

# Fiber as the Foundation and Key Findings from Omdia's Fiber Development Index



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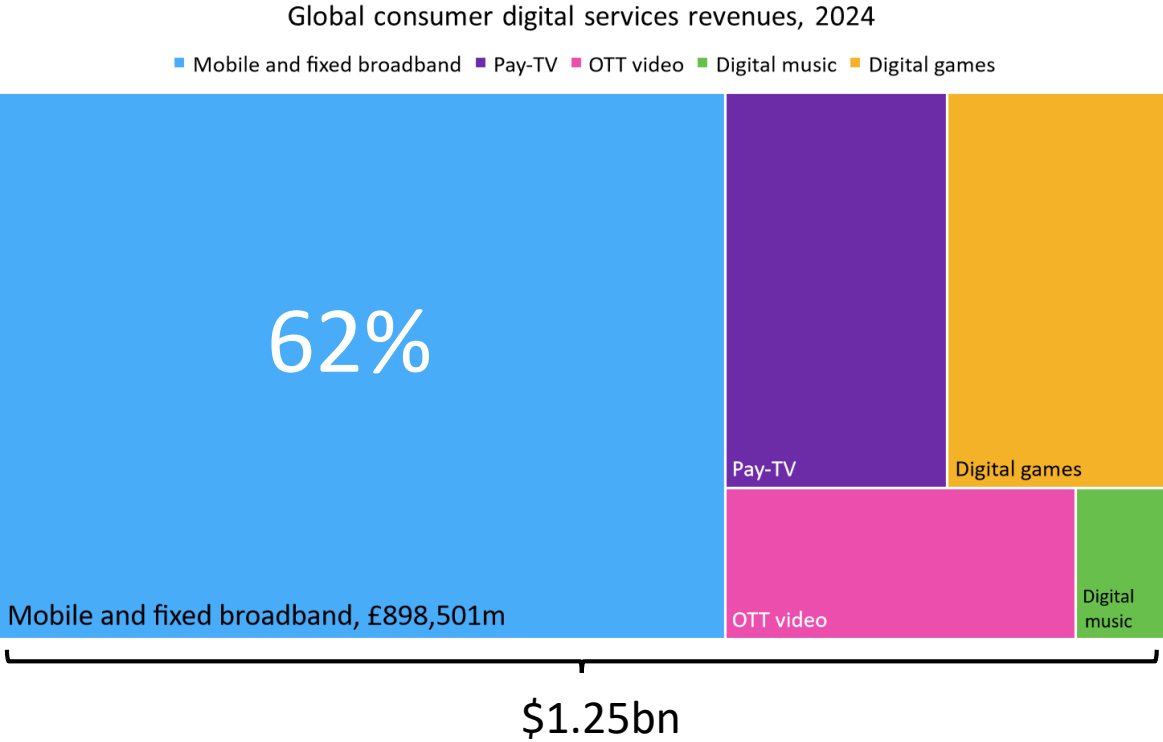
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# The importance of broadband



