Spectrum pricing

A presentation for the Caribbean Spectrum Management Task Force

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Overview

- Objectives of spectrum pricing
- 5G spectrum award fees
- International policy on direct to device satellite services
- Challenges in comparing pricing data

Objectives of spectrum pricing

- Regulate usage when demand exceeds supply
- Ensure efficient use
- Cover costs of regulator
- Ensure fair return for state (not all countries)

5G award fees: low band is still king

Average global 5G band prices (€/MHz/pop)

Country	Low band	Mid band	High band
US	0.6960	0.5384	0.0069
South Korea	Not awarded	0.1752	0.0043
EU average	0.3269	0.0712	0.0018

EU 5G band prices (€/MHz/pop)

	26 GHz
Croatia	0.0013
Finland	0.0016
Greece	0.0015
Italy	0.0028

- High band much cheaper than mid band:
  - South Korea: 28 GHz **2%** of price of 3.5 GHz
    - $0.0045/MHz/pop
  - Italy: 26 GHz 2% **0.7%** of price of 3.7 GHz
    - $0.003/MHz/pop

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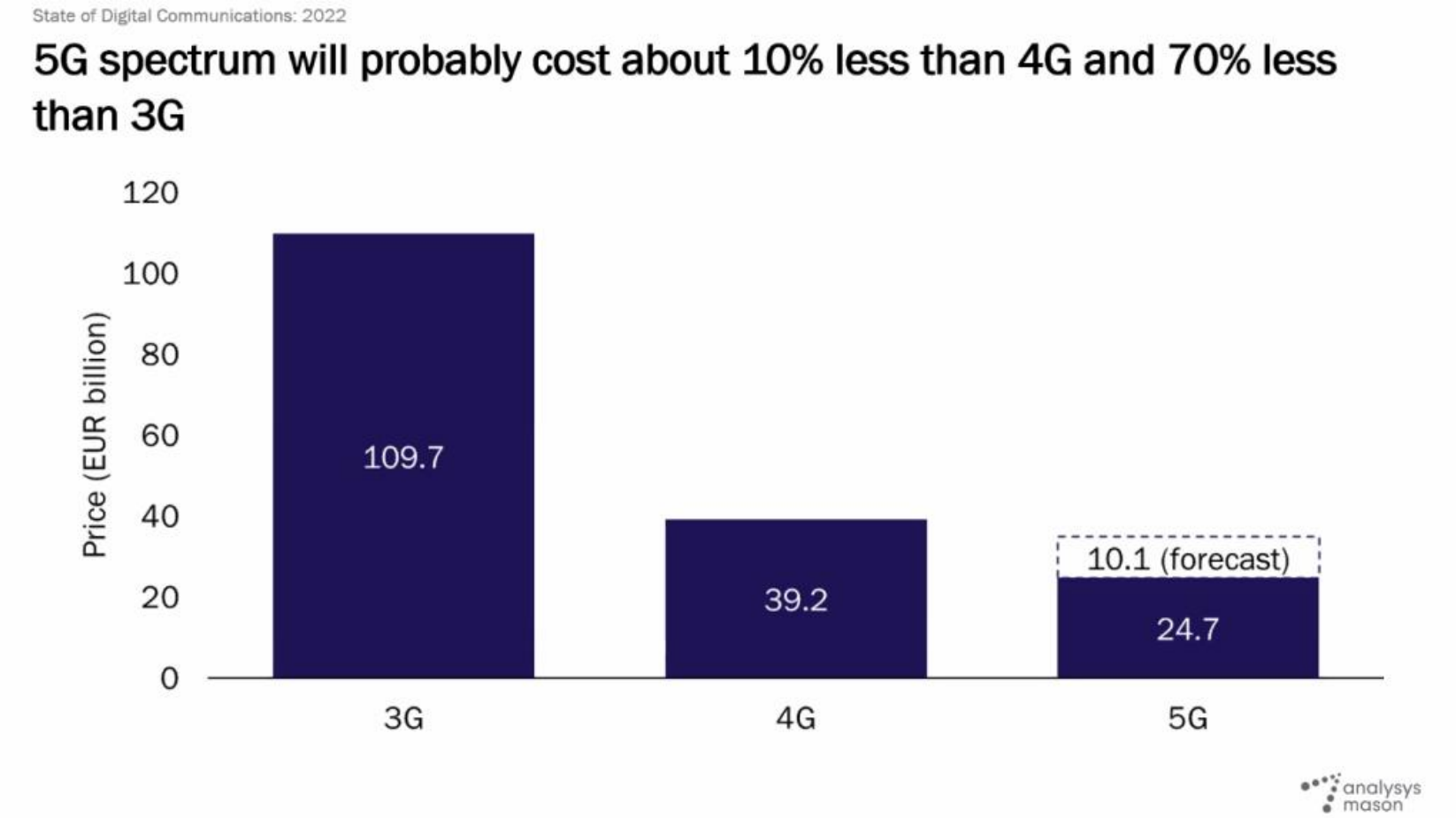
5G is cheaper than 4G



(Source: Analysys Mason)

