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Energy Benchmark 2023: Telco Insights and Industry Health Check

Hosted by GSMA Intelligence

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The road to net zero

Commitments

At the end of 2023, operators continued to lead the market in terms of their commitment to key sustainability efforts.

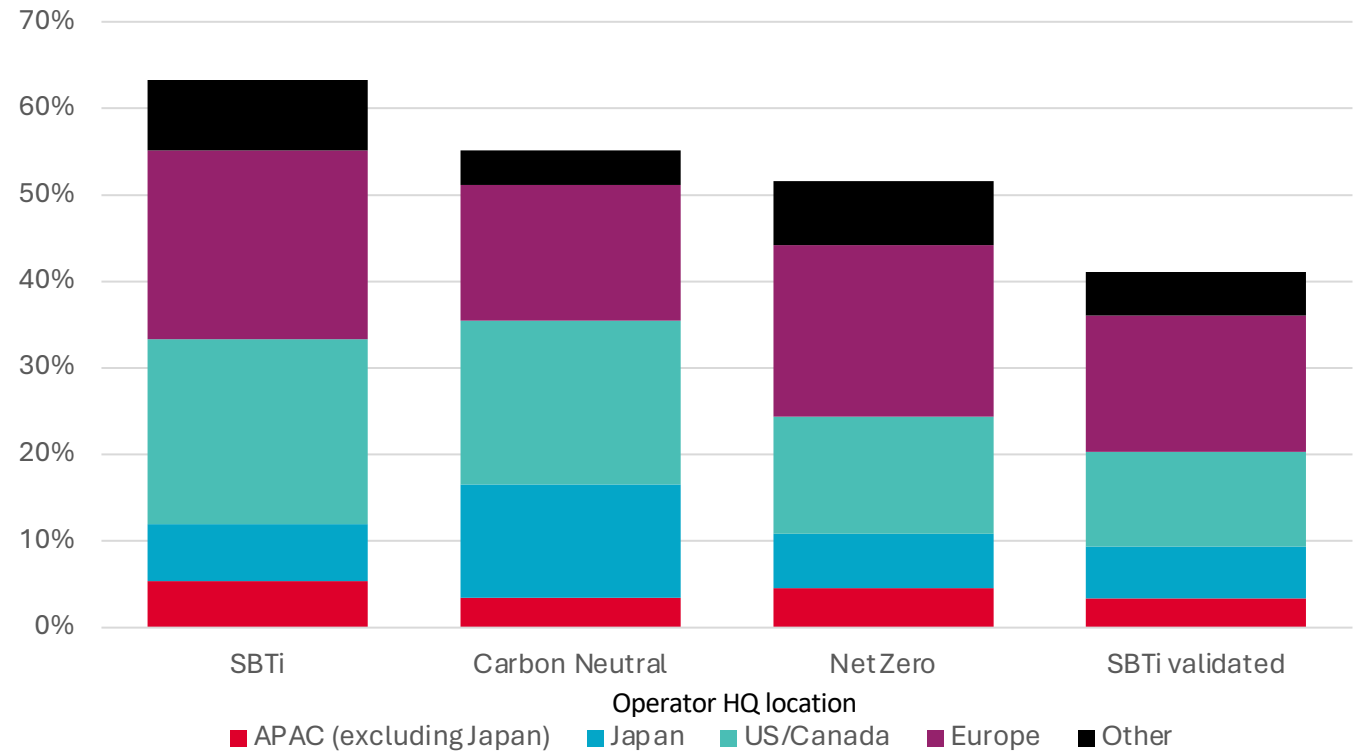
- 63% @ Science Based Targets initiative (SBTi)
- 52% @ UN Race to Zero pledge

Stark Regional Variations

- Global averages mask significant regional variation
- Europe still ahead, though momentum growing in India and Asia in particular

Global market share (mobile revenue) of operators by commitment

Source: GSMA Intelligence



Net Zero vs. 5G Era compute demands

Push factors

- Access networks: 5G and fibre build outs lay the basis for higher bandwidth applications
- Cloud and edge: continued expansion in datacentre capacity in the public cloud, and on-prem infrastructure for edge compute (variety of sectors)

