

# Global Spectrum Pricing

## Executive Summary





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The GSMA is a global organisation unifying the mobile ecosystem to discover, develop and deliver innovation foundational to positive business environments and societal change. Our vision is to unlock the full power of connectivity so that people, industry and society thrive. Representing mobile operators and organisations across the mobile ecosystem and adjacent industries, the GSMA delivers for its members across three broad pillars: Connectivity for Good, Industry Services and Solutions, and Outreach. This activity includes advancing policy, tackling today's biggest societal challenges, underpinning the technology and interoperability that make mobile work, and providing the world's largest platform to convene the mobile ecosystem at the MWC and M360 series of events.

We invite you to find out more at [gsma.com](https://gsma.com)

For spectrum information, please visit [www.gsma.com/spectrum/](https://www.gsma.com/spectrum/)

To contact the Spectrum Team, please contact us at [www.gsma.com/spectrum/contact-us/](https://www.gsma.com/spectrum/contact-us/)

## GSMA Intelligence

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GSMA Intelligence is the definitive source of global mobile operator data, analysis and forecasts, and publisher of authoritative industry reports and research. Our data covers every operator group, network and MVNO in every country worldwide – from Afghanistan to Zimbabwe. It is the most accurate and complete set of industry metrics available, comprising tens of millions of individual data points, updated daily.

GSMA Intelligence is relied on by leading operators, vendors, regulators, financial institutions and third-party industry players, to support strategic decision-making and long-term investment planning. The data is used as an industry reference point and is frequently cited by the media and by the industry itself.

Our team of analysts and experts produce regular thought-leading research reports across a range of industry topics.

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**Published:** May 2025

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The cost of spectrum affects connectivity. High spectrum prices continue to be linked to lower network coverage and lower download speeds, impacting political and social goals such as digital inclusion. Spectrum costs can reach more than 25% of operators' revenues today.



Building on data from more than 250 operators in almost 100 countries, this Global Spectrum Pricing study examines trends in spectrum pricing since 2014 and their impact on consumer and enterprise connectivity.

## In the last ten years:

### Cost has reduced to enhance digital inclusion

Monthly bills have fallen by

**38%**



Cost of usage has reduced by

**40%**



Cost per GB has reduced by

**96%**



### Spectrum costs have not reduced in line with pricing

Operators increased their spectrum holdings by

**80%**

(4G and 5G)



Revenue per MHz declined by

**67%**



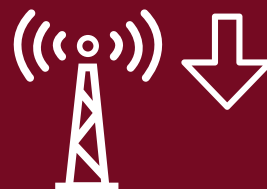
Spectrum cost to revenue ratio increased by

**63%**



## Higher spectrum costs mean:

- Reduction in coverage
- Lower affordability
- Lower speeds
- Lower adoption



## Spectrum creates a high cost burden through:

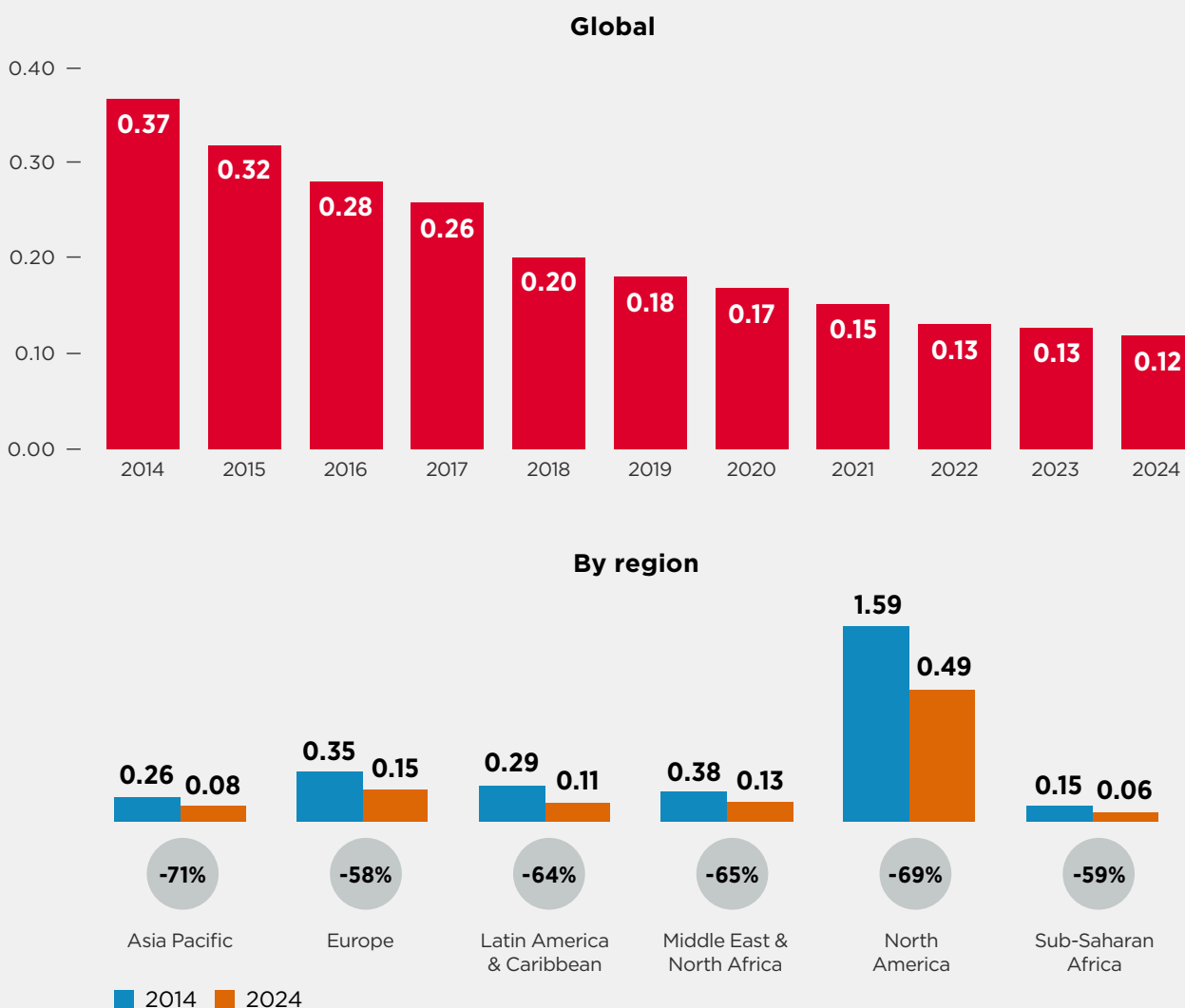
- Excessive obligations on speed or coverage
- Artificial scarcity, including set-asides
- High reserve prices



