



Spectrum Award Policies to Expand Mobile Connectivity

GSMA
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Welcome Remarks

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Spectrum licensing best practice

How to make spectrum available?

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Licensing Terms and Conditions

LICENCE TERMS & CONDITIONS CAN SUPPORT NETWORK EVOLUTION & INVESTMENT

License duration of
15 to 20 years

Remove service
and technology
restrictions

Use coverage
obligations with
caution and target
them

Avoid restrictive
and onerous
conditions

Use annual fees to
recoup costs – not
maximise revenues

RENEWAL PROCESS SHOULD AVOID RISKING INVESTMENT & SERVICE CONTINUITY

Establish a license-renewal process
inc consultation 3-4 years in advance

A presumption of renewal (unless
terms breached) supports service
continuity and investment

Renewal should be predictable and
avoid introducing new terms which
jeopardise RoI



Licensing Challenges

What spectrum will be available and when:

- To plan what spectrum operators need to invest in over the near-to-long term to meet rapidly growing data demand (this should encompass coverage & capacity bands, existing and future bands)

Regulatory certainty:

- e.g. allocation methodologies, renewal procedure, projects and programme

Licensing regime:

- e.g. refarming, resource pricing, spectrum sharing

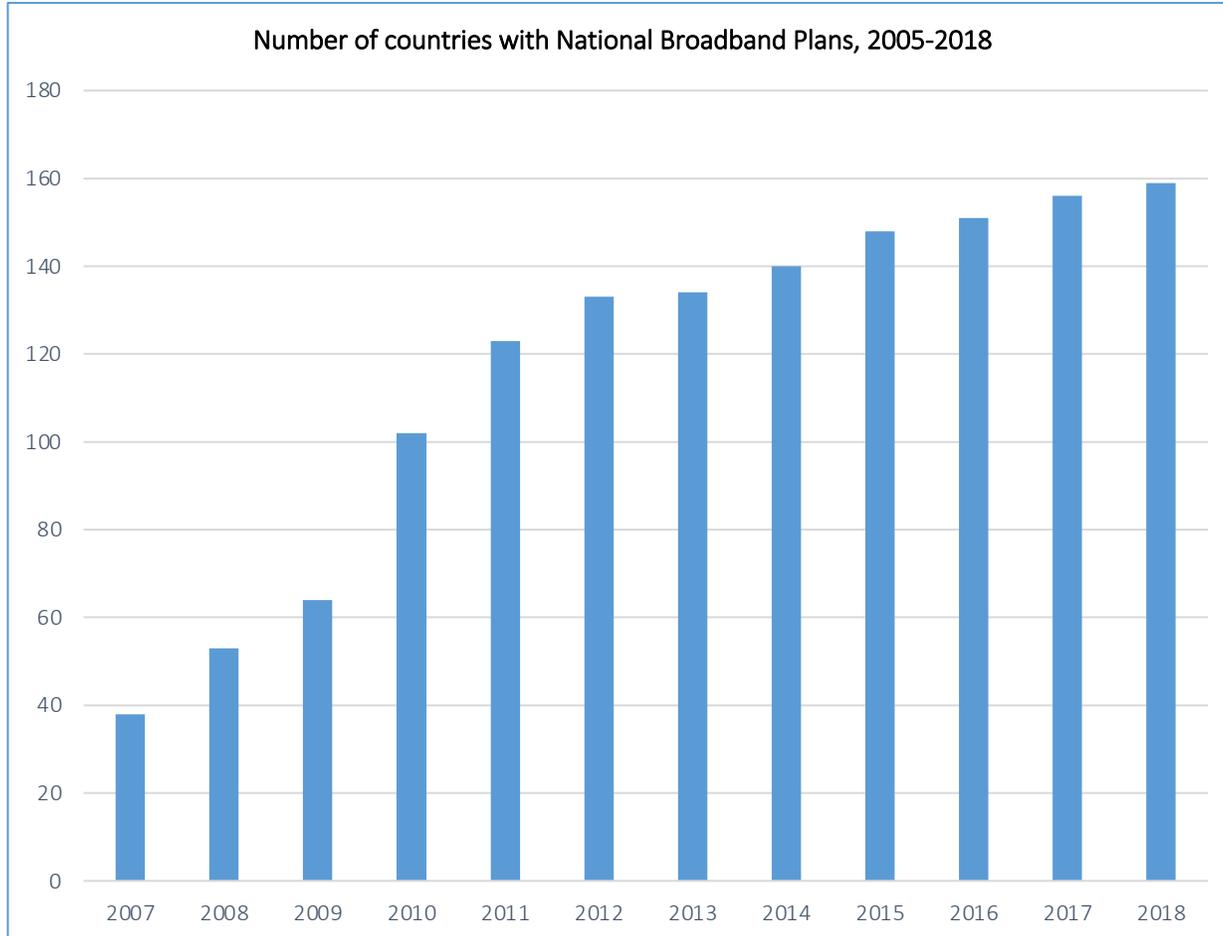
Harmonised future spectrum:

- To reduce equipment costs, limit interference and enable roaming

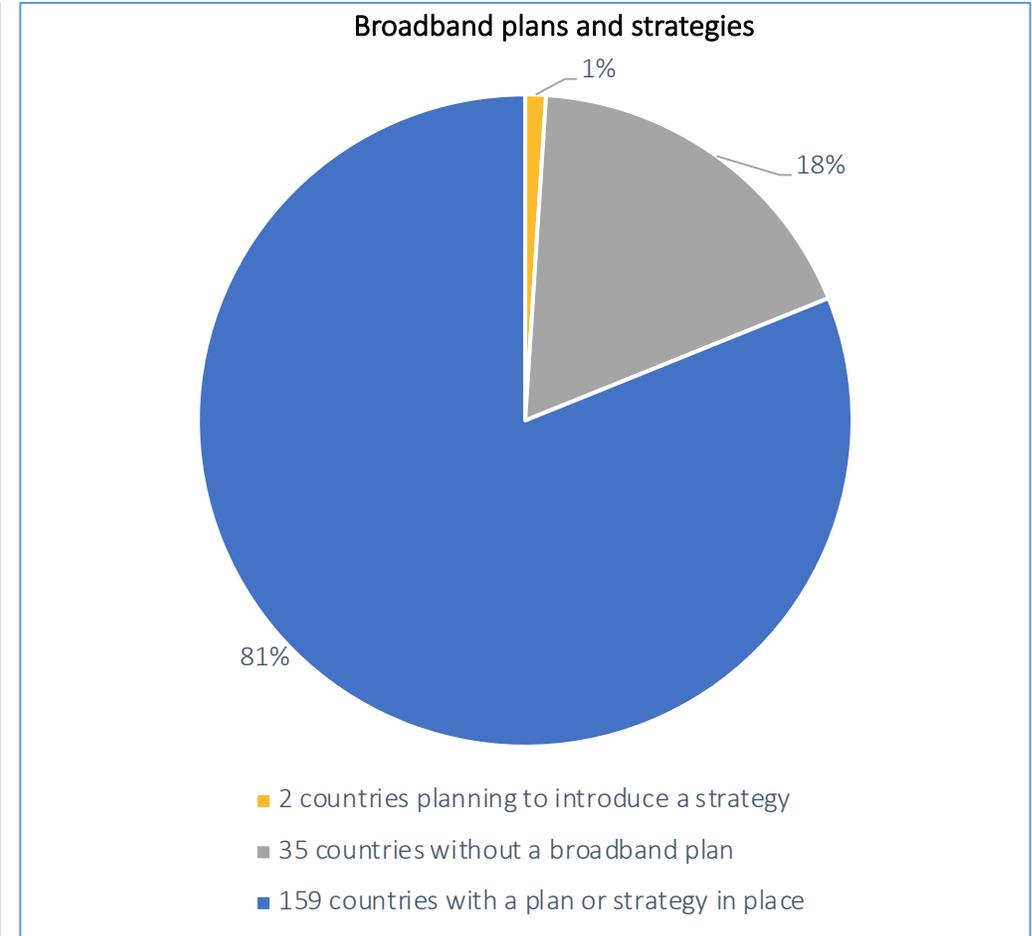




Spectrum Roadmaps



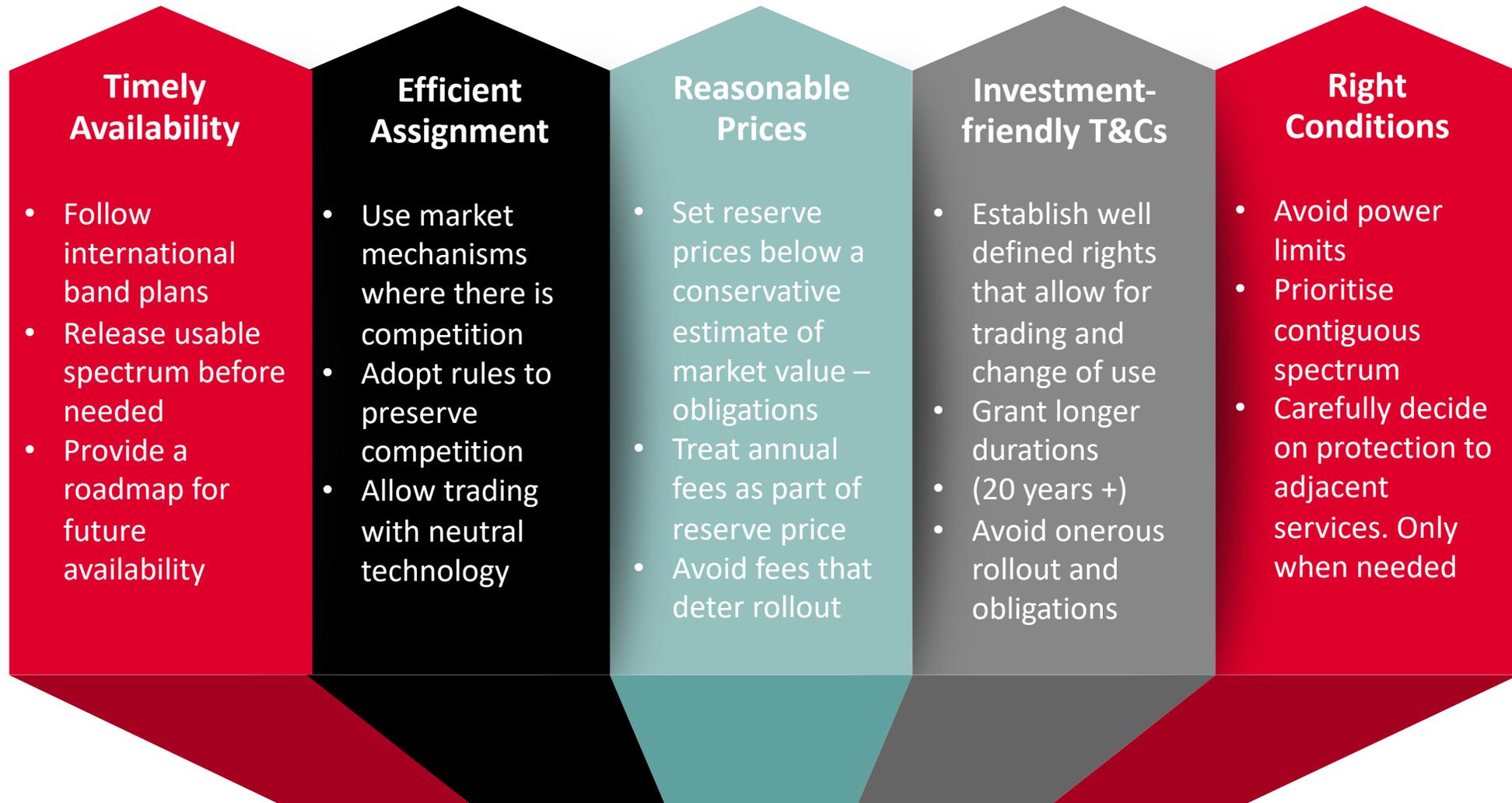
Source: ITU



Source: ITU, The State of Broadband 2018



How to make sure Spectrum is correctly assigned?