Pull factors

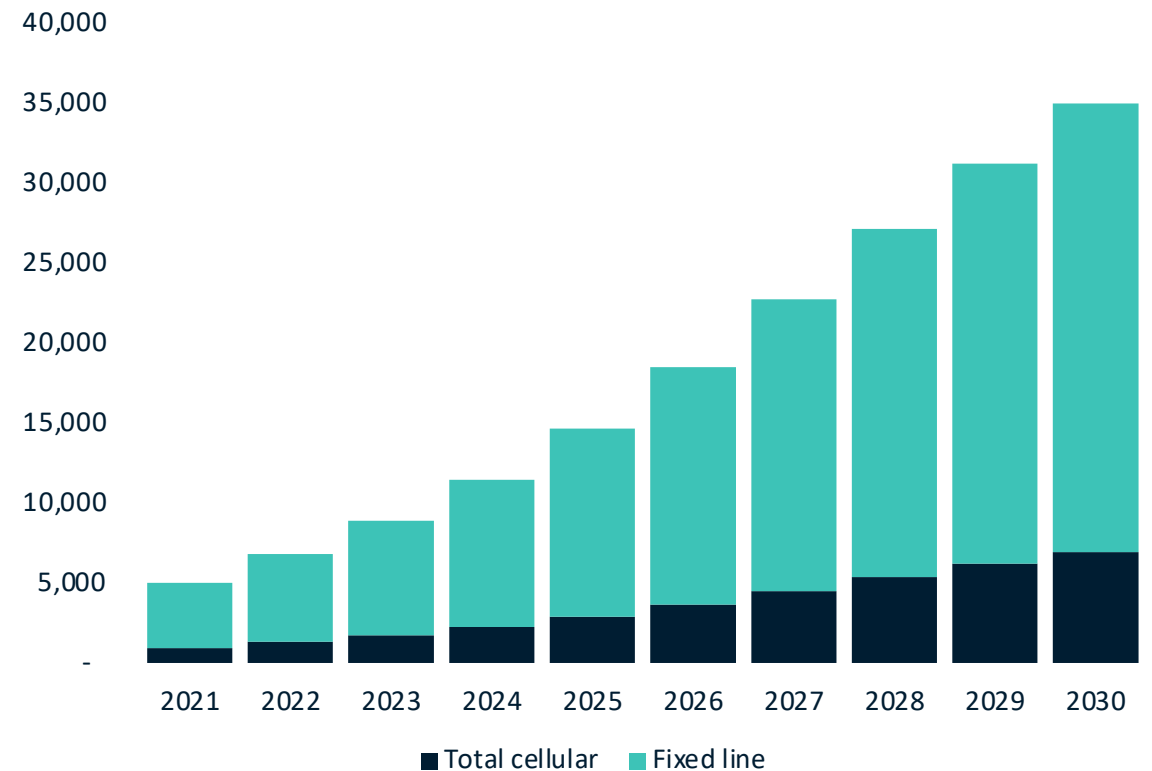
- Demand: higher bandwidth use cases (streaming, gaming, XR potential)
- = higher usage per person per month