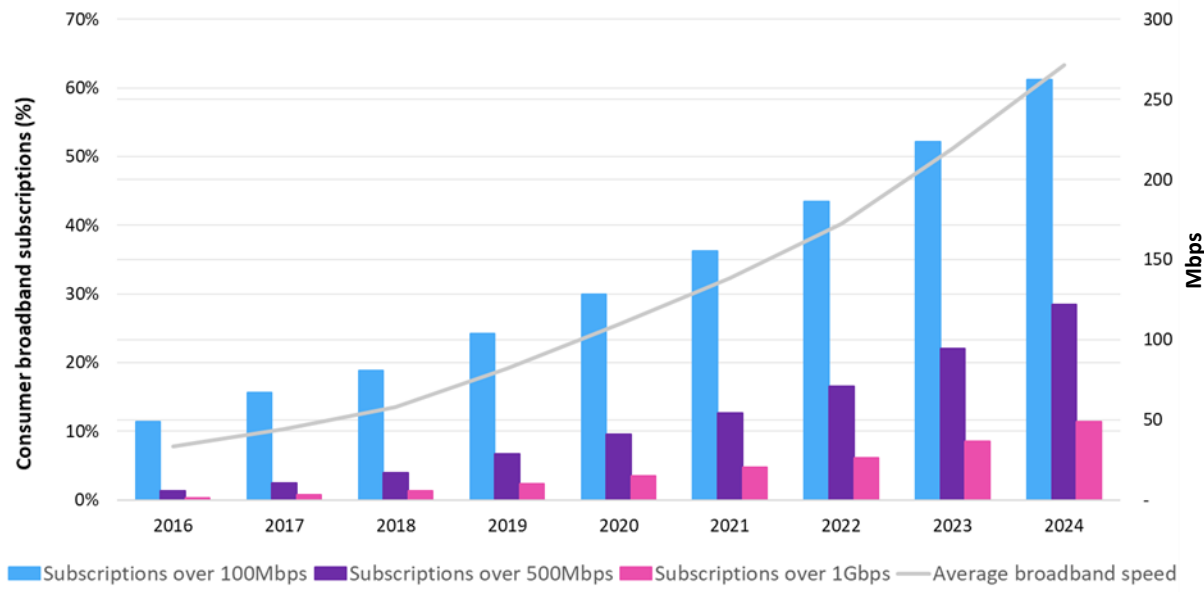
- **Digital transformation is key to future growth**
  - In Europe ICT accounts for ~50% of productivity growth (EU)
- **Broadband and mobile data services are essential to future growth**
  - Significant direct revenue driver
  - Technology enabler to all digital services
- **COVID-19 crisis highlights this dependency**
  - Business innovation increasingly turns to online
  - Increased remote working / education

# The push towards a gigabit world

## Pushed by application demand

Standard 4K 20-30Mbps	Ultra-4K 50-100Mbps
VR (high to ultra) 80Mbps-600Mbps	AR (high to ultra) 100Mbps-1Gbps

Penetration of high-speed broadband subscriptions, global, 2016-2024



Source: Omdia

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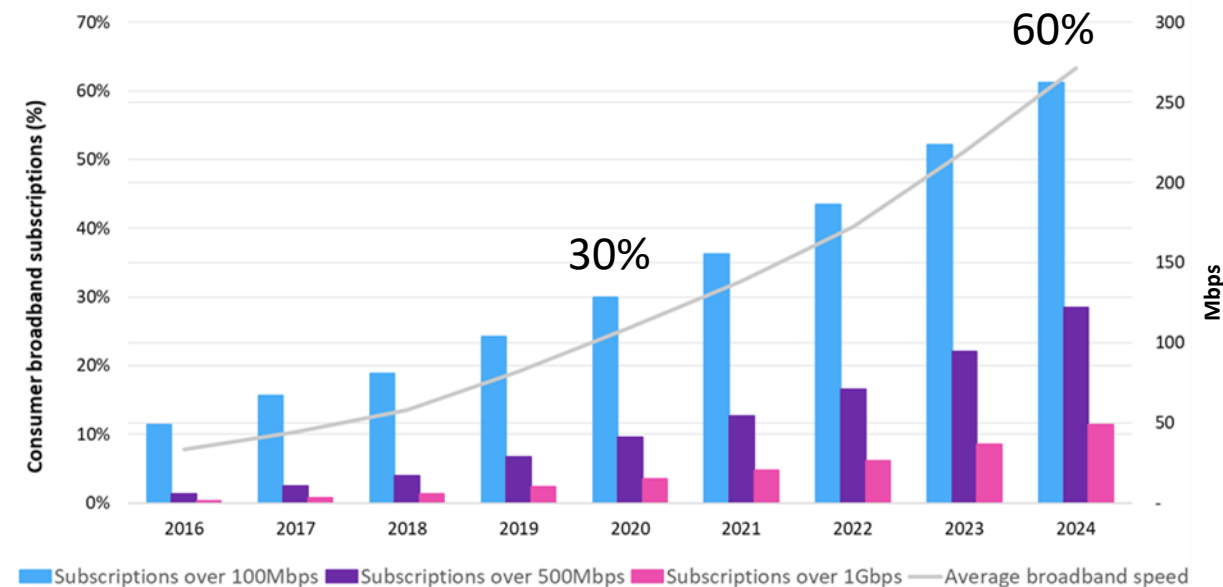
## Driving economic growth

10% increase in broadband penetration*	=	0.25-1.5% GDP growth
Doubling broadband speeds**	=	0.3% GDP growth

