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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.

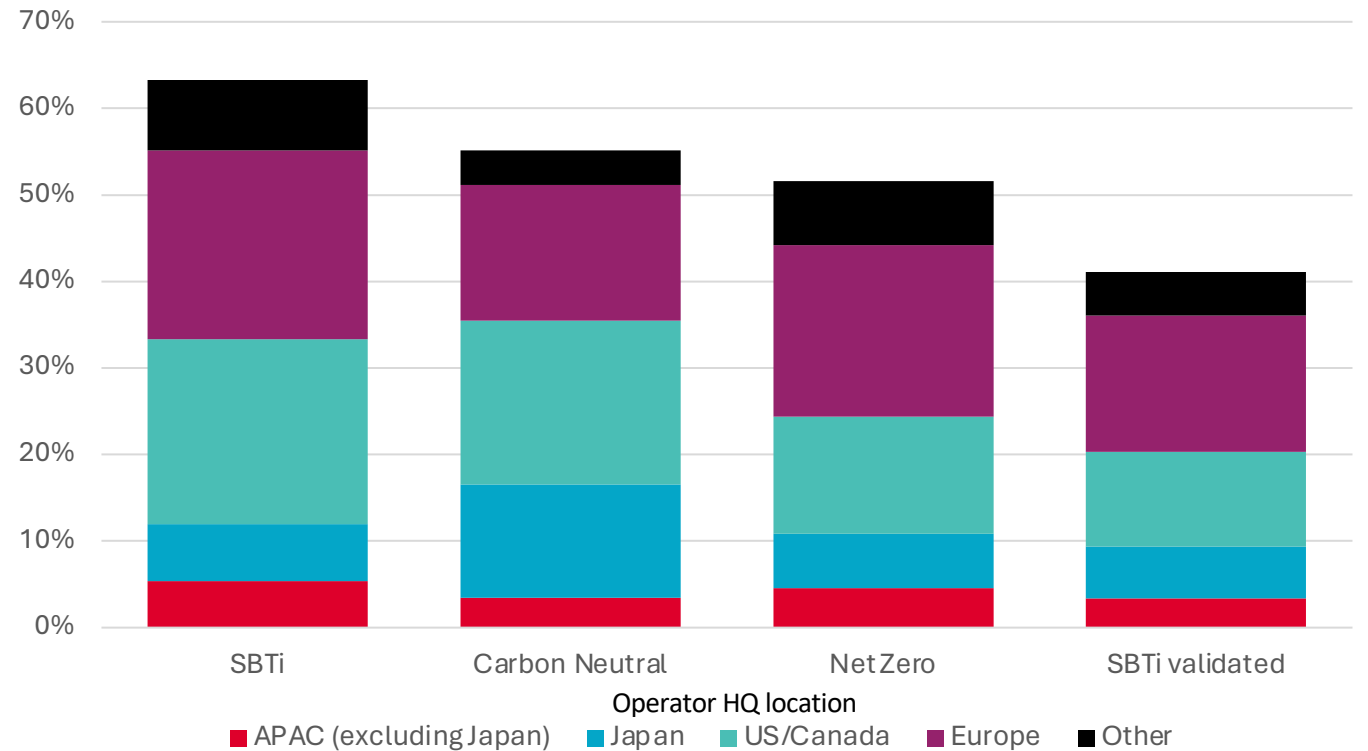
- 63% @ Science Based Targets initiative (SBTi)
- 52% @ UN Race to Zero pledge