AI X-Factor

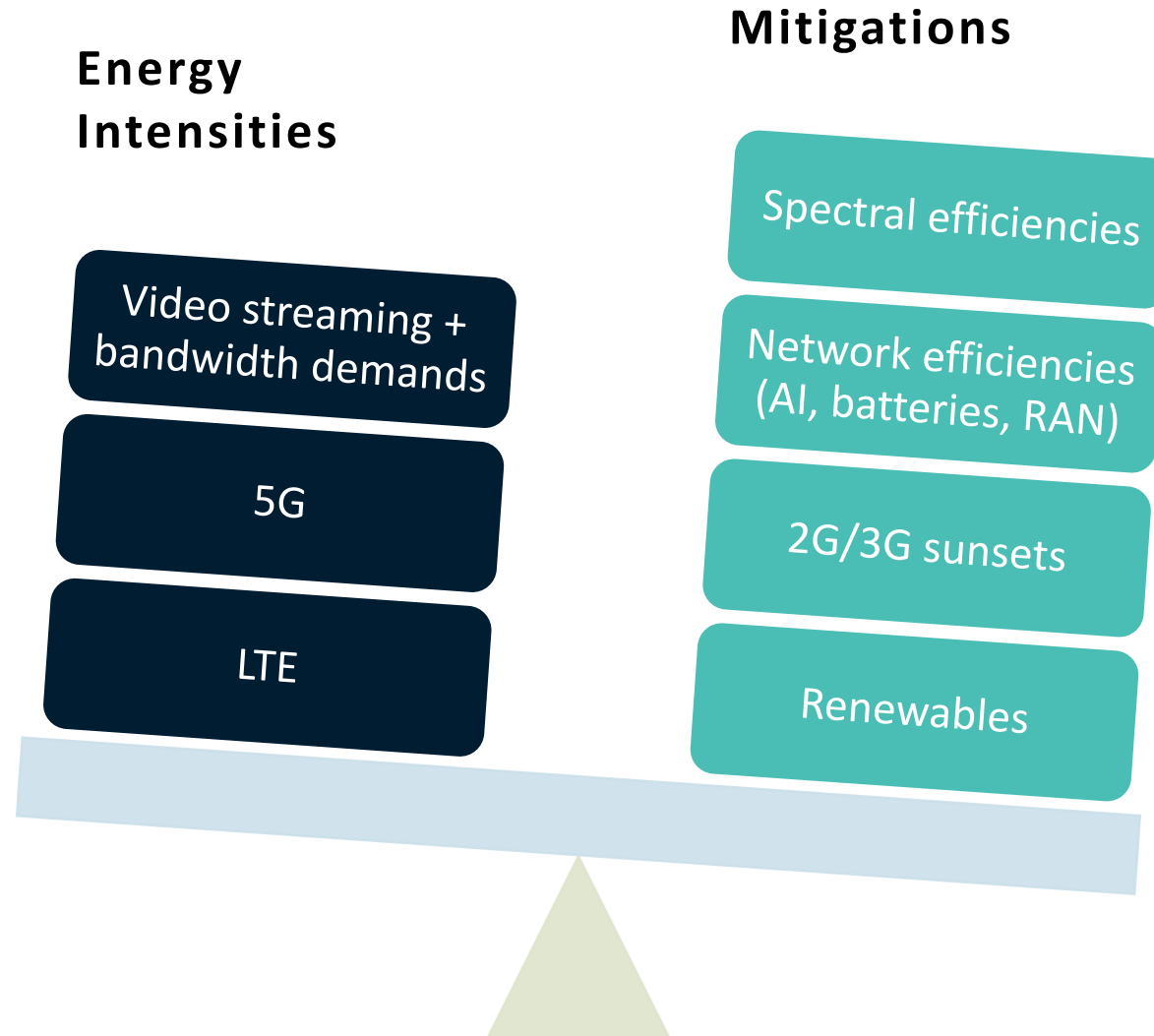
- Traffic rise may be mitigated by more efficient processing
- AI is a big change factor here, affecting chipsets, processing algorithms, and even overall network design

Global internet traffic: 6x up by 2030 on today's levels

Source: GSMA Intelligence



Lowering energy for telcos is a holistic challenge...



GSMA Intelligence's Energy Efficiency Benchmark: 2023

17 Operator groups

59 Countries


65 Networks

1.6bn Mobile subscriber footprint coverage

20% Global market share*

*Participating operators



 Markets included in the benchmarking

Our Partners



What's in the tool box?

No silver bullet metric, we measure the lot

Energy efficiency

- Core yield: kWh per GB of data
- Secondary
 - kWh per cell site
 - kWh per unit of revenue
 - kWh per subscriber