Source: \*ITU, \*\*EIB

# The shift from marketing speed to quality of service

Penetration of high-speed broadband subscriptions, global, 2016-2024



Source: Omdia

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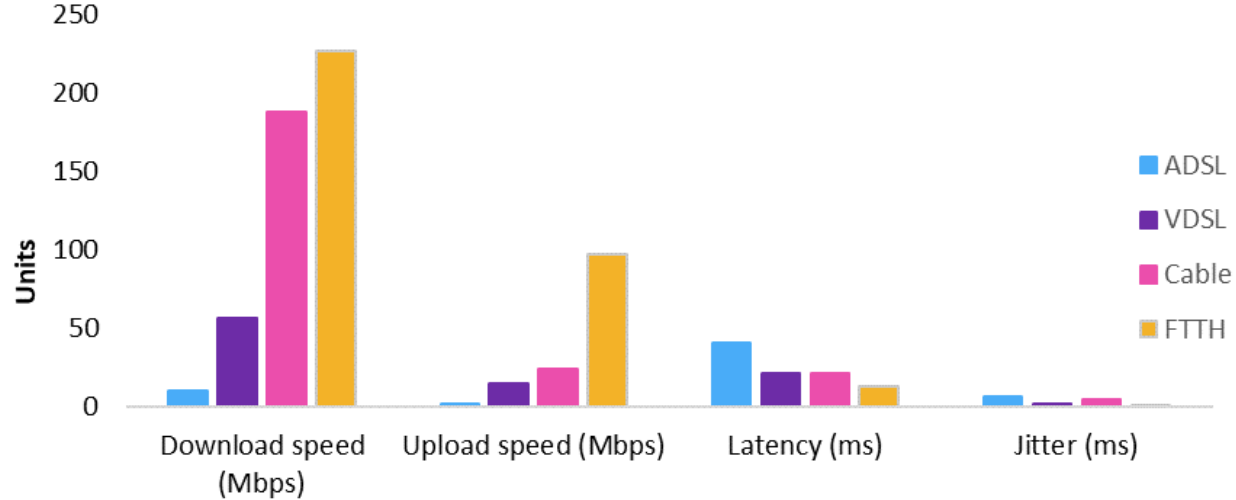
## What consumers value

1. 100% reliability
2. Great customer service
3. Good Wi-Fi experience in every room
4. Fast broadband speed
5. Easy and quick set-up

# The importance of Fiber to QoE

- **FTTH Advantages**
  - Limitless speed
  - Cost neutral in greenfield situations
  - Lower operational costs
  - Higher reliability
  - More secure

