

Future Spectrum Requirements for Europe

WRC-15 lunchtime seminar

Geneva, 9 November 2015

An industry overview
Daniel Pataki, Vice President of Regulation
GSMA

A mobile operator's perspective
Massimiliano Simoni, TIM, and Chairman of the Frequencies Operator Expert Group, GSMA

Recommended new mobile bands
Glyn Carter, Spectrum Advisor
GSMA

Q&A, buffet lunch and networking





Mobile Economy: Europe

Daniel Pataki, Vice President of Regulation
GSMA

Socioeconomic impact of mobile in Europe



Employs

3.8 million

people



Contributes

€500bn

into the economy
(3% GDP)



Pays

€84bn

in tax

LTE: transforming mobile in Europe

4G coverage and penetration

% Connections

2015 21.9%

2020 56.9%



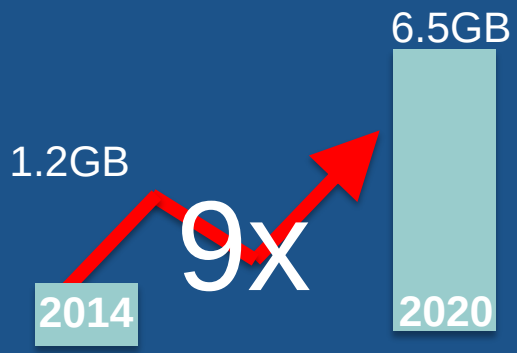
Population covered

2015 89.8%

2020 96.6%

What does this all add up to?