In the last 10 years, on average, the amount of spectrum dedicated to mobile networks has nearly doubled, while operators have offered higher value services with lower prices to consumers.

Average revenue per GB of data declined by 96% and the revenue that operators generate per MHz has also gone down significantly.

Average monthly recurring revenue per MHz per connection (\$, inflation adjusted)

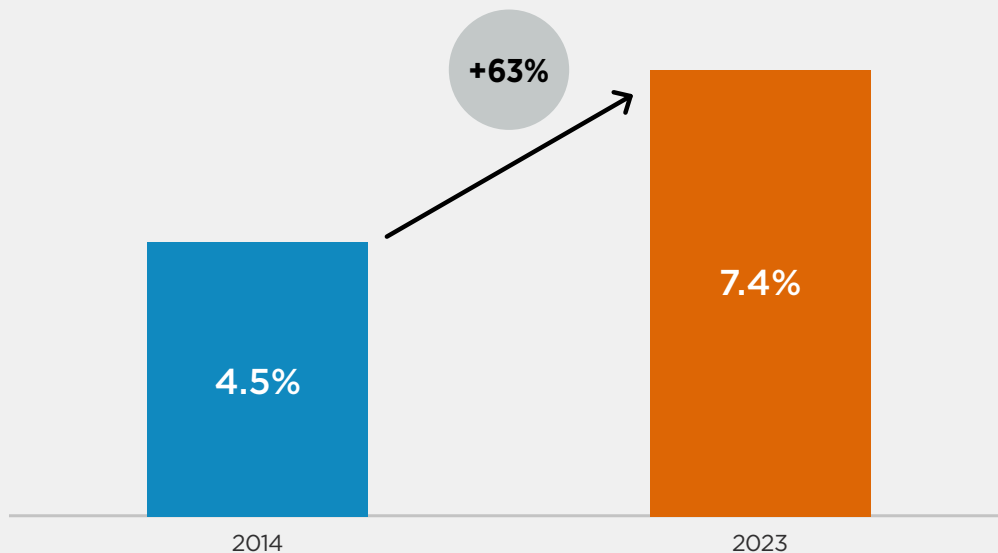


**Note:** Data shows weighted average revenue per MHz, per connection of countries in the region where data could be collected. 2023 US dollar prices.

**Source:** GSMA Intelligence

Spectrum price per MHz has declined in recent years, but it was not sufficient to offset the build-up in the total cost of spectrum (as a percentage of revenue), largely driven by the additional capacity needed for the launches of 4G and 5G networks.