## 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

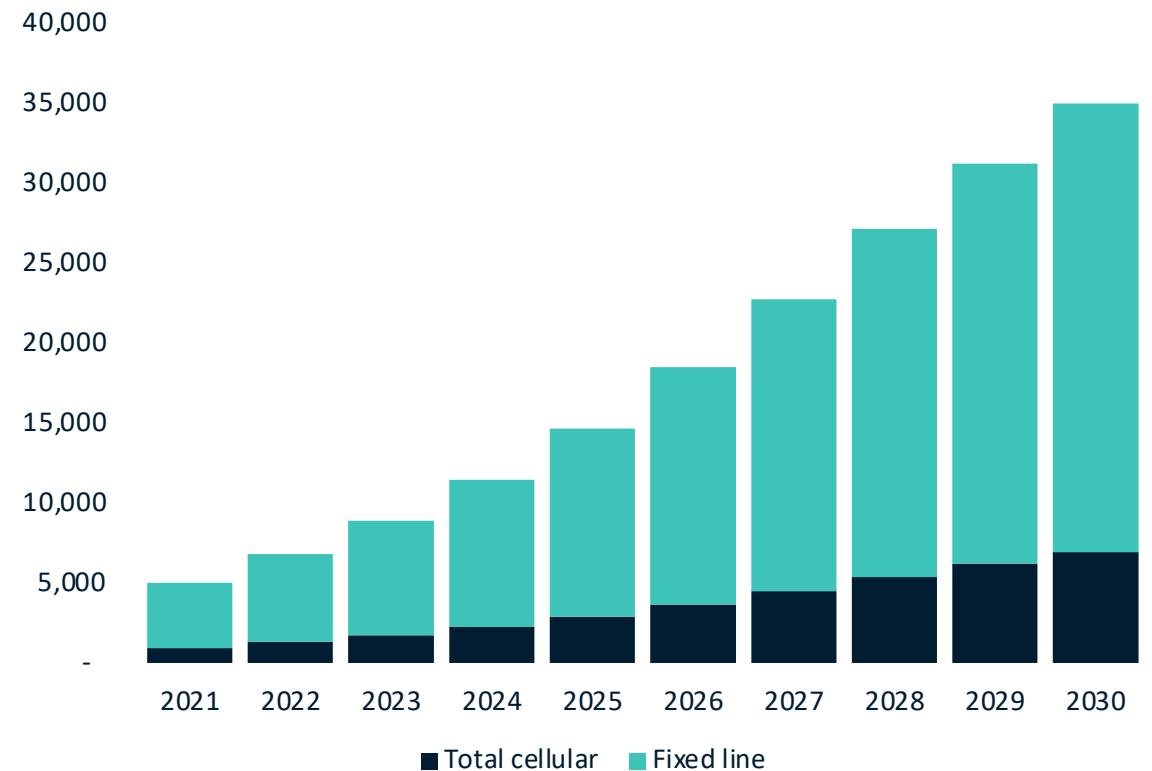
- Demand: higher bandwidth use cases (streaming, gaming, XR potential)
- = higher usage per person per month

## AI X-Factor

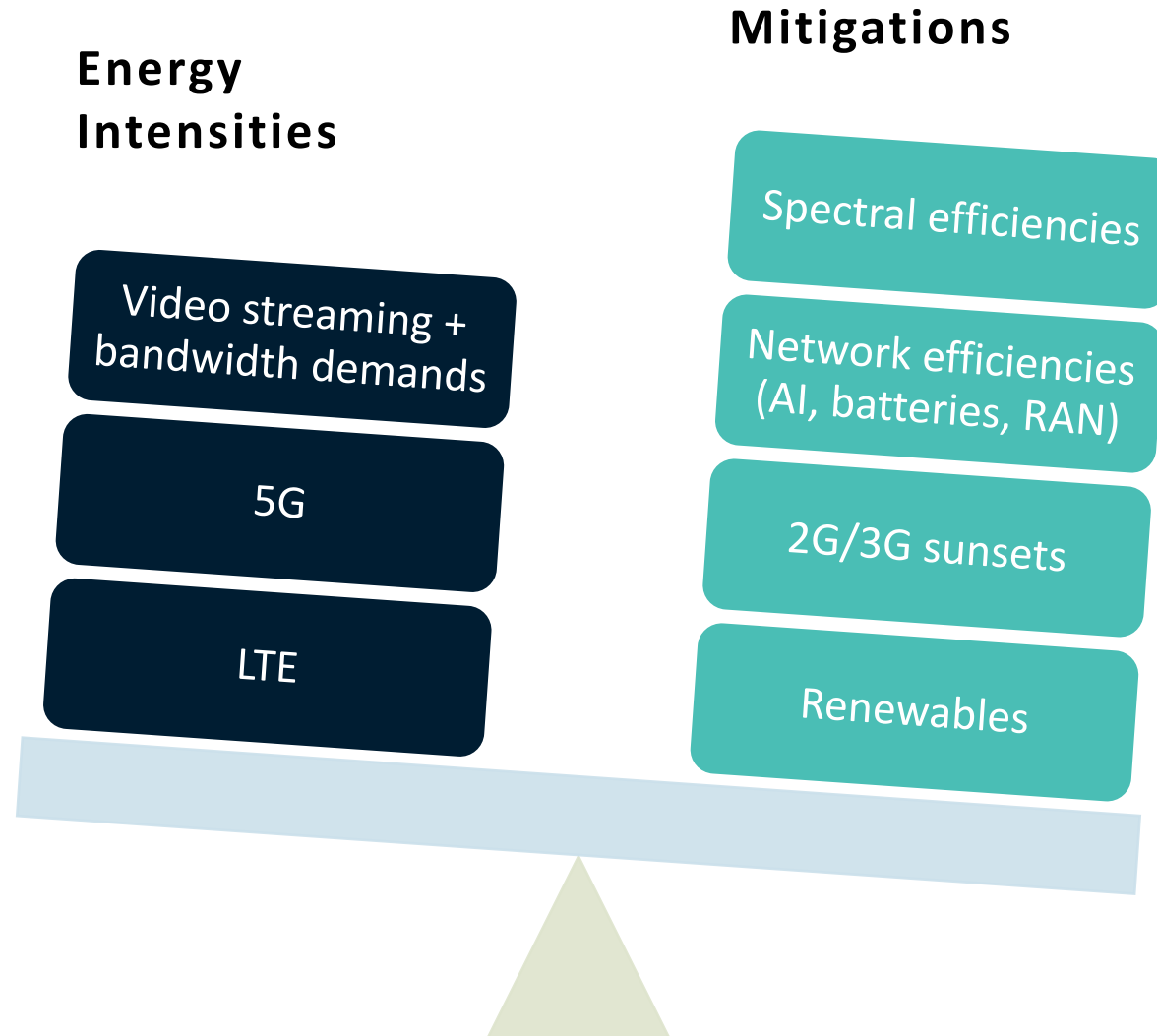
- Traffic rise may be mitigated by more efficient processing
- AI is a big change factor here, affecting chipsets, processing algorithms, and even overall network design