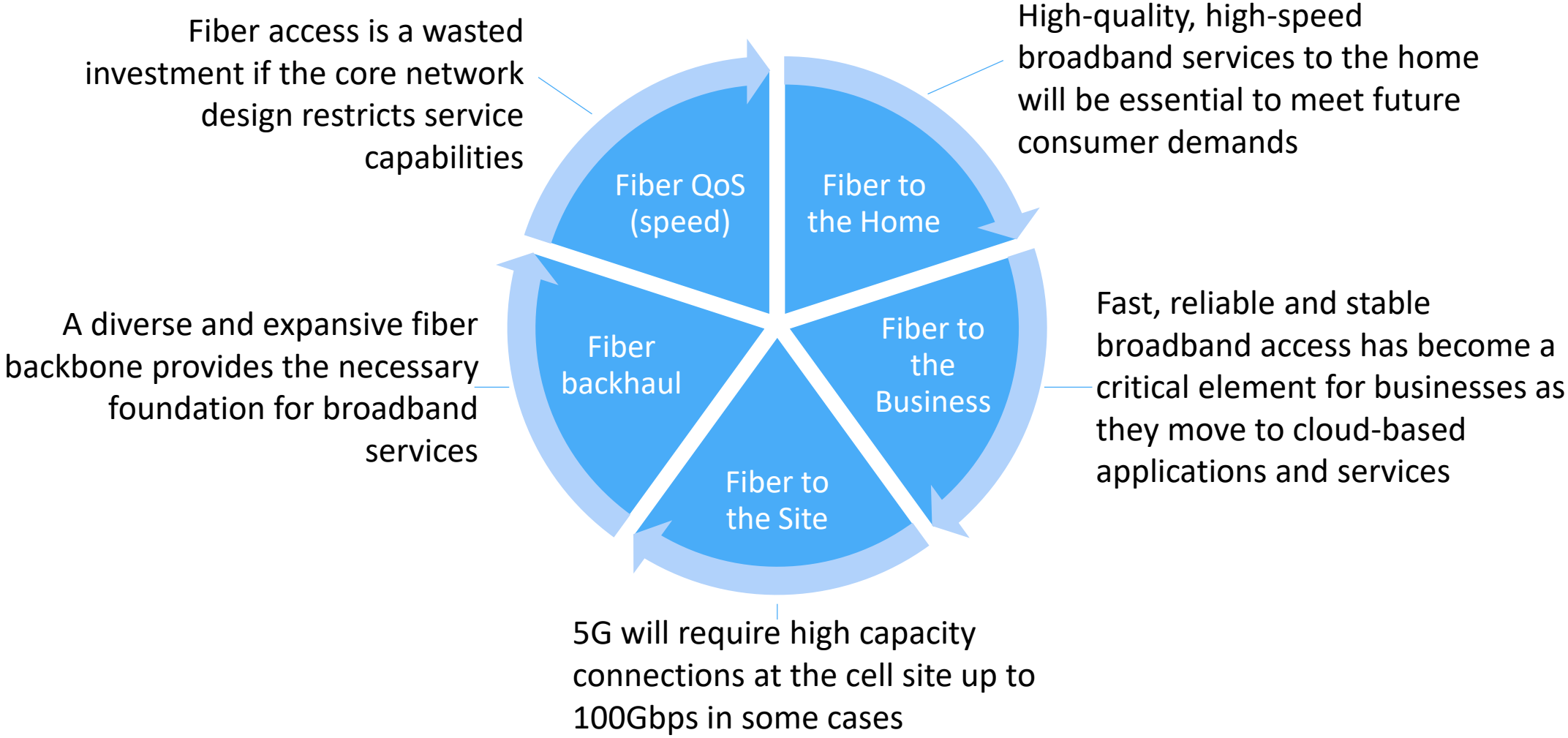
Average network KPIs by technology, select countries