Impacts of high Spectrum prices



Network Coverage



Network Quality



Consumer Prices

Analysis based on 229 operators in 64 countries (34 high income and 30 low & middle income) from 2010-2017

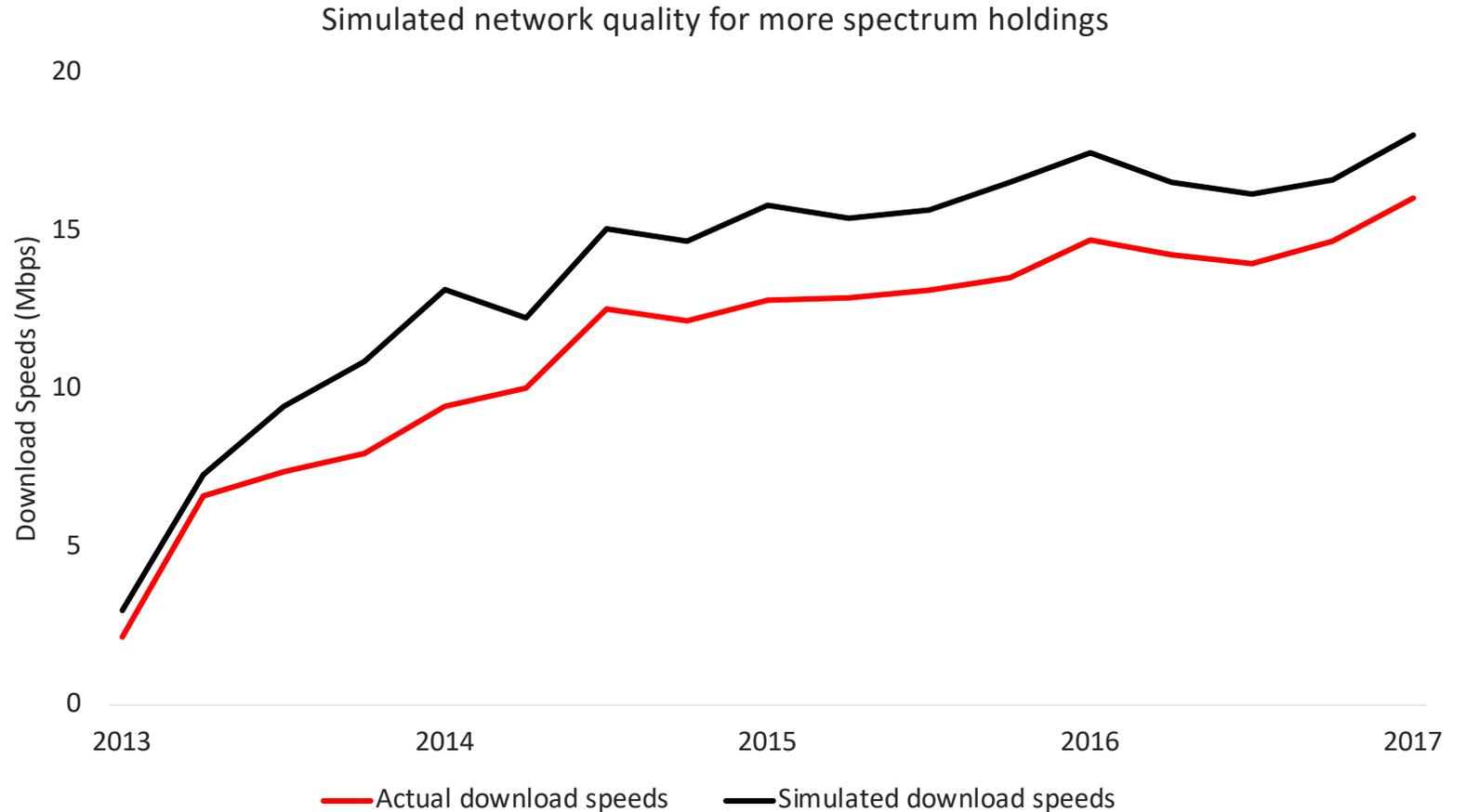


Impacts of high Spectrum prices

Amount of spectrum impacts network quality

Compare actual with simulated download speeds if more spectrum released to operators with 20 MHz less than median

Speeds would have been 2.5Mbps faster (15% increase) over the period if spectrum holdings had been at average levels



Source: GSMA Intelligence. Covers 10 operators that had 20 MHz less than the median level for both 3G and 4G spectrum holdings, operating in Ukraine, Colombia, Pakistan, Brazil and Taiwan.



Spectrum auction best practice

- Auctions are not the only award mechanism – beauty contests can work well
- There is no single best auction type and numerous factors impact the outcome
- High reserve prices are a growing threat to successful awards
- Spectrum caps and set-asides can work – but may represent major weaknesses
- Price discovery and truthful bidding is key to achieving a fair market price
- Focusing on achieving high prices directly impact the service
- License conditions can enable policy goals (e.g. improve coverage), but when mismanaged can jeopardise high quality services





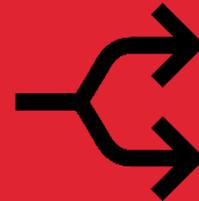
In summary, Spectrum should be made available:



AT THE RIGHT TIME

The earlier the better

Use a spectrum roadmap



UNDER THE RIGHT CONDITIONS

Technology Neutrality is very important



IN SUFFICIENT QUANTITY

Capacity crush in cities will define the commercial offering of an operator

Work with the operators to understand how much is needed

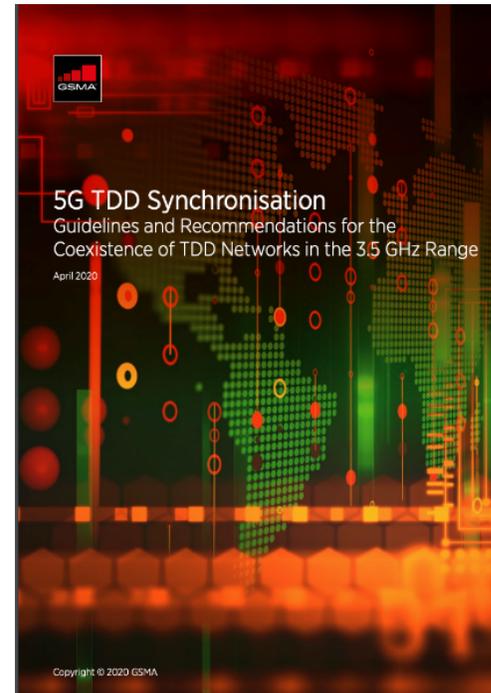
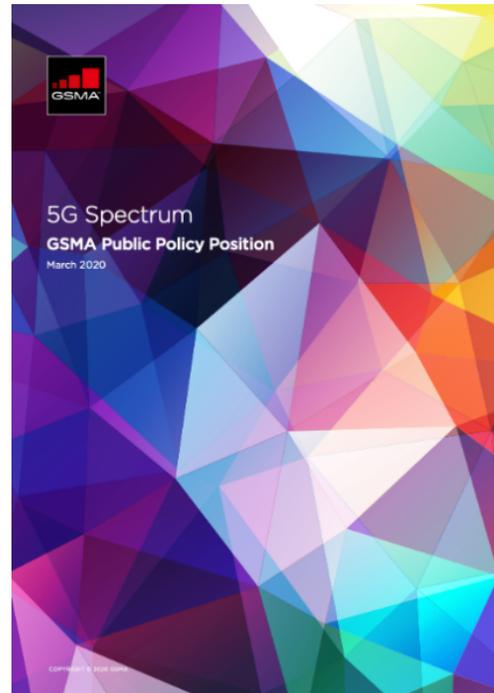


AT THE RIGHT PRICE

Auctions should determine the price



GSMA Studies



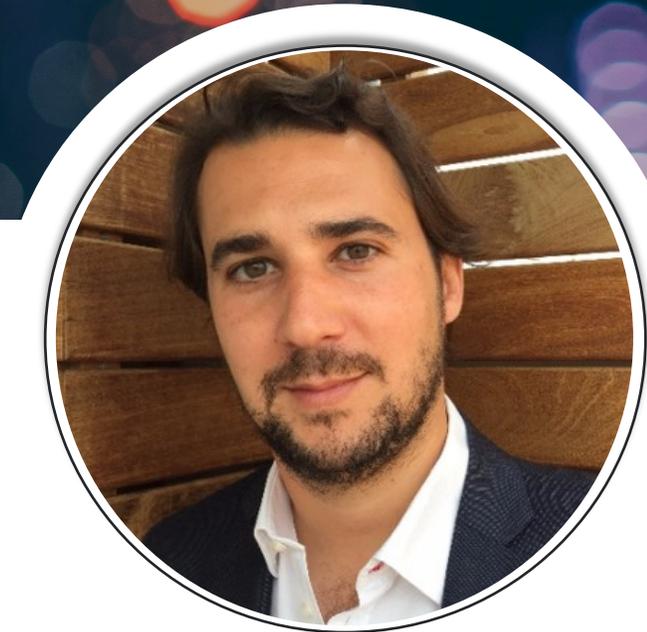
<https://www.gsma.com/spectrum>
<https://cp.gsma.com/expanding-mobile-coverage/>



Spectrum pricing in Africa: Evidence to support better and more affordable mobile services



Pau Castells
Head of Economic Analysis
GSMAi

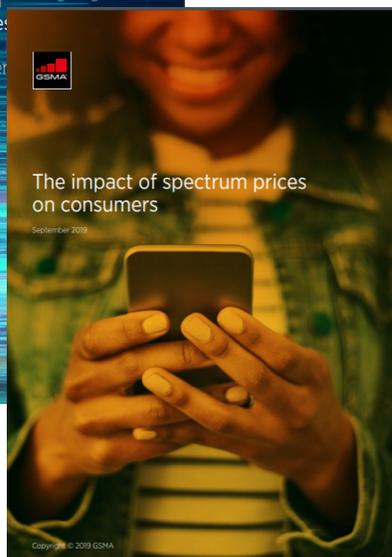




Over the last four years, the GSMA has developed solid research showing how spectrum prices can slow down network rollouts, reduce quality and coverage



Effective Spectrum Pricing:
Supporting better quality and
more affordable n



- NERA reports (2017) – Global (mostly developed countries), Europe and Latin America
- GSMA Intelligence (2018) - Developing markets report
- GSMA Intelligence (2019) – Causal effects of high spectrum prices on consumers

<https://www.gsma.com/spectrum/resources/effective-spectrum-pricing/>



However, there was a persistent evidence gap on the impact of spectrum policy in Africa

This is important – millions of unconnected; with recent evidence showing how mobile lifts people out of poverty in Africa and drives economic growth ([GSMA and World Bank research](#)).

This study fills the gap, with three objectives

- 1** *First study to systematically quantify the amount of spectrum that has been licensed for mobile services in Africa, by technology;*
- 2** *Analyse prices paid for spectrum, over time and across countries in Africa;*
- 3** *Establish how lower amounts of spectrum, late release of spectrum or higher spectrum prices are linked to worse network quality and slower coverage rollout.*



The Spectrum Pricing in Africa study

This study leverages a unique spectrum awards database

- Historical analysis of spectrum licencing allows to study spectrum holdings trends 2010-2019
- Spectrum pricing for 93 licences in Africa, and for 405 assignments globally

