to manage the conversion to digital television and release Digital Dividend spectrum for mobile.

Mobile Policy Handbook
www.gsma.com/publicpolicy/handbook
A portal to GSMA positions on mobile policy issues, including spectrum management and licensing.

GSMA Spectrum Resources
www.gsma.com/spectrum/resources
Our library of research, reports, case studies and collateral.
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