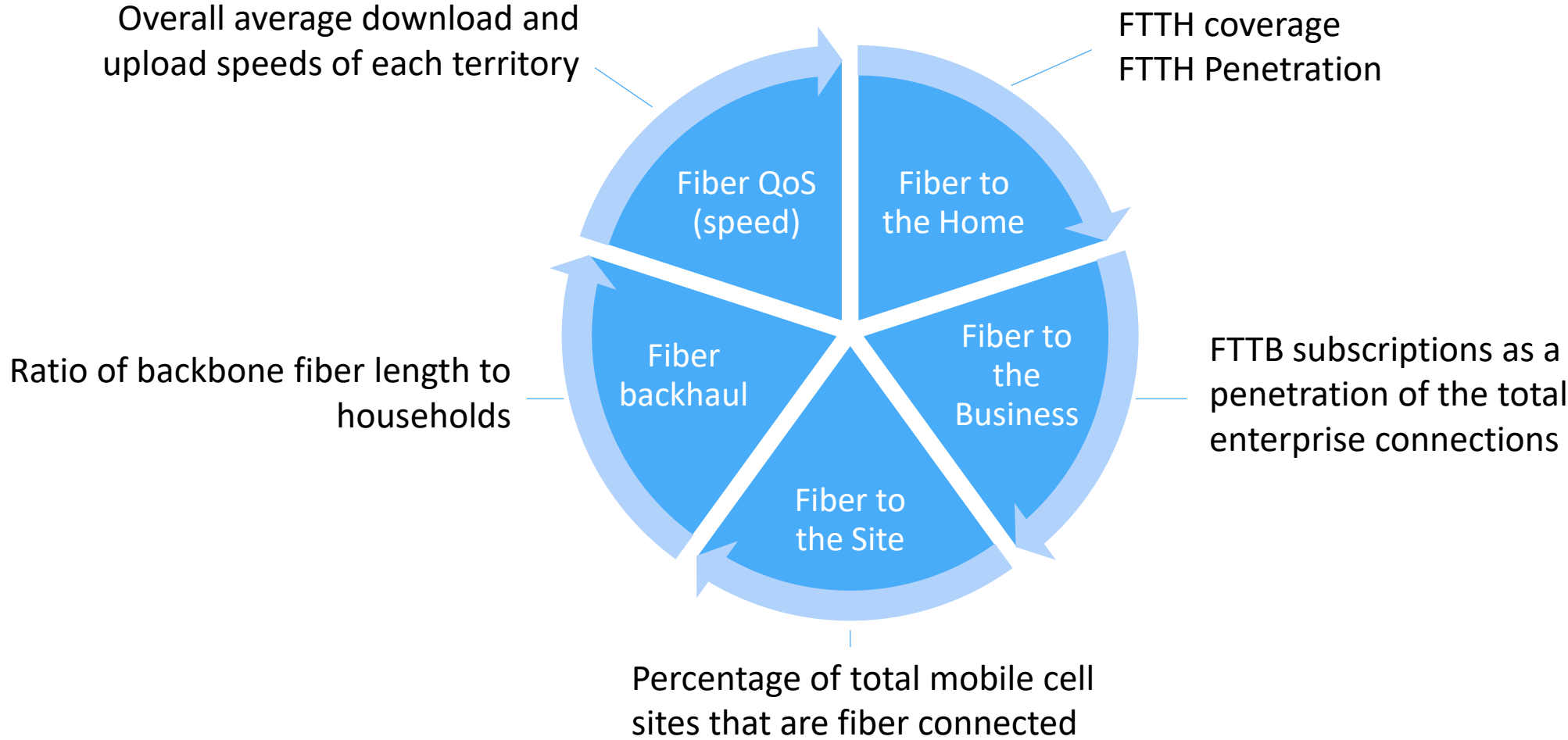
Source: MedUX, Omdia

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# Introducing Omdia's Fiber Development Index