Benchmarks developed across three areas

Amounts of spectrum

- *49 African markets*
- *79 global markets*

Timings of release

- *49 African markets*
- *79 global markets*

Spectrum pricing

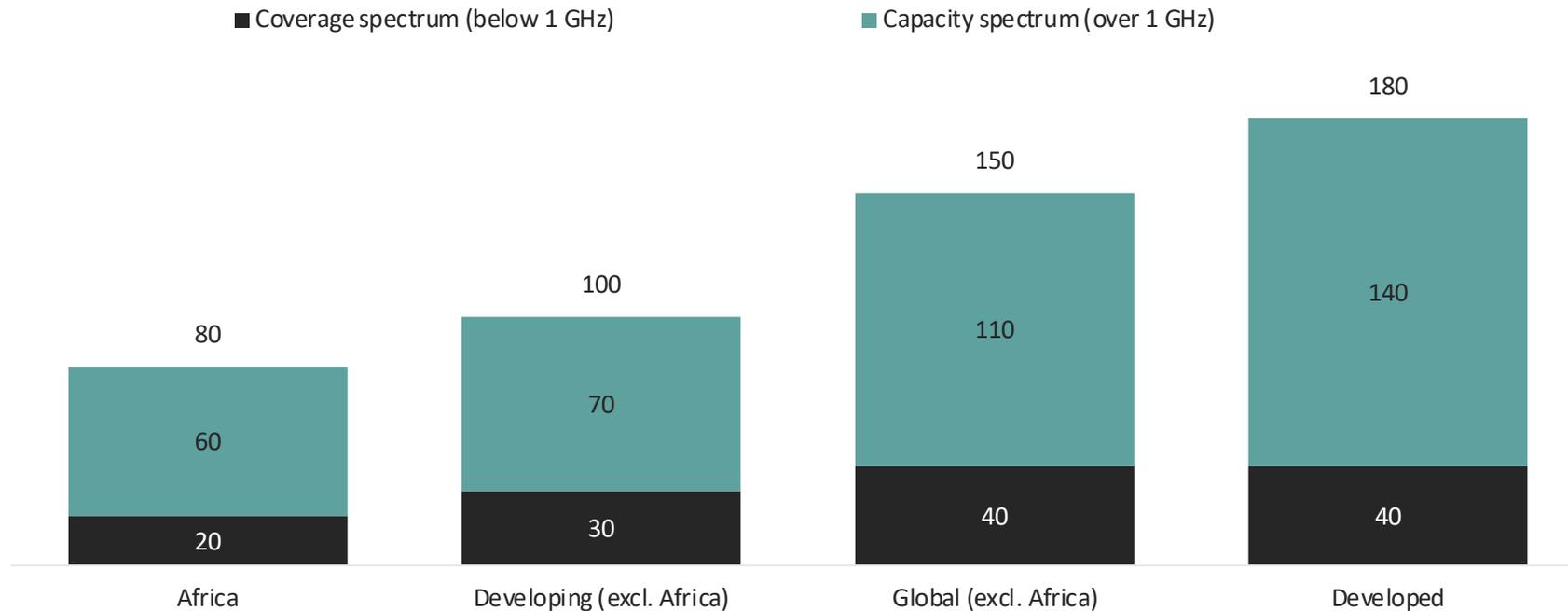
- *29 African markets*
- *87 global markets*

- Evaluate impact of indicators for amounts, timings and pricing of spectrum on:
 - mobile broadband coverage
 - network speeds
 - mobile broadband adoption



Governments in Africa have assigned half of mobile spectrum, compared to the global average...

Average spectrum holdings per operator (2019)

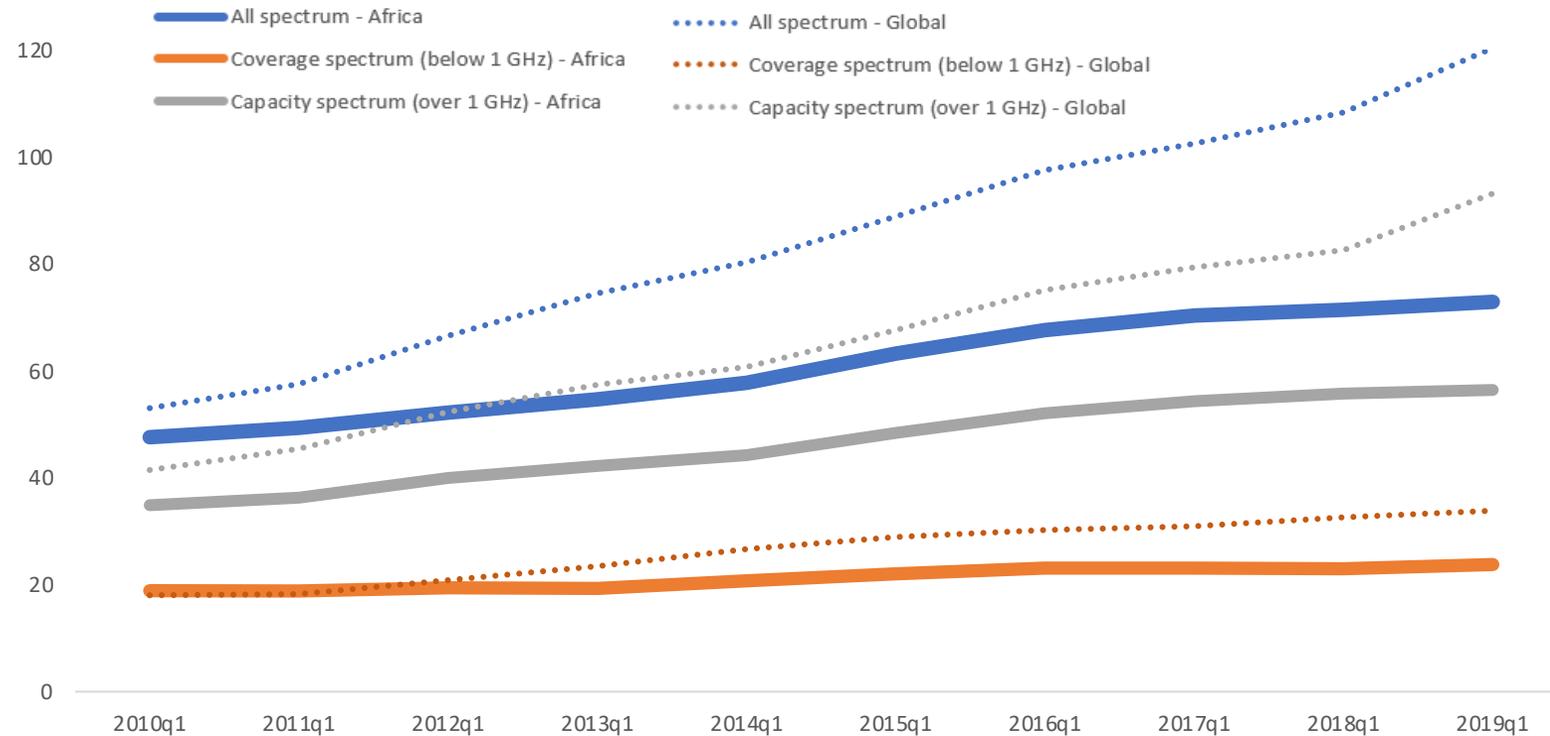


Analysis includes spectrum licences below 3.7 GHz, and excluding 5G-specific spectrum.