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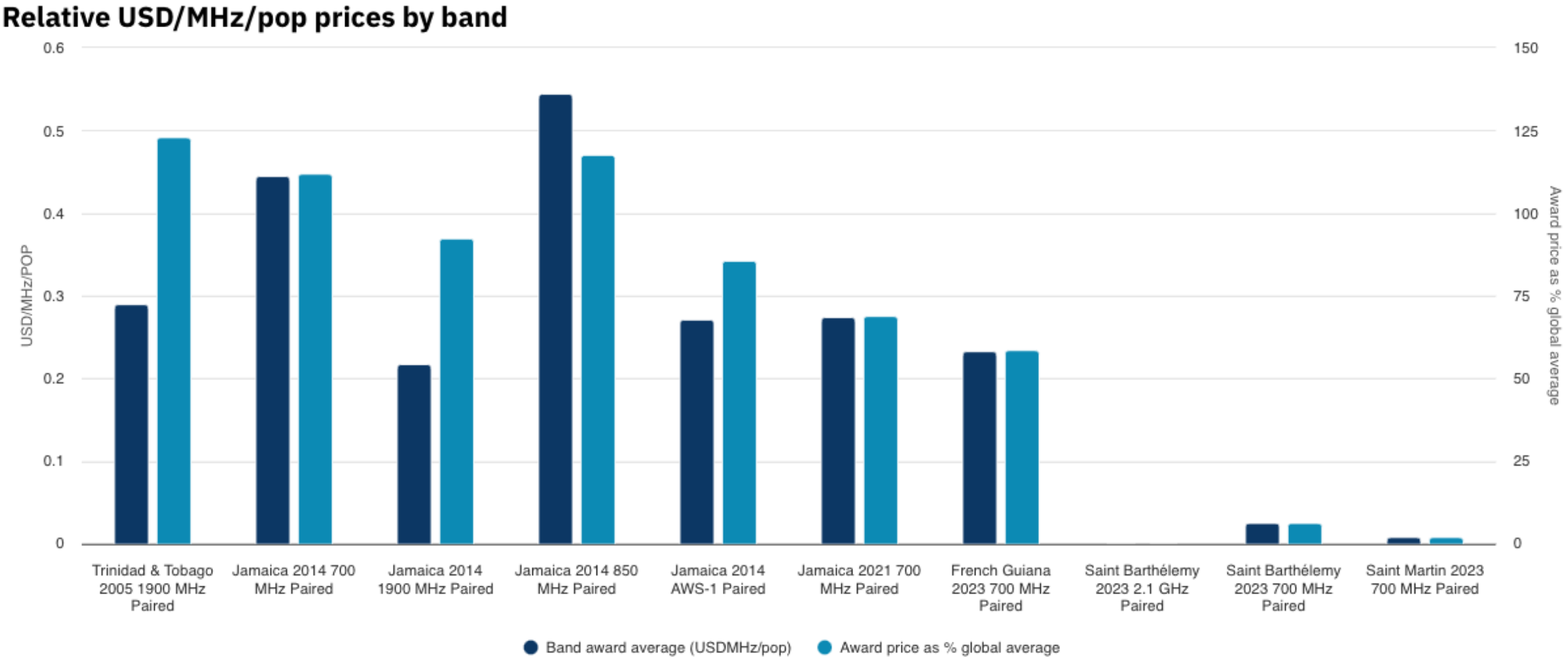
The picture in the Caribbean



(Source: [PolicyTracker Spectrum Database])

5G award fees: conclusions

Mobile spectrum is getting cheaper, not more expensive

Benchmarking still a good way of valuing mobile bands in 5G era

- Midband is about a 1/5th of low band price, reflecting propagation characteristics
- mmWave is about 1/200th

Some countries have issued mmWave licences for free

- But is this justified? They are already very cheap!

Increasing enthusiasm for reducing award fees in return for investment

- France “new deal” 2018 – renewal of existing licences
- ”Cashless auctions” Brazil 2021, Peru 2023, Austria 2020, Norway 2021

