

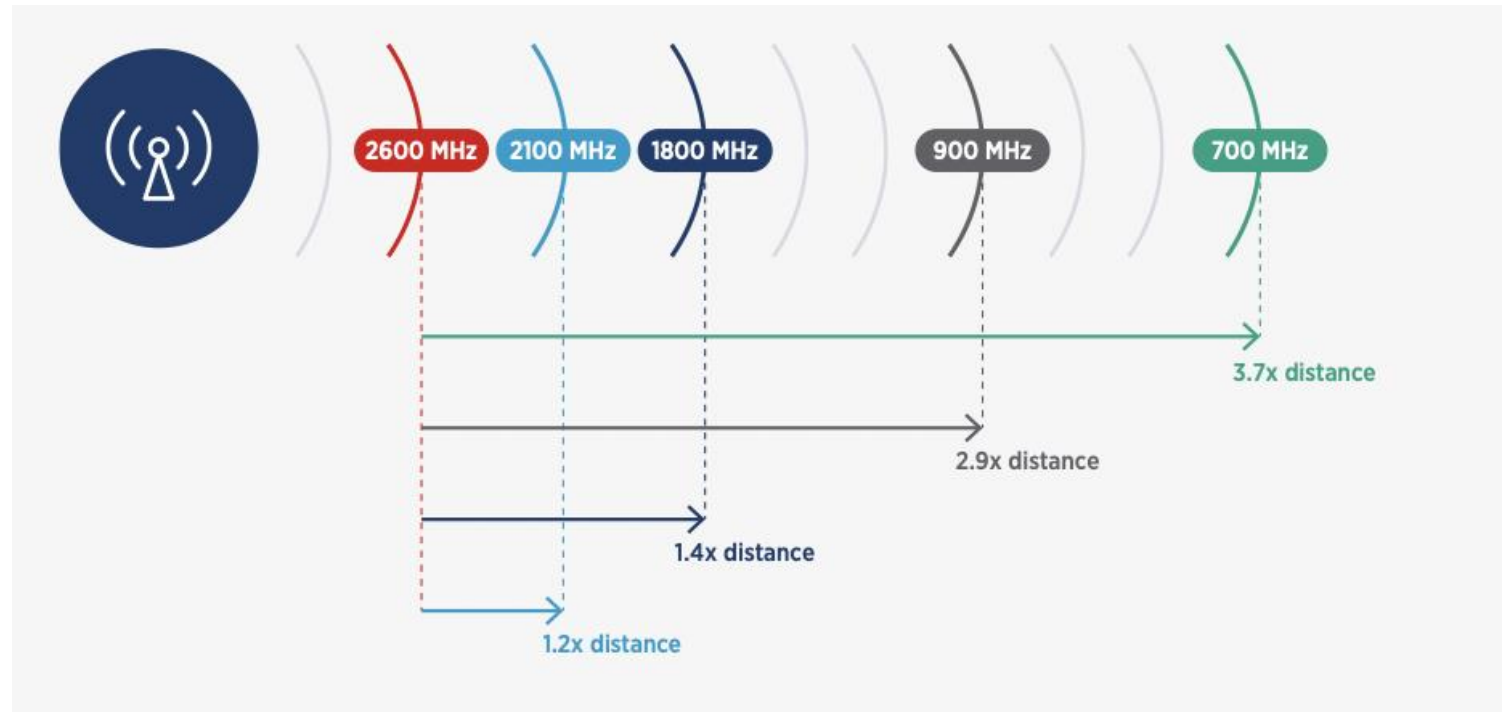
# European Spectrum Policy for the Digital Decade

Spectrum Policy Requirements

- Low-band required for lower population / rural areas
  - Mid-band for city-wide capacity
  - High-band (mmWave) for dense hotspots
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- Optimal spectrum assets drive quality, lower cost and reduce carbon.