...the notable gap in spectrum assignments versus the rest of the world emerged and expanded over the last decade

Average spectrum per operator in Africa and a sample of countries globally



Analysis includes spectrum licences below 3.7 GHz, and excluding 5G-specific spectrum.

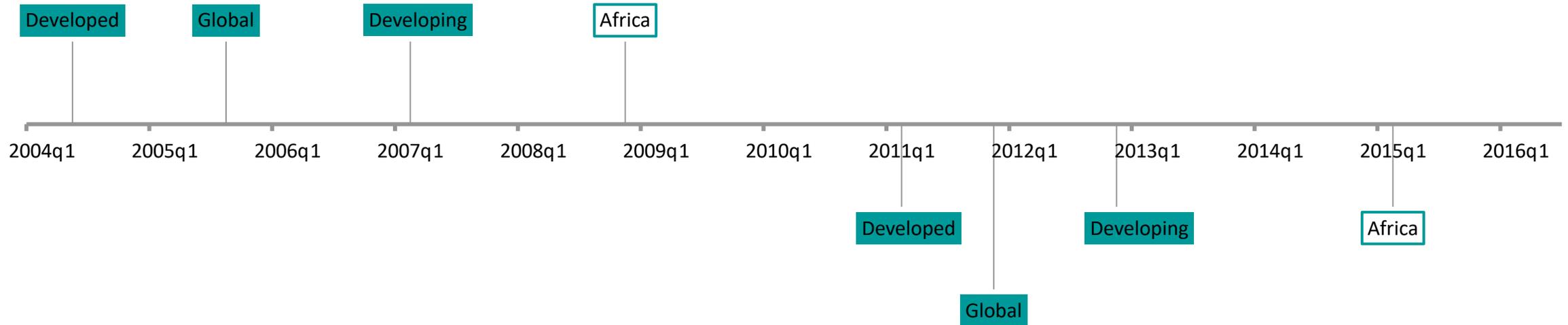


...and three years later than the global average

Average time of first spectrum award across countries

3G spectrum

4G spectrum

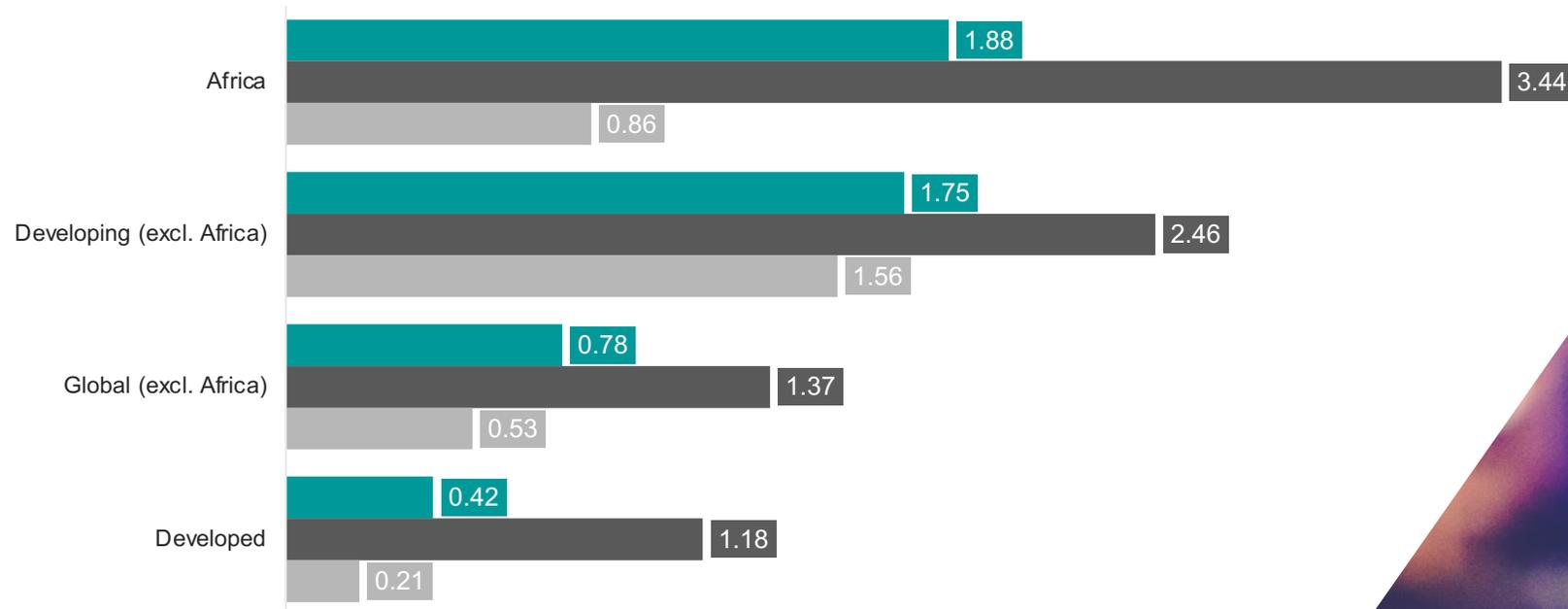




...and at higher prices – accounting for income, spectrum price is higher than elsewhere in the world

Median unit price of spectrum 2010-2019, \$ per million of income

- All spectrum assignments
- Coverage spectrum assignments (below 1 GHz)
- Capacity spectrum assignments (over 1 GHz)