## 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

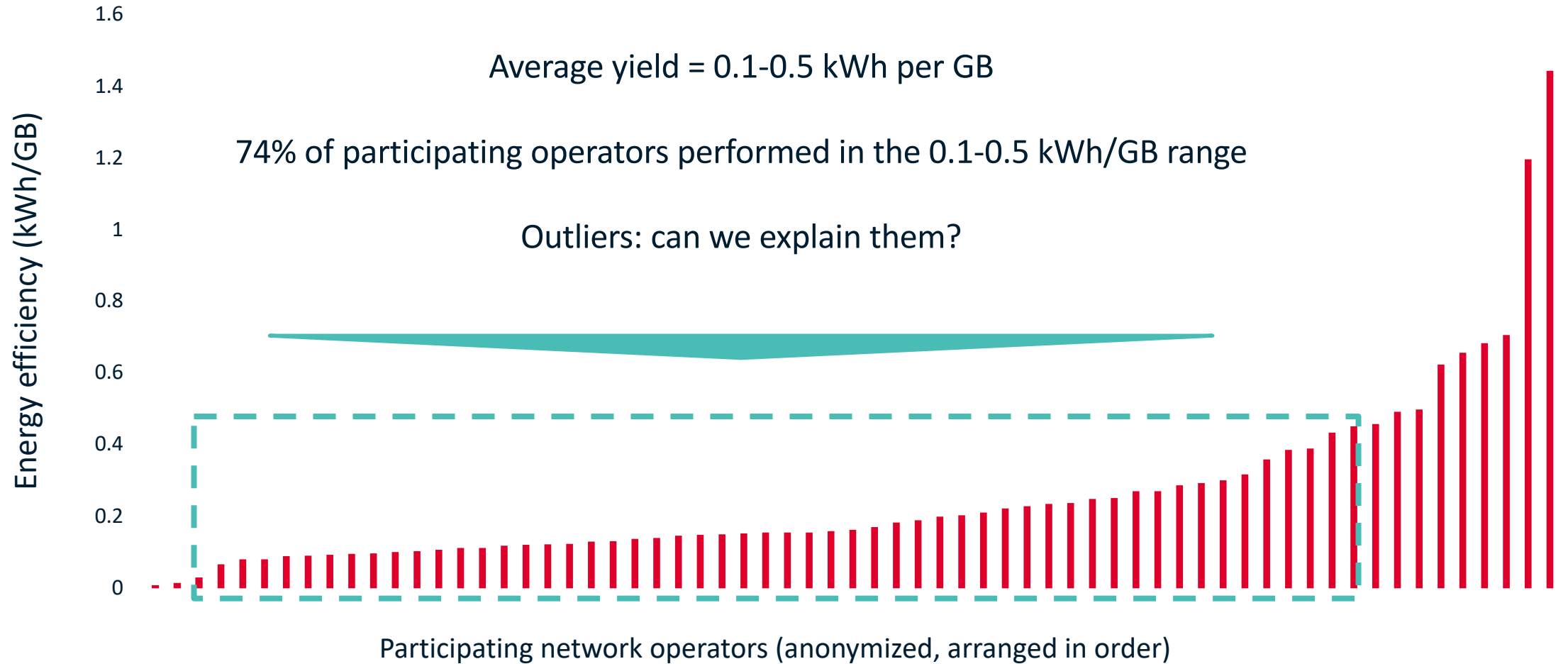
- RAN
- Datacentres and core
- Other (e.g. fleet, property/campuses)