# Spectrum for Digital Equality

Our vision sees nobody left behind

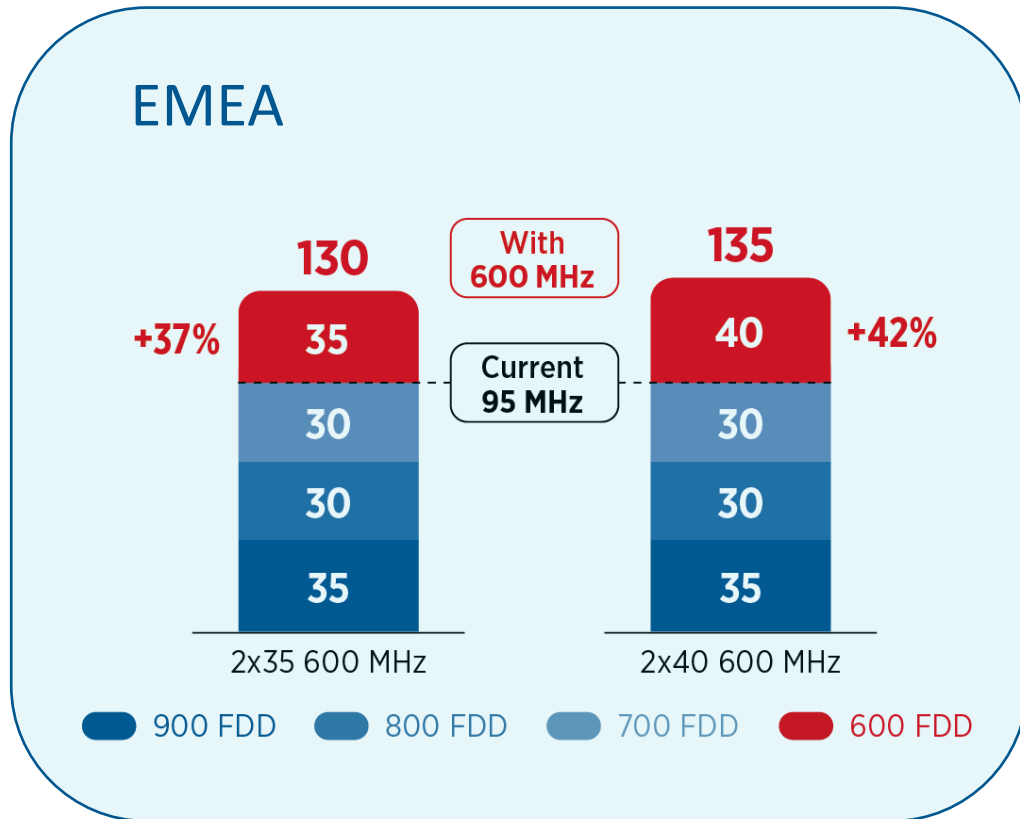


*We don't turn back. We leave no one behind. We pull each other up.*

*- Barack Obama*

# Low-Band Development

Direct impact of additional capacity on download speed

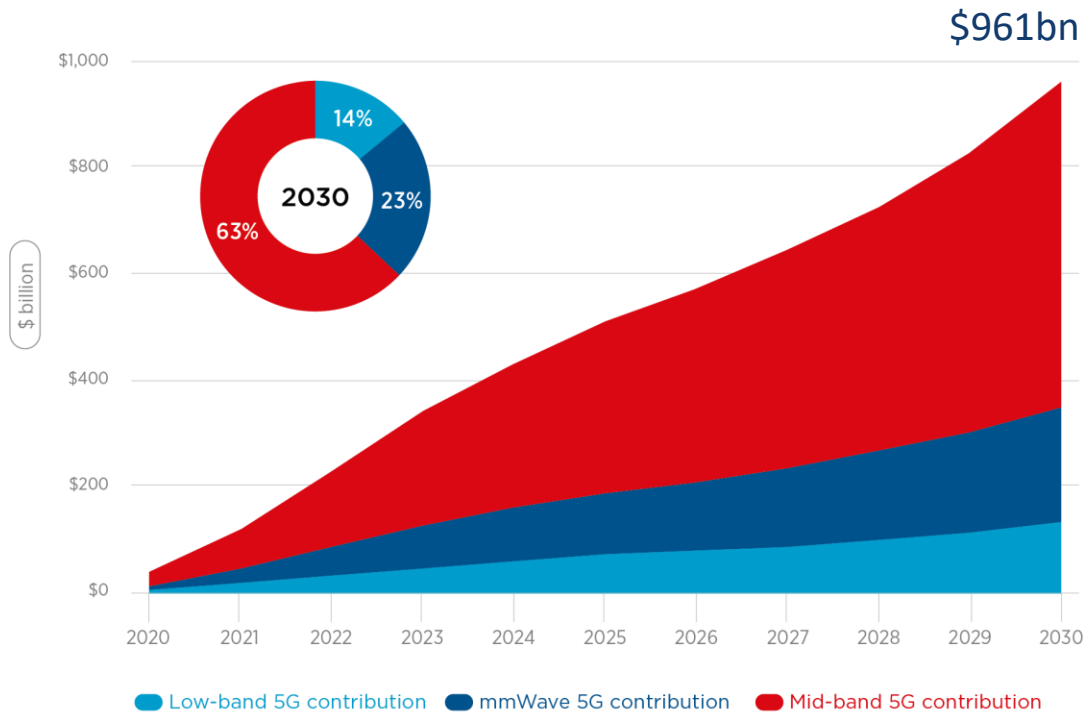


“Additional spectrum below 1 GHz (i.e. from the 470-694 MHz band) can help to provide a consistent customer experience as an important feature of IMT-2020 networks, comparable to that in cities, across wide rural areas and other harder-to-reach points of use inside cities. Some countries also have targets for equal opportunities and digital inclusion, including healthcare and education, for the population of rural areas.”

ITU TG 6/1 – Spectrum Needs for IMT

# Economic Effect of Reduced Mid-Band 5G Spectrum

## Impact of 5G on global GDP by spectrum range, 2020-2030



## Constrained Scenario

Effect of reduced mid-band availability for mobile network operators (due to set-asides or other factors)