# Individual metrics used the FDI: 2020

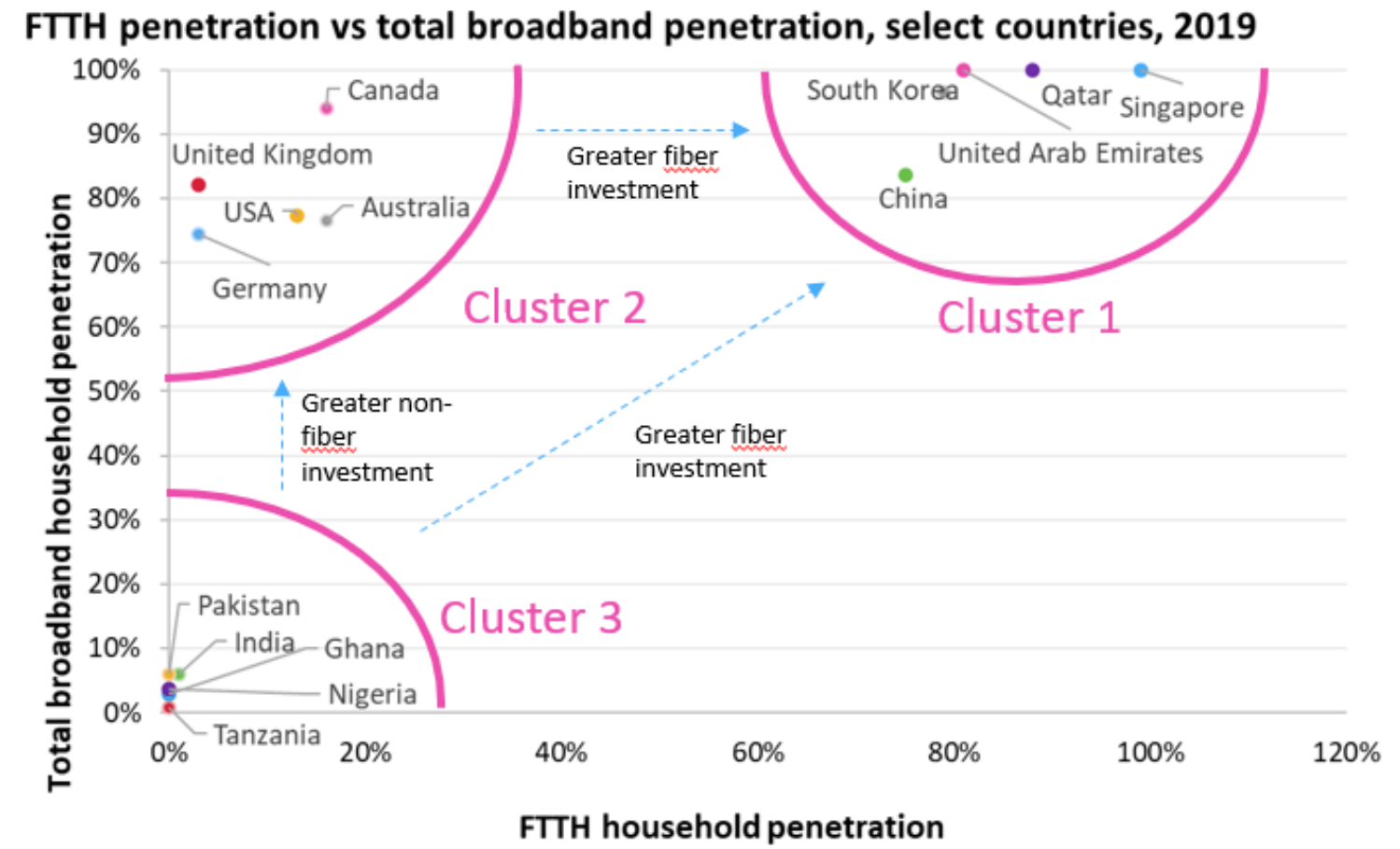


# Creation of clusters to enable clear recommendations

**Cluster 1:** Highly-developed broadband and FTTH penetration.

**Cluster 2:** Developed broadband countries that have a high-level of broadband household penetration but relatively low FTTH penetration

**Cluster 3:** Emerging broadband countries that have a low-level of broadband household penetration and have a relatively low FTTH penetration