## 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

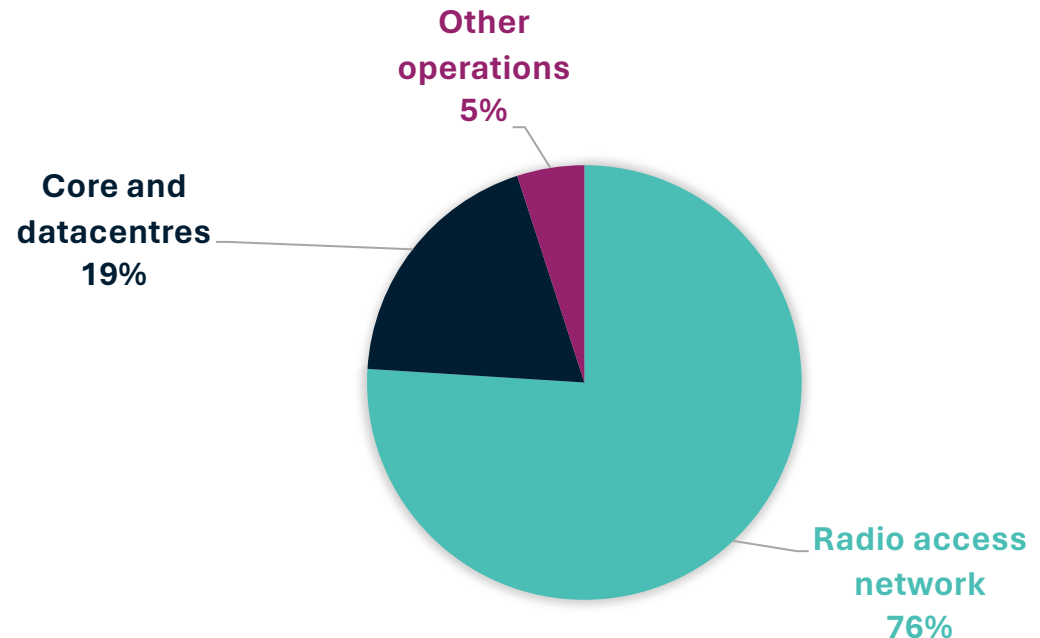
Telco-owned datacentres powering the core are 1/5th but rising because of virtualisation

## 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

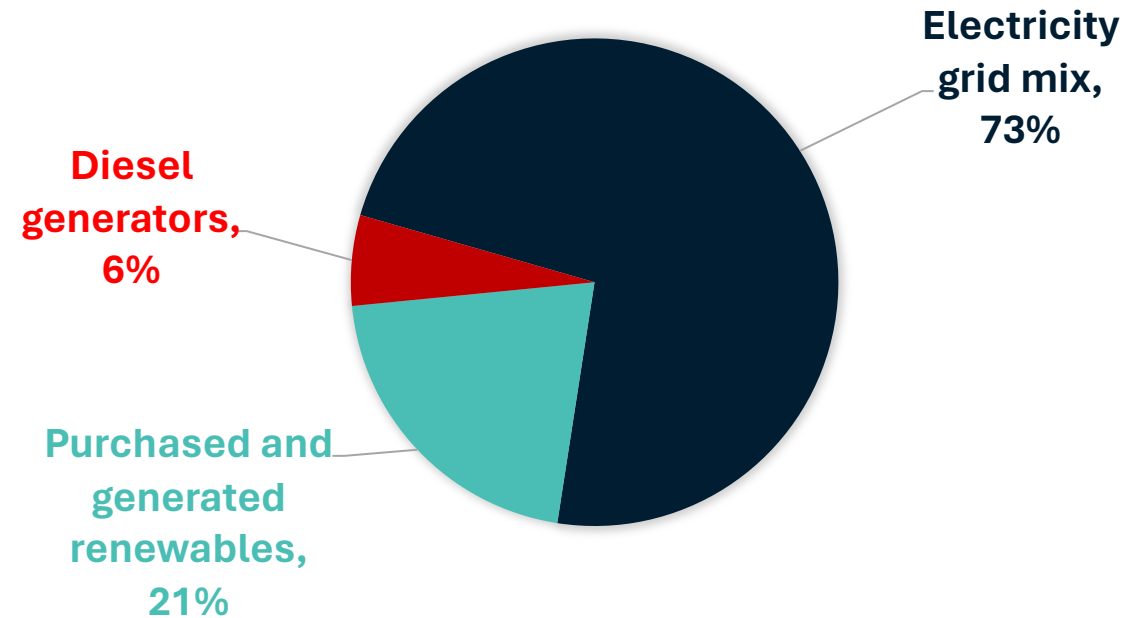
Grid power remains the majority of energy used – again, at  $\frac{3}{4}$  of the total