40% loss to global GDP impact of 5G if mid-band is reduced

Optimal Scenario

**\$961bn**

0.68% of GDP

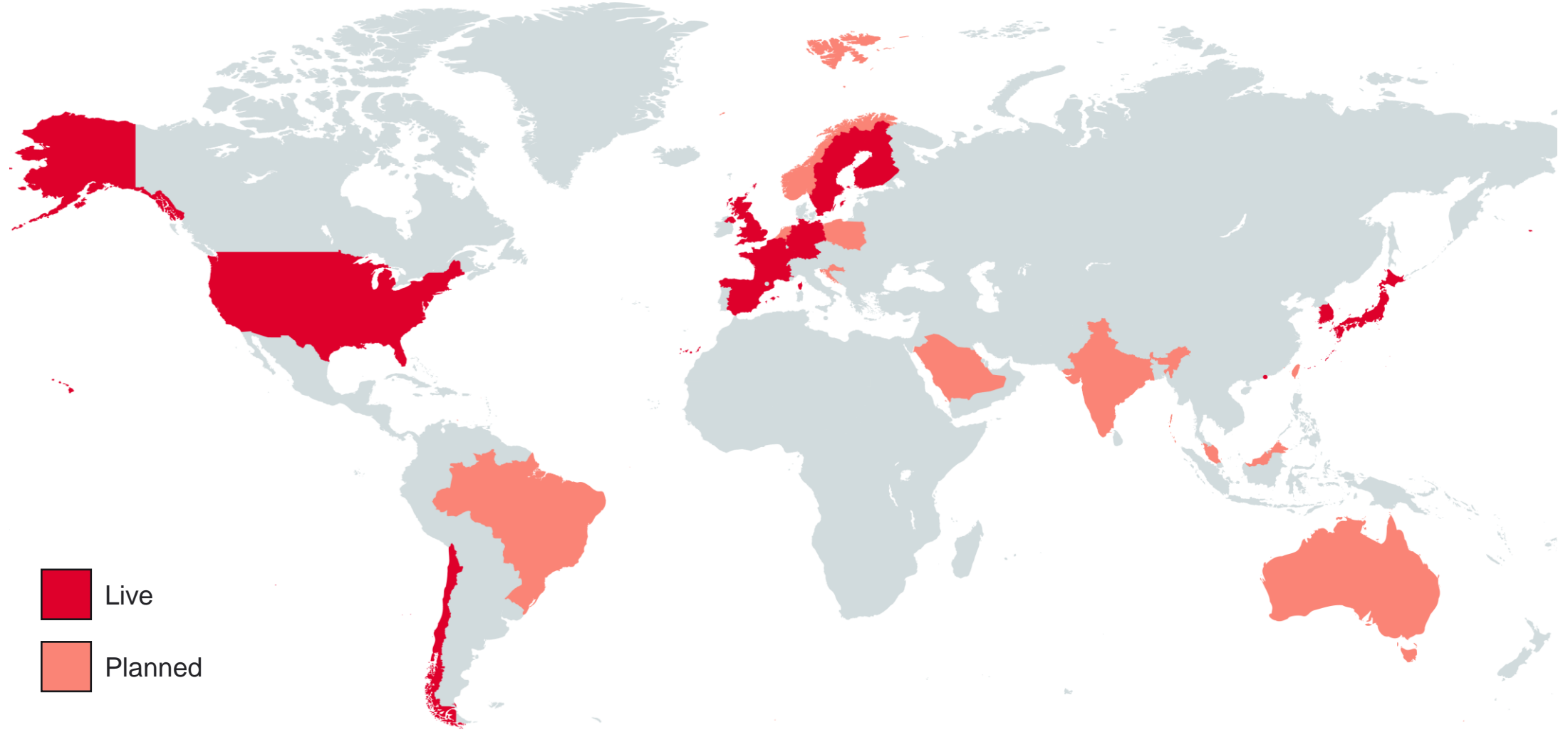
Constrained Scenario

**\$594bn**

0.42% of GDP

Sources: [The Socio-Economic Benefits of Mid-band 5G GSMA Intelligence 2022](#) and [Maximising the Socio-Economic Value of Spectrum GSMA Intelligence 2022](#)

# Majority of set-asides are in Europe



Created with mapchart.net

# Live and Planned Set-Asides of Mobile Spectrum

## EUROPE

<b>Finland</b>	Live	2300-2320 MHz, 24.25-25.1 GHz
<b>France</b>	Live	2570-2620 MHz
<b>Germany</b>	Live	3700-3800 GHz, 24.25-27.5 GHz
<b>Spain</b>	Live	2370-2380 MHz
<b>Sweden</b>	Live	3760-3800 MHz and 24.25–25.1 GHz
<b>UK</b>	Live	1800 MHz, 2300 MHz, 3800-4200 MHz, 24.25-26.5 GHz
<b>Belgium</b>	Planned	3800-4200 MHz
<b>Croatia</b>	Planned	3400-3480 MHz
<b>France</b>	Planned	3800-4000 MHz
<b>Netherlands</b>	Planned	3400-3450 MHz, 3750-3800 MHz
<b>Norway</b>	Planned	3800-4200 MHz
<b>Poland</b>	Planned	3410-3480 MHz

## ASIA PACIFIC

<b>Hong Kong</b>	Live	27.95-28.35 GHz
<b>Japan</b>	Live	4600-4900 MHz, 28.2-29.1 GHz
<b>South Korea</b>	Live	4720-4820 MHz, 28.9-29.5 GHz
<b>Taiwan</b>	Live	4800-4900 MHz
<b>Australia</b>	Planned	24.7-25.1, 25.1-27.5, 27.5-29.5 GHz
<b>India</b>	Planned	3700-3800 MHz, 4800-4990 MHz, 28.5-29.5 GHz
<b>Malaysia</b>	Planned	26.5-28.1 GHz