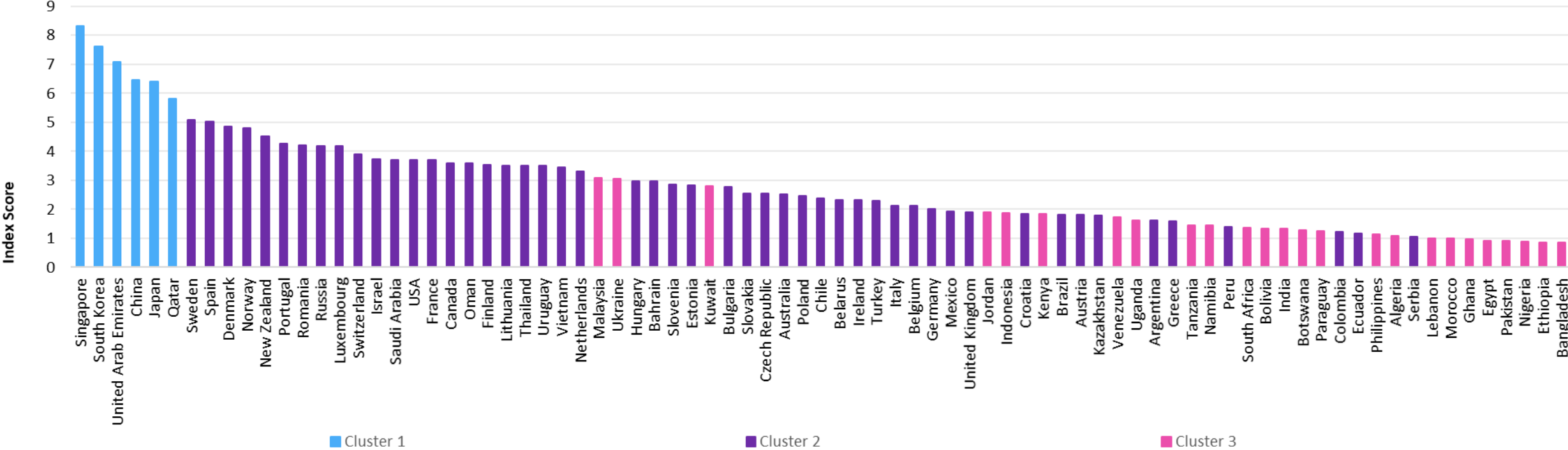


# Cluster countries have some common trends

	Cluster 1	Cluster 2	Cluster 3
Geography	Tend to be smaller, more compact territories have a significant advantage	Often vast sparsely populated areas with difficult terrain	Often vast sparsely populated areas with difficult terrain
Demographics	Tend to be highly urbanized territories with a high percentage of people living in multi-dwelling-units (MDU) complexes	While generally highly urbanized, majority of people tend to live in single home units	In many countries less than half of total population lives in cities and only a handful of people have sufficient means to afford fixed broadband services
Alternative technologies	Typically have low (or zero) levels of alternative infrastructure competition	Significant investment in alternative infrastructure leading to a sweating of assets	Most people in developing countries rely on mobile broadband due to its affordability and ease of access.
Government policy	<b>Very strong national broadband policies</b> with ambitious broadband connectivity and FTTH and / or ultra-high-speed goals, often with government subsidies and grants available	<b>Lack of clear national policy</b> or ambitious broadband connectivity goals meant there were not enough incentives for large operators to invest into fiber networks	While most countries have adopted national broadband plans or strategies, these tend to <b>focus on general broadband availability</b> and often lack meaningful objectives and specific policies

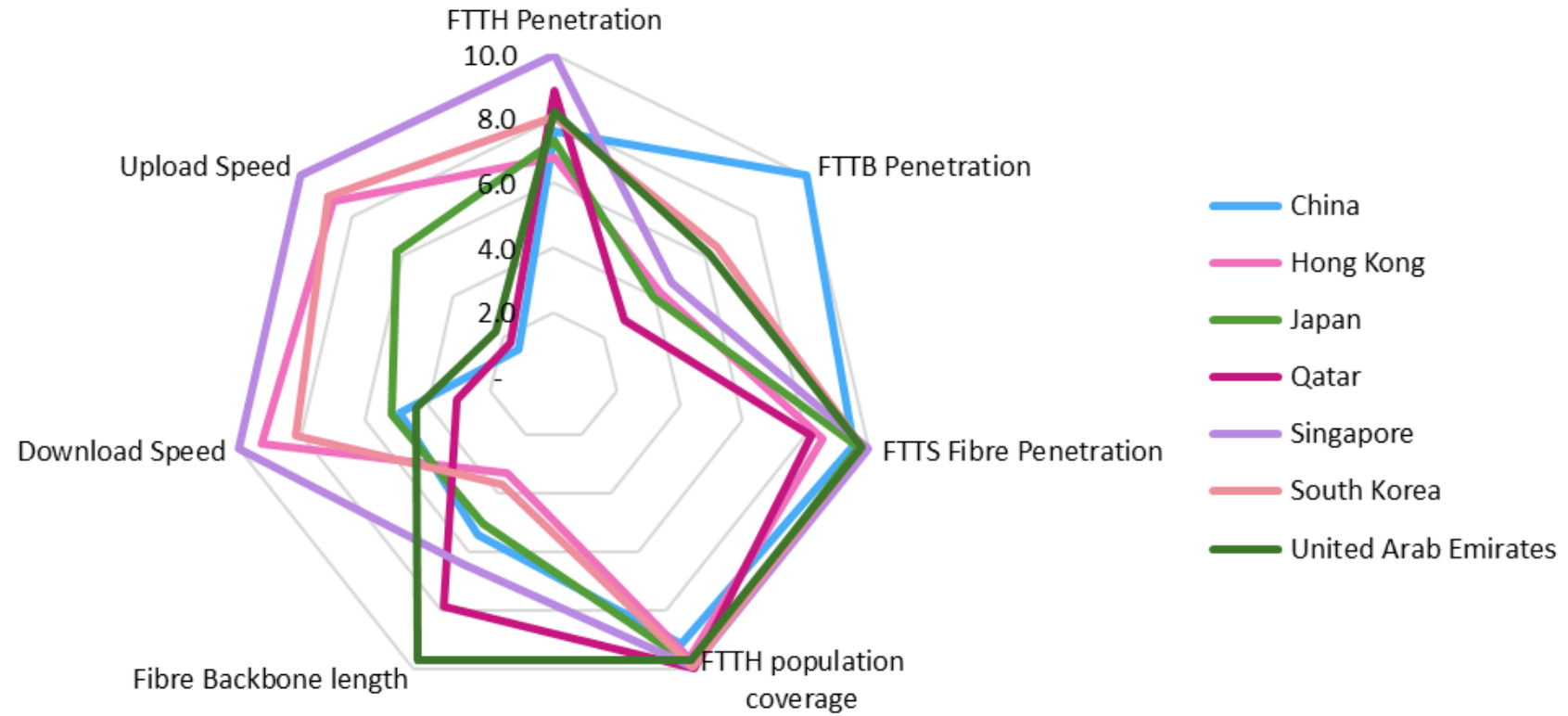
# Fiber Development Index 2020 results – top level