700m + >70% + 74% =



LTE subscribers by 2020

smartphone subscriptions by 2020

of *cellular* traffic that is video by 2019

BIG growth in monthly usage per subscriber

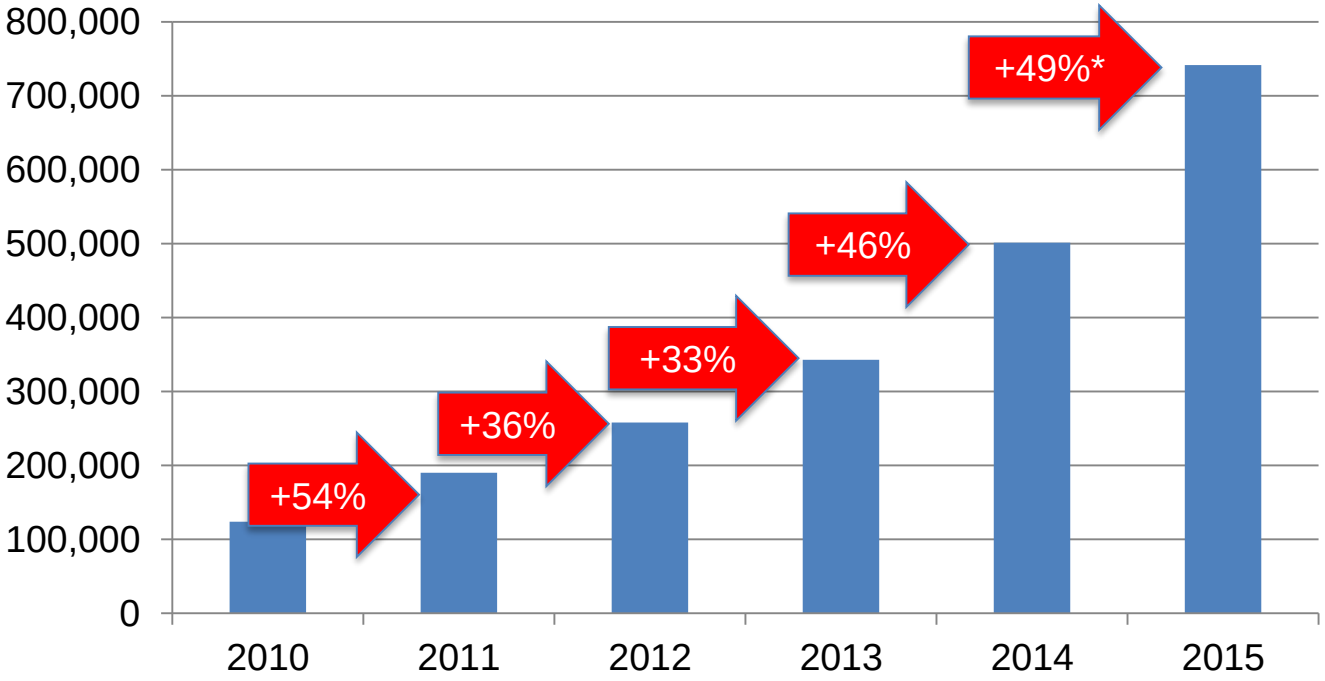
THE TREMENDOUS GROWTH IN DATA USAGE MAKES NEW IMT SPECTRUM VITAL



A mobile operator's perspective

Massimiliano Simoni, TIM
Chairman of the Frequencies Operator Expert Group, GSMA

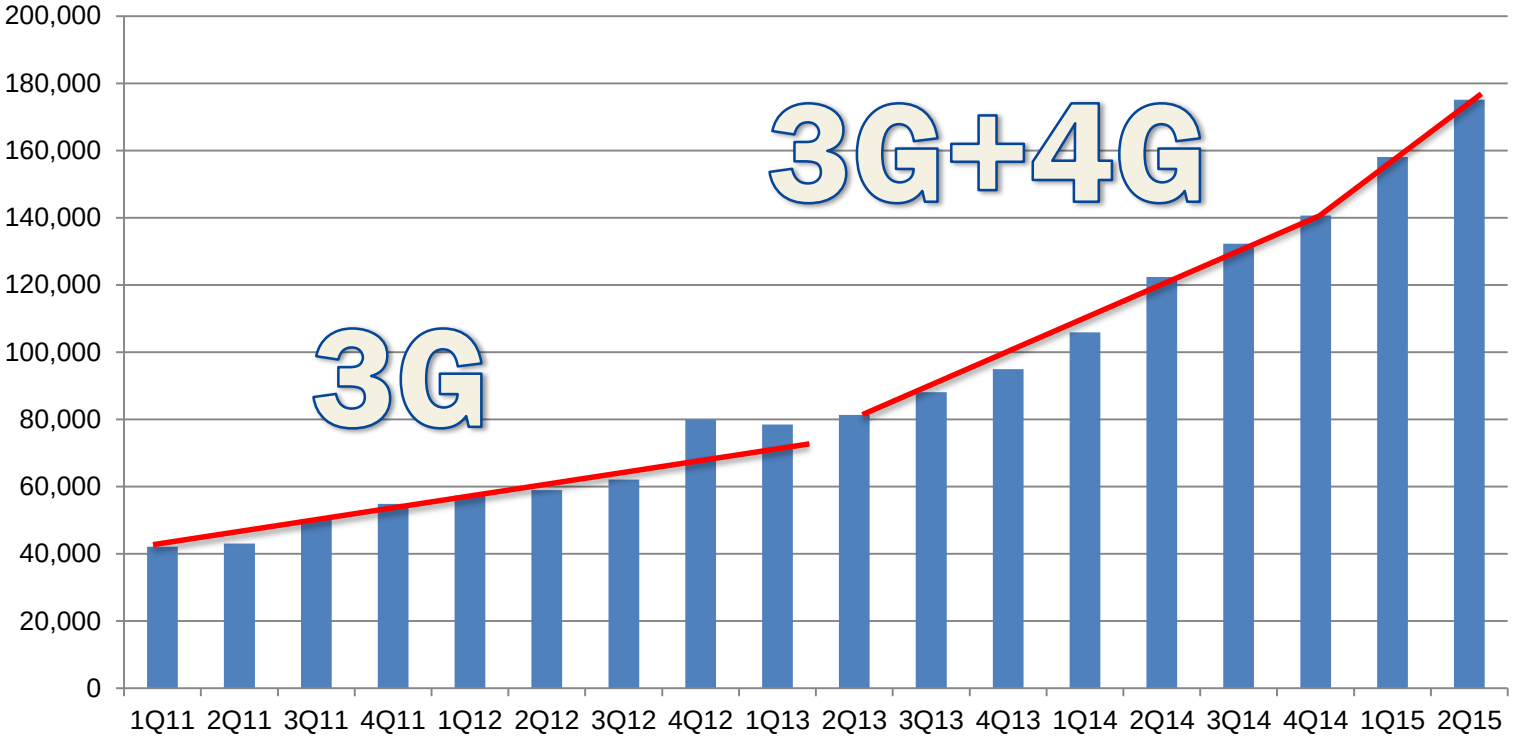
Data traffic growth in Italy (TB)



Processing of AgCOM data

** estimated*

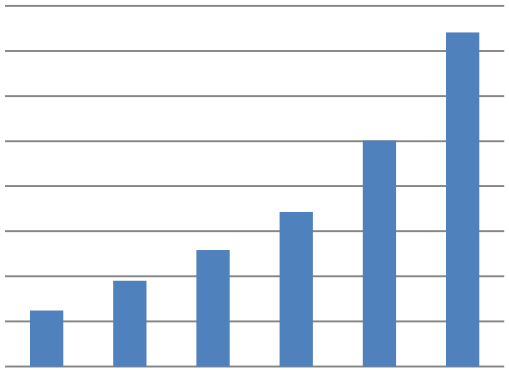
Quarterly mobile data traffic volumes in Italy (TB)