Network energy distribution

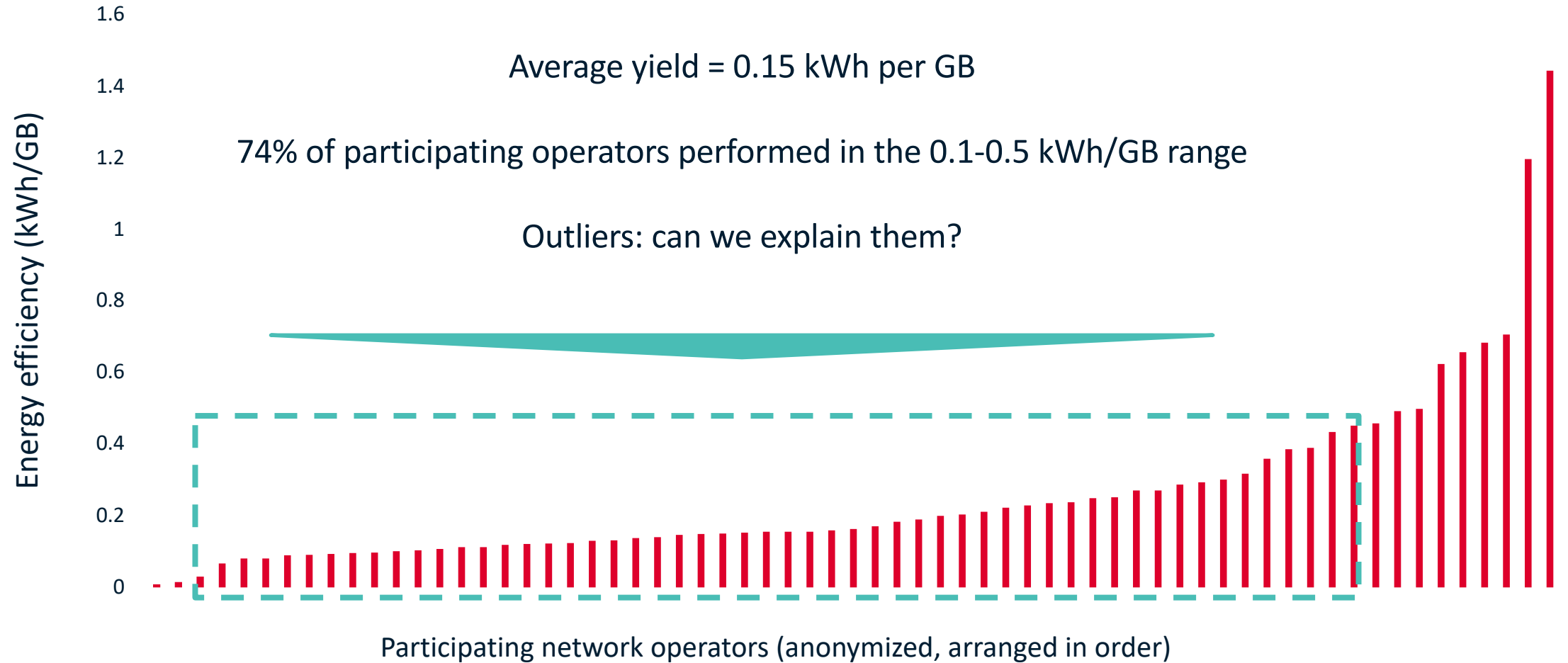
- RAN
- Datacentres and core
- Other (e.g. fleet, property/campuses)

Fuel splits

- Traditional grid power
- Renewables
- Diesel

Data based on GSMA Intelligence Telco Energy Benchmark study in 2024 with 65 mobile networks
Source: GSMA Intelligence

