

SPECTRUM

THE FUNDAMENTAL ELEMENT OF MOBILE



5G Trials and Launches

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WRC-19 5G Developing Market Status Check

everywhere you go

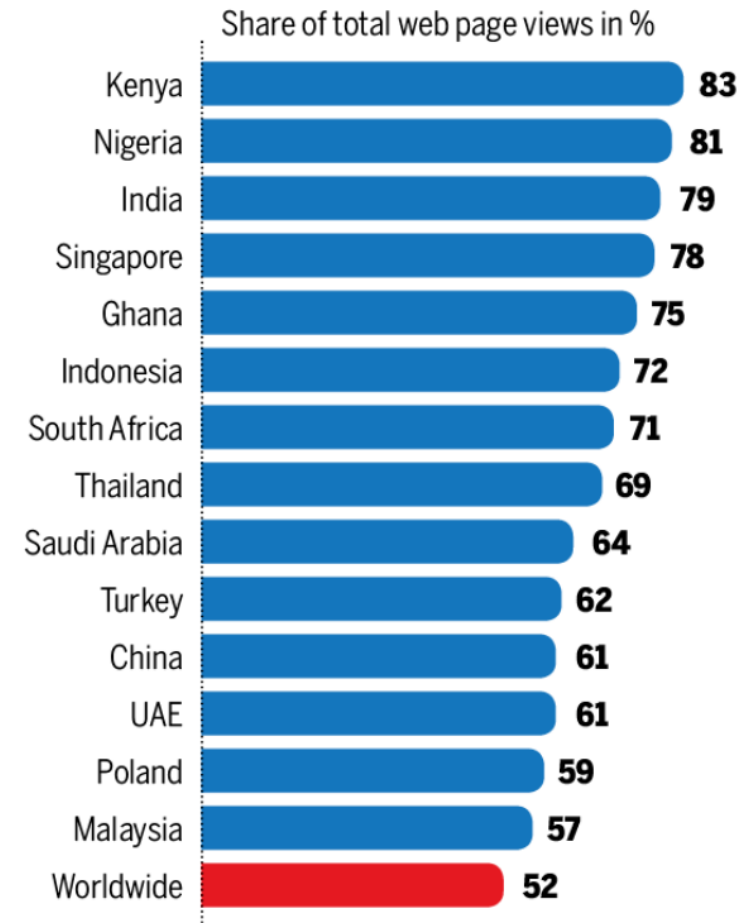


Africa's insatiable need for spectrum



- Why are developing markets pushing so hard for 5G and the spectrum required?
- Mobile broadband is an enabling technology rather than mode of usage
- It is not, as in many other developed markets, a usage mode as much as it is a technology delivery methodology
- We cannot hope to monetize the luxury of mobility like in developed markets.
- We cannot “offload” onto fixed networks - even if we do offload it is on Fixed Wireless Networks.
- It is all about spectrum....

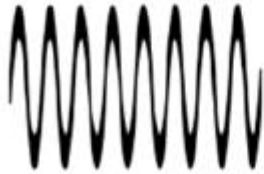
Mobile internet traffic as percentage of total web traffic as of January 2018, by country



Source - Statista



Spectrum Readiness



- New Sub-1GHz Spectrum
- New Sub-6GHz Spectrum
- New mmWave Spectrum

Device Ecosystem



- 5G Handsets & Routers
- 5G / NB-IoT IoT Chipsets & Devices

80/20 principle applies

- 20% of dense urban cells produce
- Rural coverage is always a difficult business case
- Urban profits make rural coverage initiatives possible
- Starve the network in lucrative areas and everybody loses..



	Details on spectrum used	Throughput Achievement	Notes and Considerations
MTN SA	<ul style="list-style-type: none"> 100MHz in 28GHz PoC 	<ul style="list-style-type: none"> 500<Mbps to 1.6Gbps throughput, latencies from 3ms to 5ms, coverage radius about 300m 	<ul style="list-style-type: none"> Performed indoor, outdoor and mobile trials
Vodacom Lesotho	<ul style="list-style-type: none"> Commercial 3.5GHz network in 100MHz channel 	<ul style="list-style-type: none"> 500Mbps 	<ul style="list-style-type: none"> Started as FWA product due to CPE restrictions, now offering mobility
MTN Nigeria	<ul style="list-style-type: none"> PoC in 3.5GHz and 26GHz starting in November 	<ul style="list-style-type: none"> TBA 	<ul style="list-style-type: none"> TBA
Rain SA	<ul style="list-style-type: none"> 80MHz of 3.6GHz used 	<ul style="list-style-type: none"> Up to 700Mbps, 9ms latency 	<ul style="list-style-type: none"> Aggressively rolling out coverage in largest cities in SA

What Africa needs in order to seamlessly transition to 5G:



1. Harmonization

- The success of mobile in Africa can be ascribed to a unique accommodating combination between devices capability, spectrum harmonization.
- Devices and chipset specified for developed market that found their way to Africa found universal compatibility. The 900, 1800, 2100MHz band capability in devices found 1 to 1 match on regulatory space.
- By restricting the full functionality of devices (e.g. 3.4-3.6G instead of 3.3-3.8G) growth will be severely inhibited.

2. Management of expectation

- Developing markets cannot pay even close to what was paid for 3.5GHz and 26/28GHz in US and Europe
- Current frequency fee models for 2, 3 and 4G are unsustainable in 5G space with wide channels and 10x amount of sites.

3. Coexistence of legacy technologies

- Many markets still have 30-50% of subscriptions on 2G only – how do you manage spectrum to cater for 2, 3, 4G along with 5G?