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

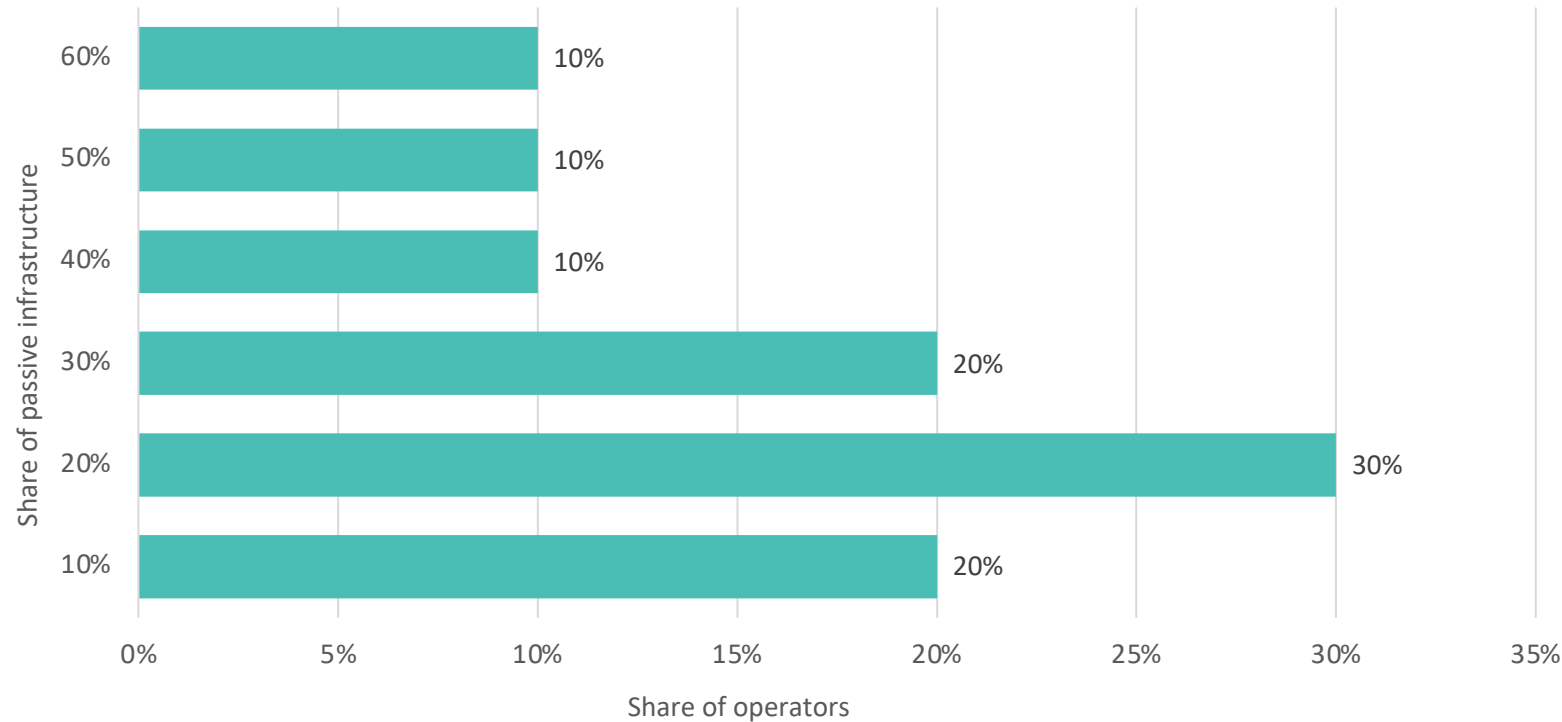
Data based on GSMA Intelligence Telco Energy Benchmark study in 2024 with 65 mobile networks  
Source: GSMA Intelligence