Progress is being made



Network energy distribution: rebalancing

RAN is the majority of power draw for mobile networks @ $\frac{3}{4}$ of total

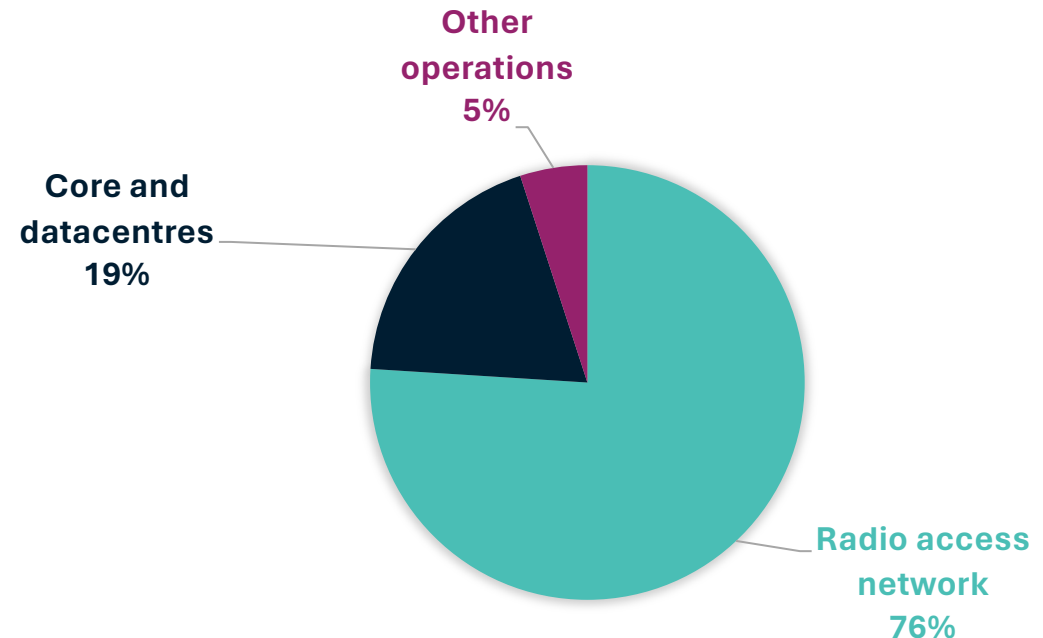
Telco-owned datacentres powering the core are 1/5th but rising because of virtualisation

Implications

- Vendor innovation now equally targeting RAN and core
- Getting your compute architecture right OVERALL is paramount

Area of energy consumption

Data based on GSMA Intelligence Telco Energy Benchmark study in 2024 with 65 mobile networks
Source: GSMA Intelligence



Fuel splits: renewables on the up

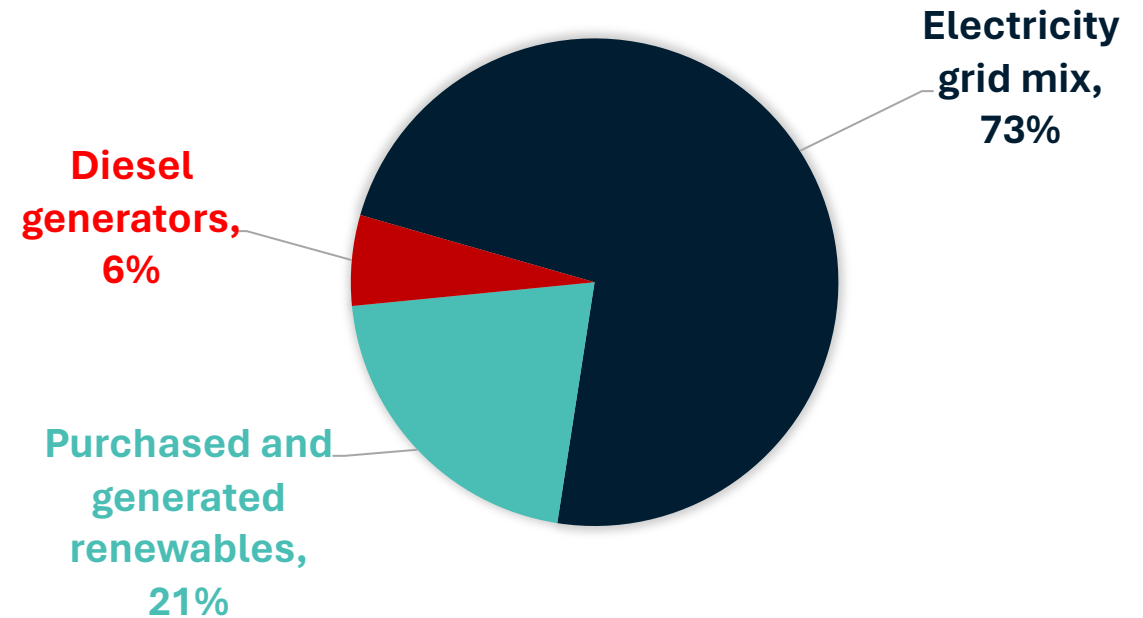
Grid power remains the majority of energy used – again, at $\frac{3}{4}$ of the total

However, renewables have doubled to around 20%. Why? More capacity, longer forward contracts, PPAs

Diesel is the rump...and still for hard to reach areas, but an outsized contributor to emissions