Processing of AgCOM data

New spectrum: a mixed balance of frequency bands

Increasing **capacity**



Enhanced **coverage** for broadband applications



Ever increasing speed



Operators' efforts

Operators have already started to

- Refarm the spectrum, introducing new technolgies in their bands
- Switching off old technologies, where possible (some regulatory issues, roaming agreements, existing M2M devices and legacy terminals are the major problems)
- Densify the network increasing the number of sites so to reuse the frequencies

This is resulting in an always more efficient use of the spectrum

But it is not enough!

Spectrum for capacity and coverage (below 6 GHz)

Bands already candidate for IMT at WRC-15:

- L band
- 2700-2900 MHz
- C band

Low UHF proposed for further studies:

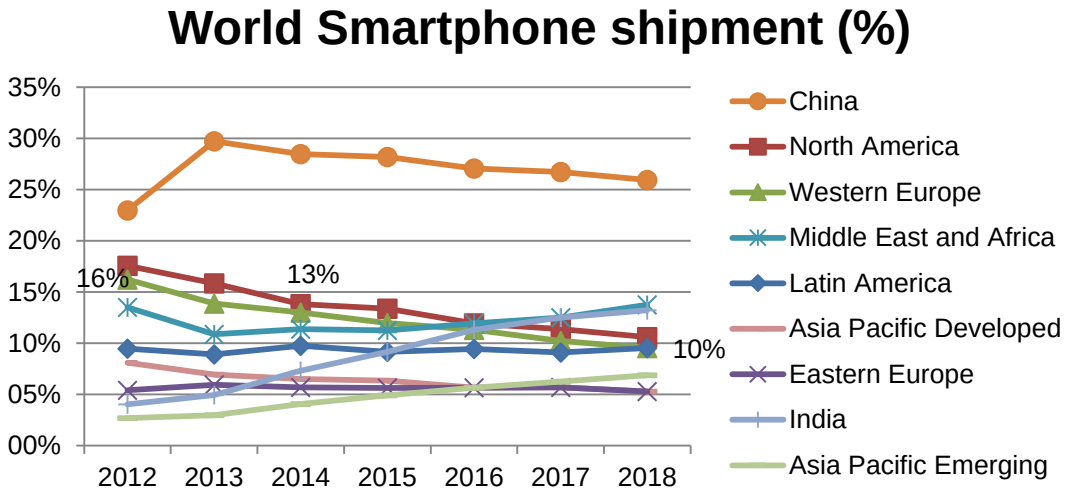
- A mobile co-primary allocation to the Mobile Service now at WRC-15 to provide the needed flexibility to be able to manage the spectrum at national level
- Coexistence conditions and band plan to be studied during next study period to harmonize it, with no obligation to implement even after WRC-19

Spectrum for IMT-2020 capacity (above 6 GHz)

GSMA has identified these bands to be proposed for studies between now and 2019 with the aim to allocate some spectrum at **global** level for capacity at WRC-19

6-20 GHz	20-33 GHz	ABOVE 33 GHz
• 5925-7145 MHz • 10-10.6 GHz	• 23.15-23.6 GHz • 24.25-29.5 GHz • 31.8-33.4 GHz	• 37-47 GHz • 47.2-50.2 GHz • 50.4-52.6 GHz • 66-76 GHz • 81-86 GHz

Benefits of harmonization



- Economies of scale
- More products and more services to people at a lower price
- Less cross-border interference

Processing of CSS Insight data



Proposed new spectrum for IMT

Glyn Carter, Senior Spectrum Advisor
GSMA

GSMA proposed new bands for IMT

Sub-700 MHz UHF

(470-694/8 MHz)



The key to the future of widespread mobile broadband coverage

L-band

(1350-1400 MHz & 1427-1518 MHz)



A good mixture of coverage and capacity

2.7-2.9 GHz



A good capacity band that would allow use of existing 2.6GHz cell sites

C-band

(3.4-3.8 GHz & 3.8-4.2 GHz)