## AMERICAS

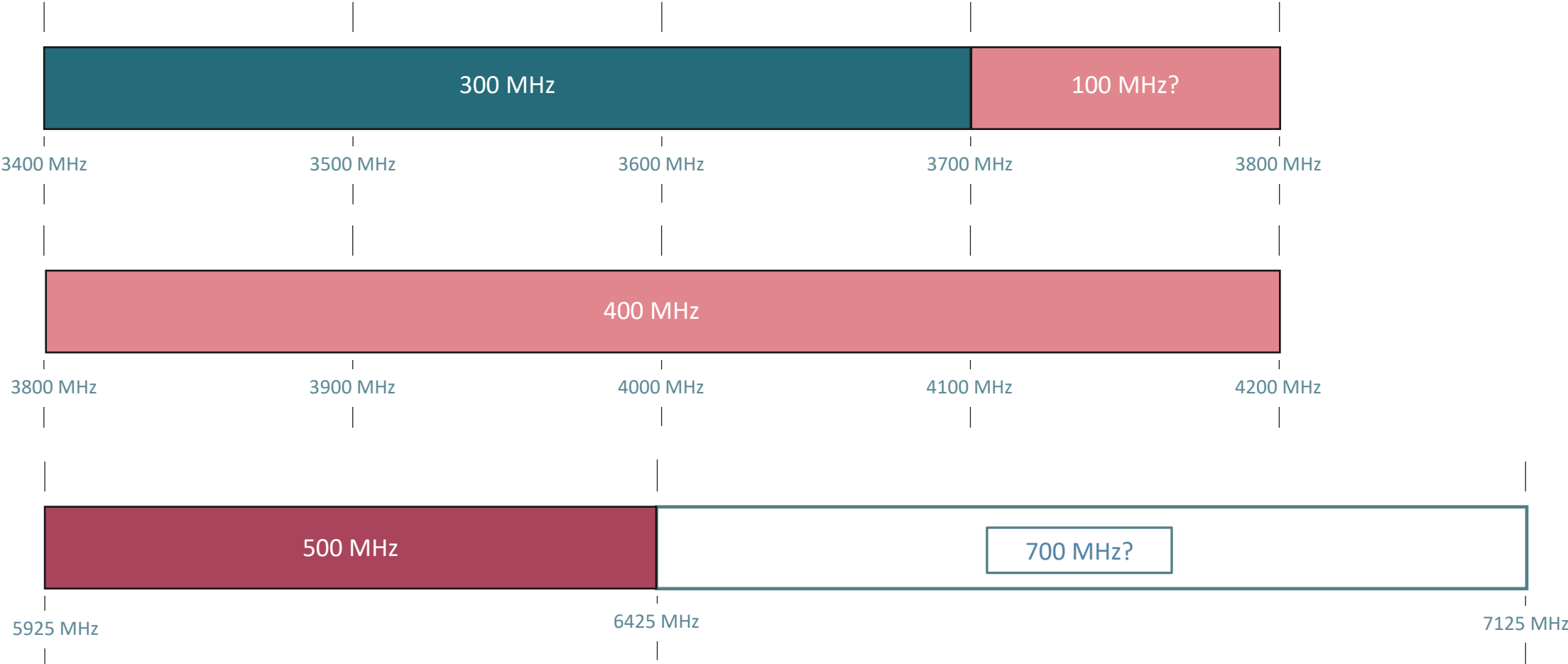
<b>Chile</b>	Live	3750-3800 MHz
<b>USA</b>	Live	3550-3700 MHz
<b>Brazil</b>	Planned	3700-3800 MHz, 27.5 - 27.9 GHz

## MENA

<b>Saudi Arabia</b>	Planned	4000-4200 MHz
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# Squeezed at Both Ends

Licensed 5G restricted by set-asides and unlicensed: both often supported by same players



# Clear questions for Europe



- **Digital equality:**
  - How will 5G and 6G reach all Europeans? What spectrum will be required to lower the digital divide?
- **Judgement day:**
  - At what point does low take-up of set asides drive policy shift? There is clear cost. Is there a benefit?
- **Cleaner, greener future:**
  - What is the carbon impact of lower power, smaller channel networks? Can macro-cell mobile help climate targets without spectrum?
- **Is Europe competitive?**
  - E. Asia, Middle East and North America all have robust spectrum plans. How will Europe keep up?