Source of energy

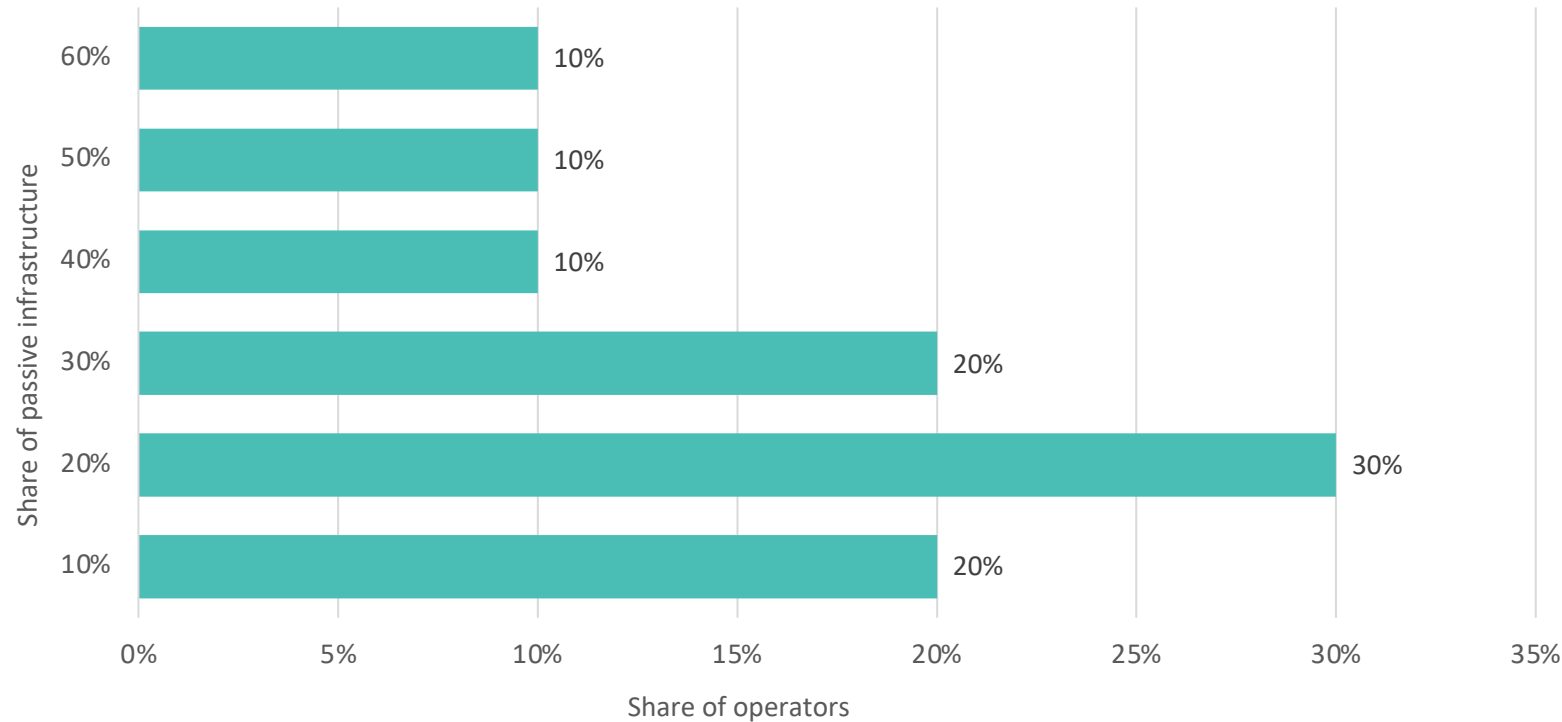
Data based on GSMA Intelligence Telco Energy Benchmark study in 2024 with 65 mobile networks
Source: GSMA Intelligence



The role of passive infrastructure

What percentage of your total energy consumption is related to passive infrastructure?