Large bandwidth could provide capacity to support high-speed mobile broadband

Agenda Item 1.1

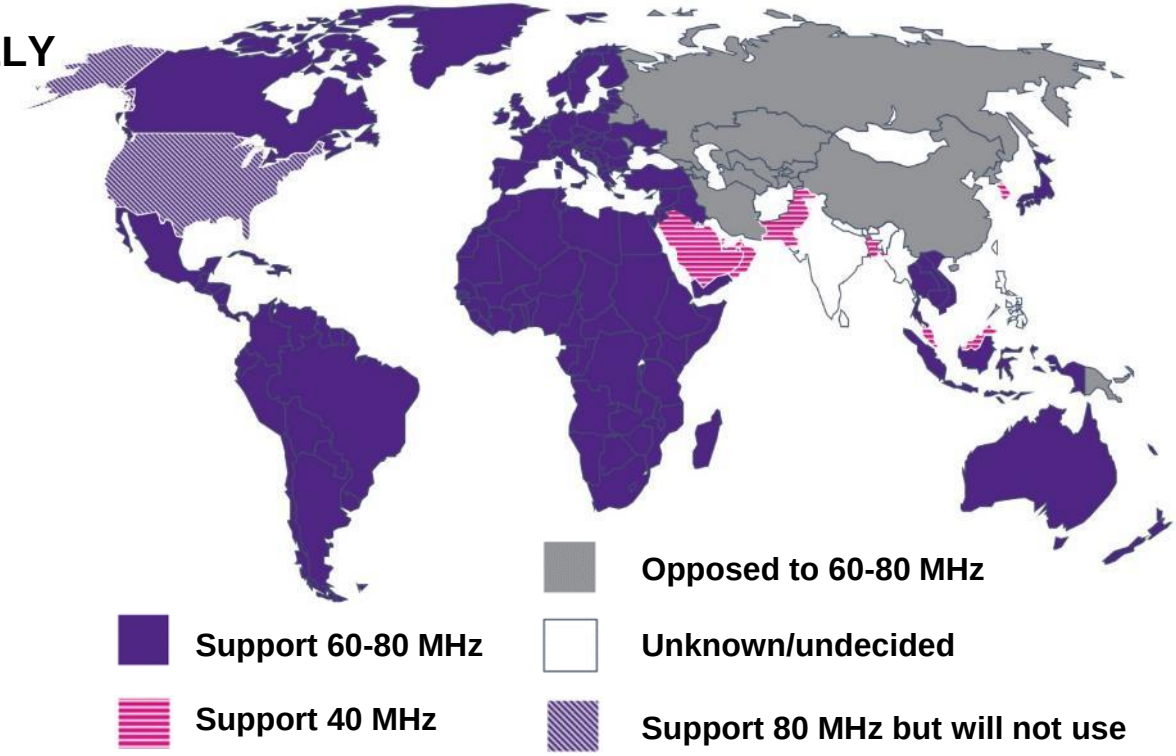
AGENDA ITEM 1.1 RISKS NOT MEETING ITS GOAL

- Objective is to identify additional spectrum for IMT to facilitate the development of mobile broadband
- Mobile data traffic continues to grow faster than anyone's expectations
- CEPT support for 1427-1518 MHz and 3.4-3.8 GHz is much welcomed
  - However much of this is not 'new' spectrum in Europe, and 'No Change' proposed for all other bands
- Goal is to plan for mobile spectrum requirements in 2020-2025, not today
  - Without sufficient spectrum, Europe risks losing out in the broadband race
- Flexibility needed to allow countries to react to their evolving situations
  - IMT identification does not mean spectrum has to be used for mobile broadband
  - Existing services can continue and be protected through regulatory conditions

L-Band (1427-1518 MHz)

WIDESPREAD SUPPORT GLOBALLY

- Good combination of coverage and capacity
- 1452-1492 MHz largely unused and already harmonised for IMT in Europe
- Co-existence with existing fixed links is manageable
- Compatibility with MSS above 1518 MHz can be achieved at national level



Source: Plum Consulting (Oct 2015)

C-Band

- **Europe has taken lead role in promoting use of C-band for IMT**
  - 3.4-3.8 GHz harmonised in Europe – and ECP proposing global IMT identification
- **Situation in some other parts of the world very different to Europe**
  - Flexibility needed to cater for different needs
- **… but IMT identification does not mean 'the end of FSS' in the band**
  - Countries can continue to use 3.4-3.8 GHz for satellite services
  - Sharing between IMT and FSS is possible through cross border coordination and/or IMT in urban and areas and FSS in rural
- **Wider harmonisation of 3.4-3.8 GHz globally is important**
  - Needs of different countries can be accommodated
  - CEPT needs to drive discussions to find a solution
- **3.4-3.8 GHz: Would give London & Shenzhen €400 million in benefits**
  - Avoids capacity crunch in central London in around 2022 and Shenzhen in 2020