# The role of passive infrastructure

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

Source: GSMA Intelligence Energy Benchmarking Project

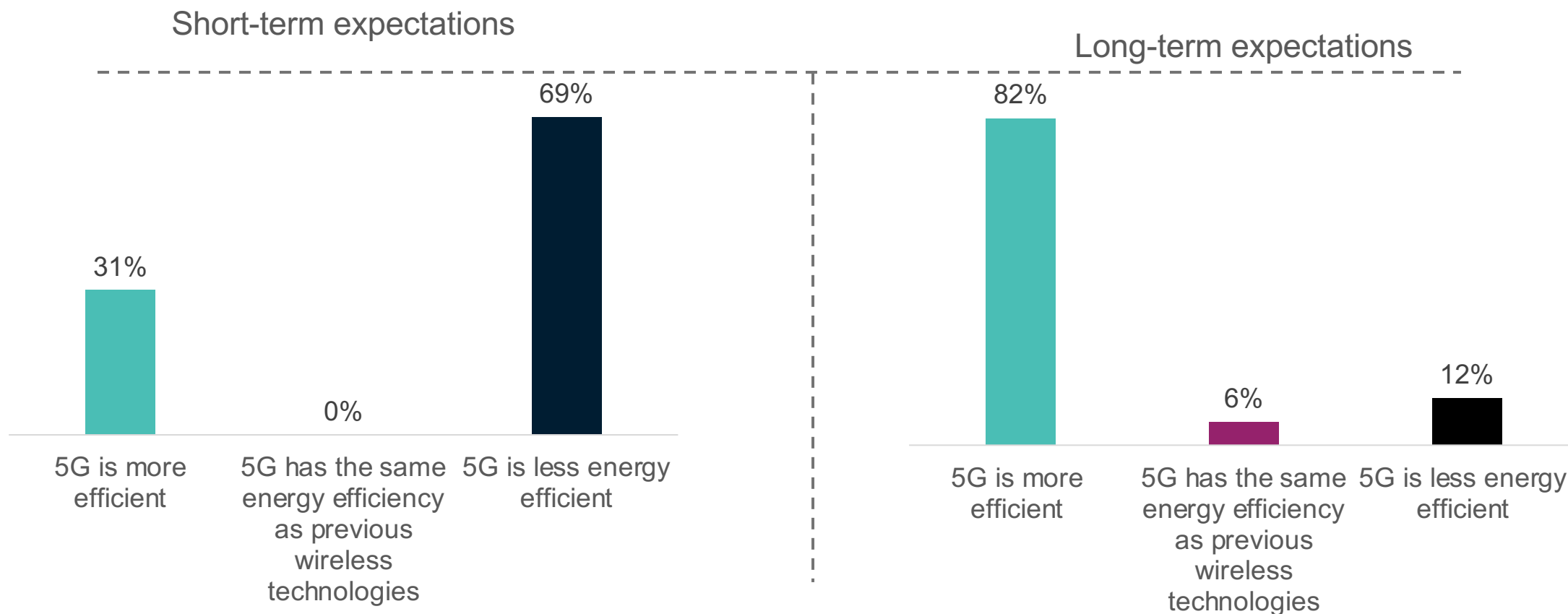


- Passive infrastructure = 29% of total on average
- Why?
  - Cooling
  - Older power sources
  - Site design
- Sticking point to address

# Can we isolate the 5G impact?

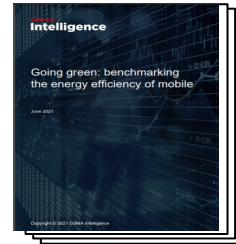
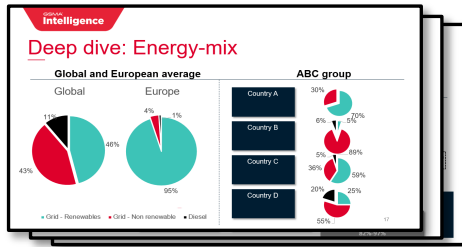
## What is the impact of 5G on overall energy efficiency (used energy/data traffic)?

Source: GSMA Intelligence Energy Benchmarking Workshop, 2024



# What next in 2024?

## What participating operators receive



Tailored Insights	Visibility	Knowledge sharing
<b>Personalised benchmark report</b>	<b>Public report</b>	<b>Community</b>
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