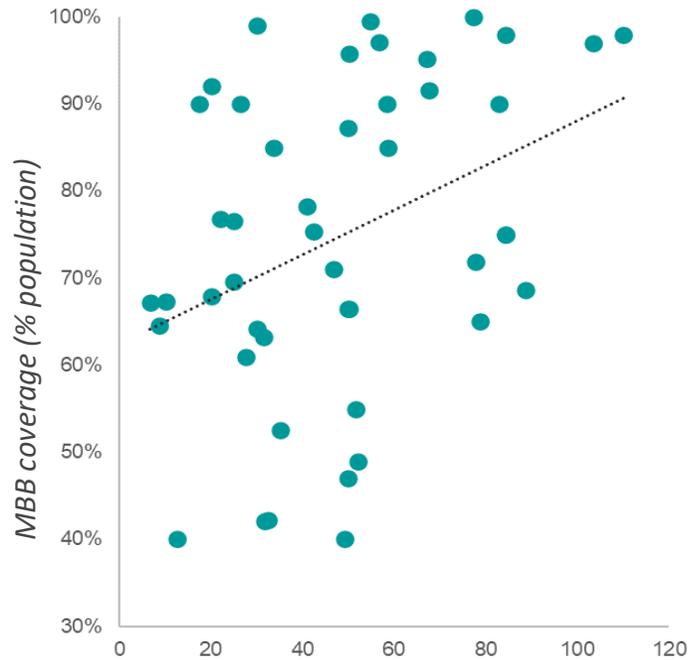


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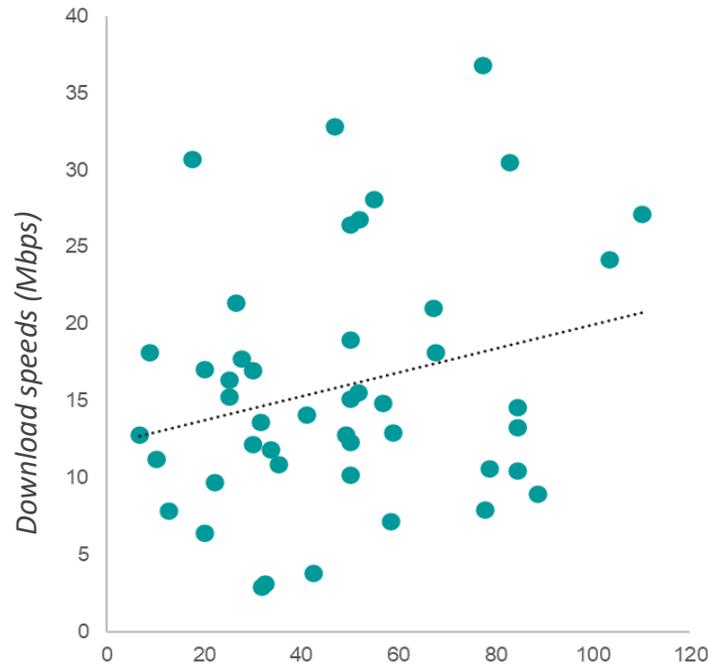


Impacts of lower amount of spectrum

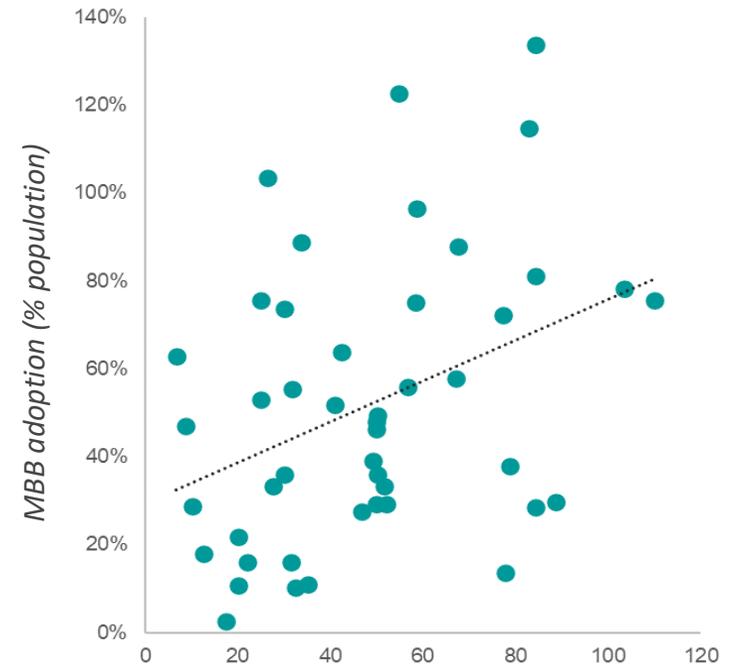
Markets with more spectrum have higher coverage



.... faster network download speeds



.... as well as encourage more adoption



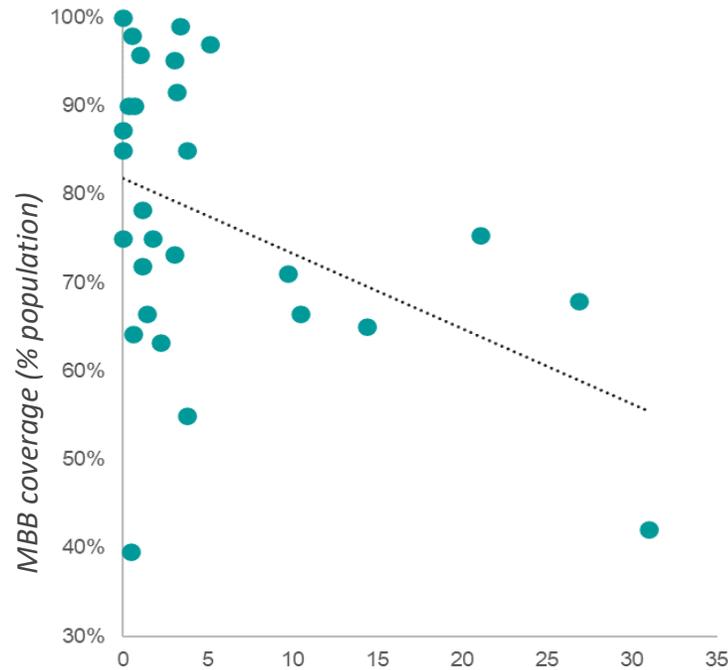
Average MBB spectrum per operator (MHz)

Analysis includes spectrum licences below 3.7 GHz, and excluding 5G-specific spectrum.