Global spectrum cost to recurring revenue ratio (%)

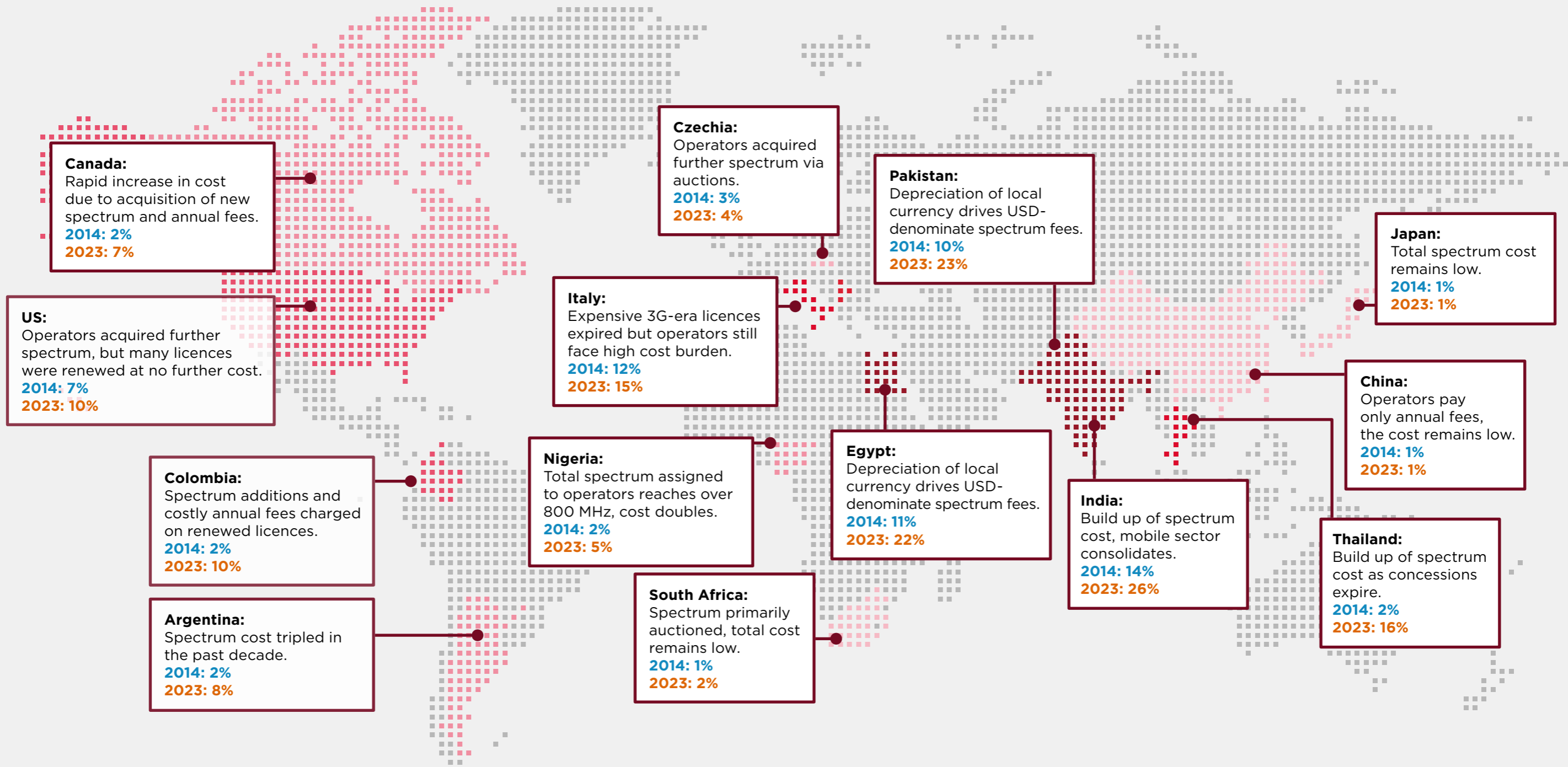


**Note:** Calculated as an arithmetic average of countries where reliable data could be collected.

**Source:** GSMA Intelligence

Spectrum cost varies significantly by country. In some markets, the cost of spectrum can amount to a quarter of operator revenues.

Cost to recurring revenue ratio by country



Source: GSMA Intelligence

High spectrum cost affects the viability of investments, and consequently generates a negative impact on consumers, limiting affordability and slowing adoption. Affordable spectrum empowers digital inclusion.

### The impact of a 10-percentage point spectrum price increase compared to revenue



↓ **6-percentage point  
Lower coverage**



↓ **8%  
Lower speeds**

Source: GSMA Intelligence

## Pricing recommendations

### New spectrum

1. Regulators should not anchor administratively set prices to historical prices and outdated benchmarks.
2. Setting reserve prices at a low level allows room for price discovery and minimises the risk of unsold spectrum.
3. Making all spectrum allocated to mobile services available to operators ensures there is no artificial scarcity and supports better outcomes for consumers.
4. The cost of meeting obligations or investment commitments attached to spectrum licences should be reflected in their price.

### Licence renewal

1. Fees should not be linked to historical spectrum prices, given the decrease in underlying value.
2. Renewal fees contribute to the build up of spectrum cost and can have negative impacts on consumers. A spectrum trading framework can provide the same incentives without imposing additional costs.
3. Regulators can consider renewals in exchange for investment commitments for coverage or quality of service.
4. Alternatively, administrative review can be the most cost-effective way of ensuring that spectrum remains in efficient use.

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