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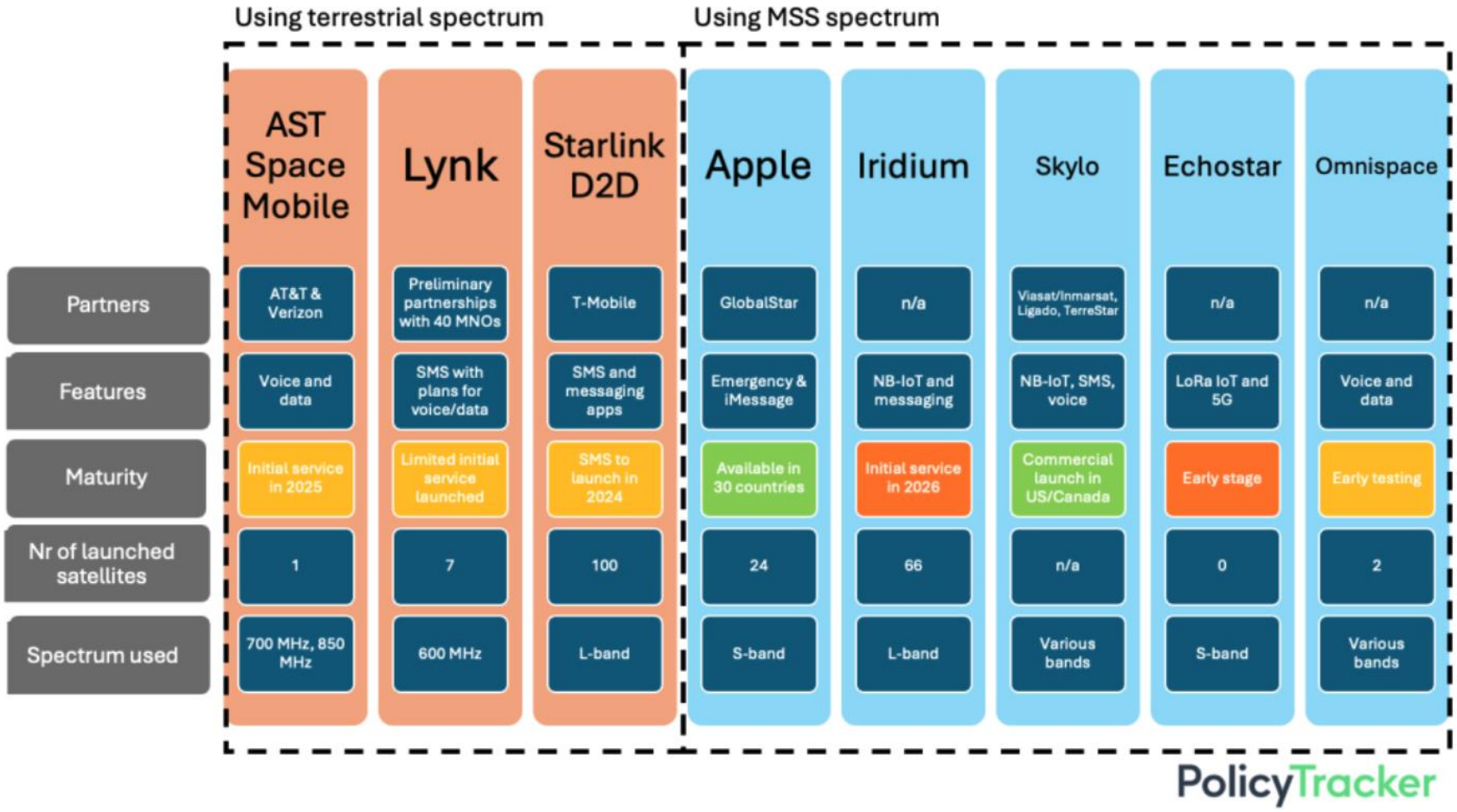
Direct to device satellite services (D2D)



Overview of satellite D2D providers

(Source: PolicyTracker Overview of the satellite direct-to-device market)

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D2D satellite services: policy initiatives

- Relate to permissions not pricing
- ITU rules forbid use of terrestrial spectrum for non-terrestrial services (studies for WRC-27)
- USA 2024:
  - 2024 agreed framework allowing some terrestrial spectrum bands to be re-used by satellite operators
- Australia 2024
  - ACMA confirms D2D can be operated under existing licences
  - Incumbents concerned about interference

Claims that satellite will use free spectrum to provide the same service as mobile. However:

- Much D2D will use MNOs existing spectrum in partnership arrangement
- D2D likely to fill in gaps rather than competitor to mobile
- Satellite spectrum shared and not generally auctioned
- Spectrum rights need associated orbital rights
- Big question mark over user willingness to pay

PolicyTracker sources:
US regulator adopts satellite direct-to-device (D2D) framework
Australia adopts “light touch” approach for satellite direct-to-device
Indian mobile operators argue for satellite auctions

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Challenges in comparing pricing data

- Mobile award prices are the simplest
  - $/MHz/pop for each band
  - But what about annual fees?
- In other services, methodologies vary
- E.g. TV broadcasting:
  - Kenya, UAE, Saudi Arabia and Tanzania
    - Charge per transmitter
    - Prices can vary by region
  - Nigeria: fee based on region
  - USA + Germany: population covered
  - UK: company turnover
  - South Africa: no fees charged
- Created specimen licences to make meaningful comparisons
  - E.g. large city licence vs small community licence

Country	Fee payable?	Annual fee	Per station fee	Varies by frequency?	Varies by bandwidth used?	Varies by geographical area?	Varies by service type?	Varies by power level?	Uses formula?
Kenya	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes
Egypt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
UK	Yes	Yes	No	No	No	No	No	No	Yes
USA	Yes	Yes	No	No	No	No	No	Yes	Yes
Australia	Yes	Yes	No	No	No	No	No	No	No
Germany	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes
South Africa	No	No	No	No	No	No	No	No	No
Nigeria	Yes	Yes	No	No	No	Yes	No	No	No
UAE	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Tanzania	Yes	Yes	Yes	Yes	No	Yes	No	No	No
Saudi Arabia	Yes	Yes	Yes	No	No	No	No	Yes	Yes

Approaches to pricing TV spectrum in selected countries

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