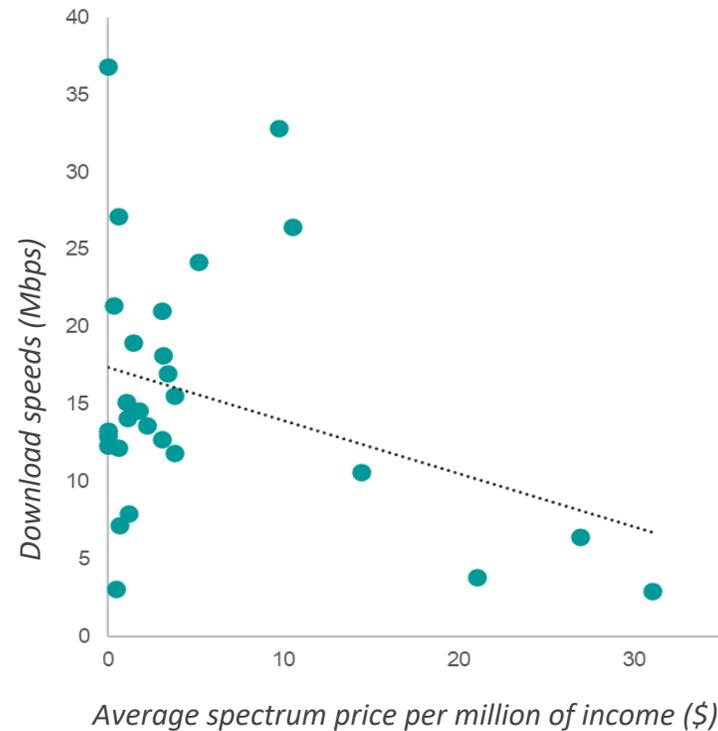


Impacts of high prices

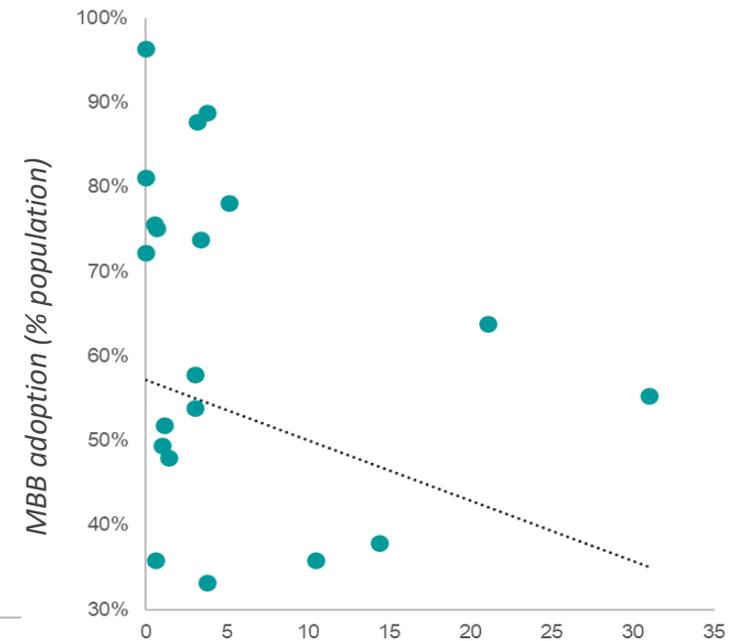
More expensive spectrum is linked to lower coverage



.... slower network download speeds



.... as well as lower adoption



Analysis includes spectrum licences below 3.7 GHz, and excluding 5G-specific spectrum.



Key Policy messages

Amount of Spectrum

African governments should release more spectrum, in order to expand coverage, improve network speeds and encourage mobile adoption

- Both coverage and capacity
- 900/1800/2100 leftover, 700/800/2300/2600, then 3500 and mmWave

Timing

To realise the full potential of mobile services, authorities should license spectrum timely, provide certainty and allow for technological neutrality

- Predictable roadmaps, long licence duration; guaranteed renewal;
- Technological neutrality

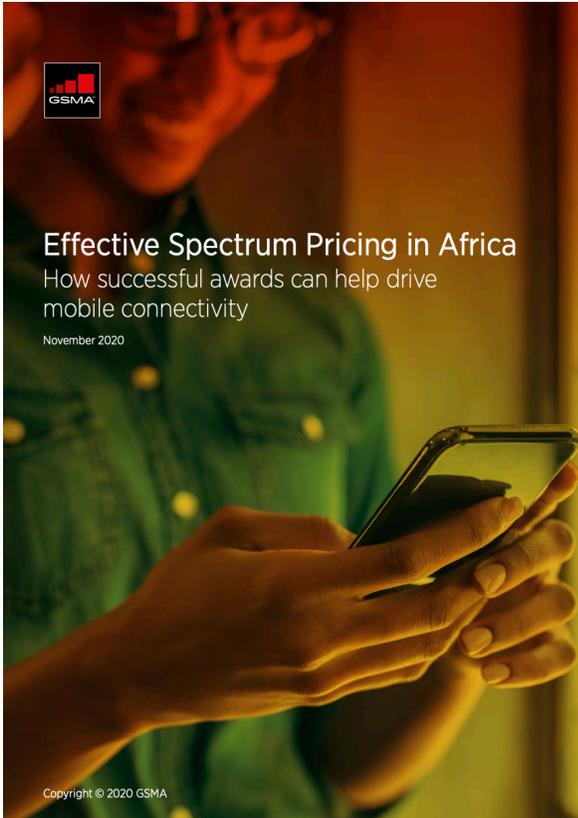
Price

Expensive spectrum is detrimental for consumers – governments should ensure policies that support affordable spectrum pricing

- Modest reserve prices and annual fees
- Avoid artificial scarcity; and ensure appropriate auction formats



Download it now



<https://www.gsma.com/spectrum/wp-content/uploads/2020/11/Effective-Spectrum-Pricing-Africa.pdf>





The regulatory framework for a pro-investment environment Panel

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John Omo

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Head of Government and Industry Relations, Ericsson



Vote of Thanks

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