Source: GSMA Intelligence Energy Benchmarking Project

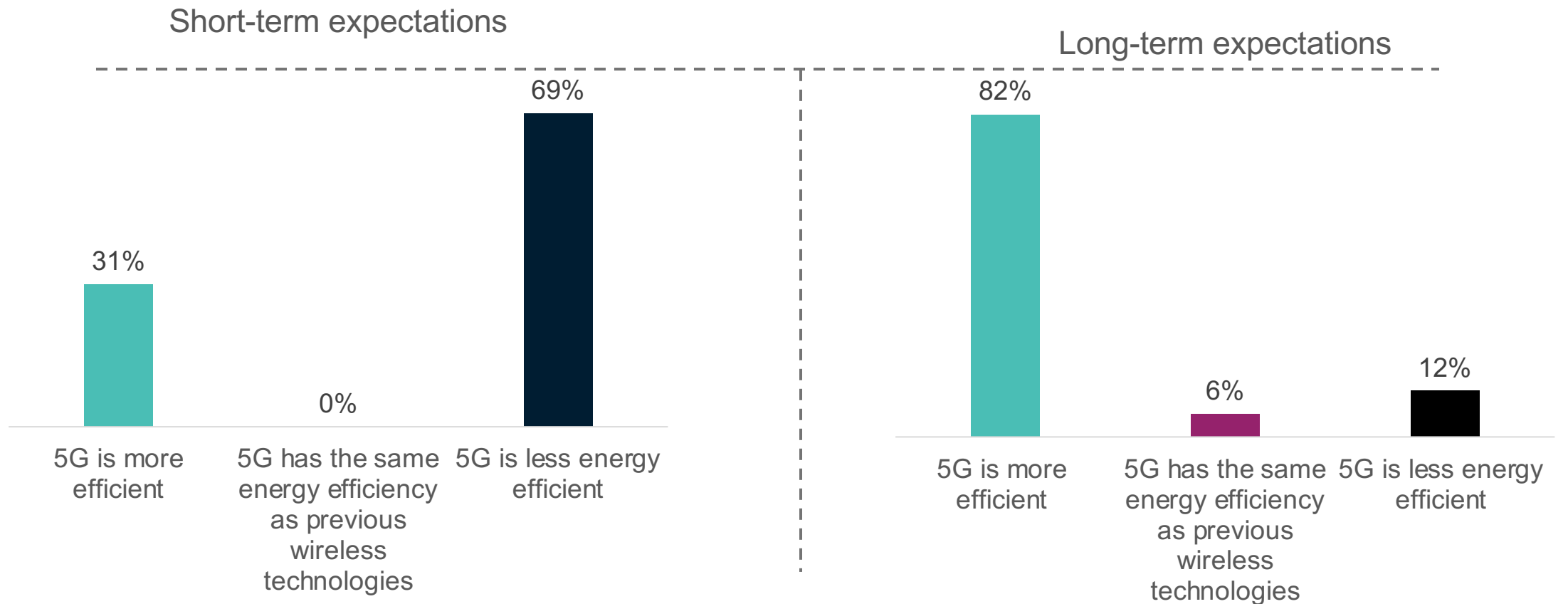


- Passive infrastructure = 29% of total on average
- Why?
 - Cooling
 - Older power sources
 - Site design
- Sticking point to address

Can we isolate the 5G impact?

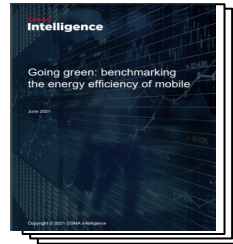
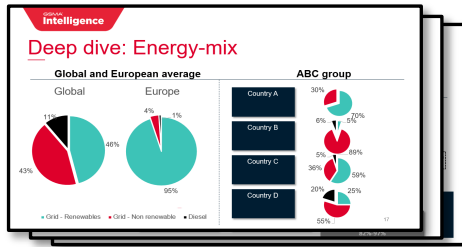
What is the impact of 5G on overall energy efficiency (used energy/data traffic)?

Source: GSMA Intelligence Energy Benchmarking Workshop, 2024



What next in 2024?

What participating operators receive



Tailored Insights	Visibility	Knowledge sharing
Personalised benchmark report	Public report	Community
Participating operators receive a private report benchmarking their op-co performance vs. the overall industry	Logo and branding on thought leadership report and promotion	Access to workshops to share insights, experience and learnings

NEW in 2024

- Extended workshop series
- New modelling features
- Increased coverage
- New metrics: Energy cost (% total opex), fixed line, open RAN