Other Bands

470-694 MHz

- Sub-700MHz UHF spectrum will start to be used for IMT regardless of what Europe decides to do
- Europe risks falling behind other regions if it does not have more flexibility in how this spectrum can be used

2.7-2.9 GHz

- We are disappointed by level of support / resistance to this band
- Band is lightly used in many countries around the world and represents an opportunity to use spectrum more efficiently

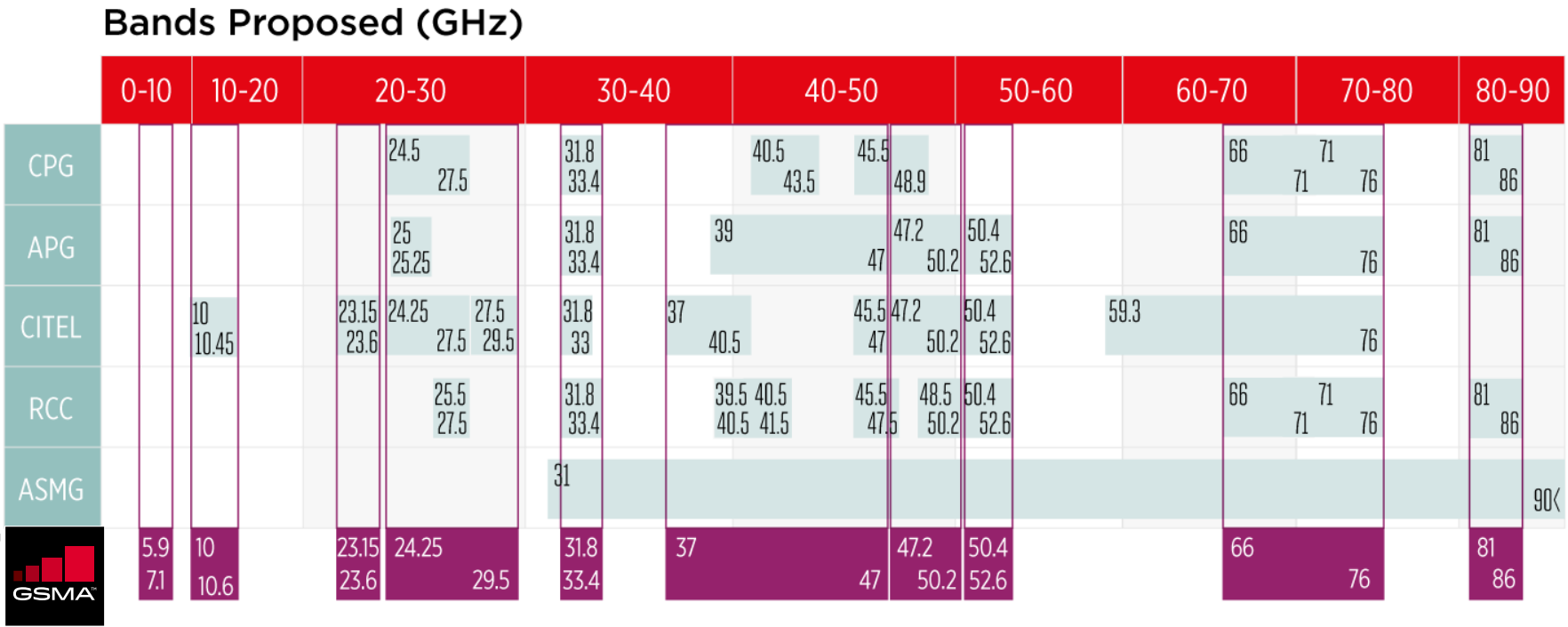
694-790 MHz (Agenda Item 1.2)

- Issues still being discussed, but overall outcome appears to be positive

Enabling the future of IMT: AI 10

WRC-19 AI should <u>STUDY</u> variety of bands to satisfy all IMT-2020 use cases

- Including frequencies below 20GHz (e.g. around 6/7 GHz)



Securing the future of mobile

THE FUTURE OF MOBILE BROADBAND IS AT RISK WITHOUT MORE SPECTRUM

- **Mobile traffic is growing faster than anyone's expectations**
  - 2015-2020: 10x traffic growth currently expected
- **Unless significant progress is made on Agenda Item 1.1, it could fail in its goal**
  - Goal is to plan for mobile spectrum requirements in 2020-2025 - not today
  - Existing IMT bands will be used to meet demand in 2015-2020
- **Without sufficient spectrum**
  - Networks could slow, consumer prices may rise and socioeconomic benefits could be lost
- **Flexibility is essential to allow countries to react to their evolving situations**
  - New bands won't be used for mobile broadband until governments are ready


GSMA
Any questions?