Index Ranking split by Broadband Development Cluster



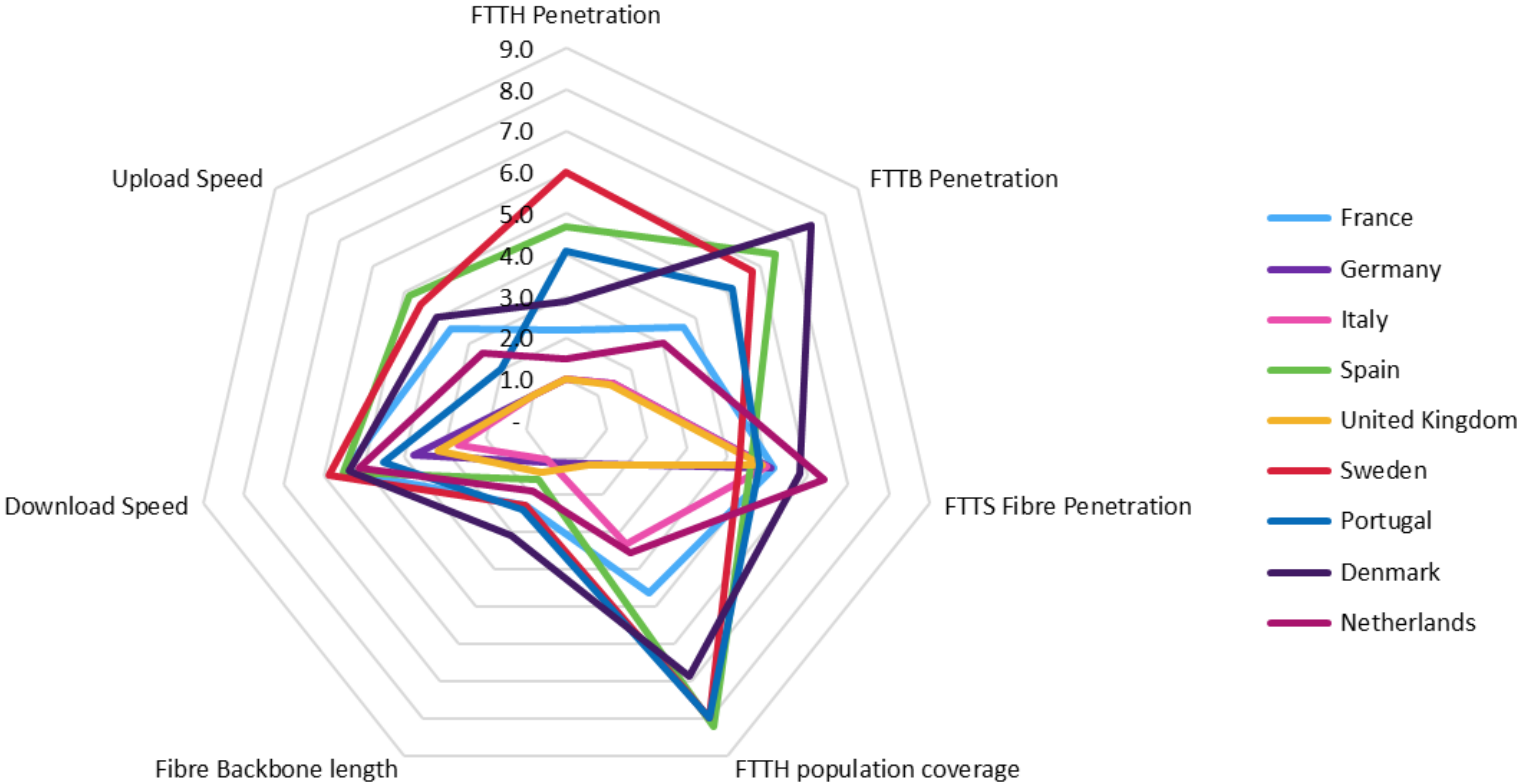
# Cluster 1 countries still have work to do

### Cluster 1 Individual Metric Scores



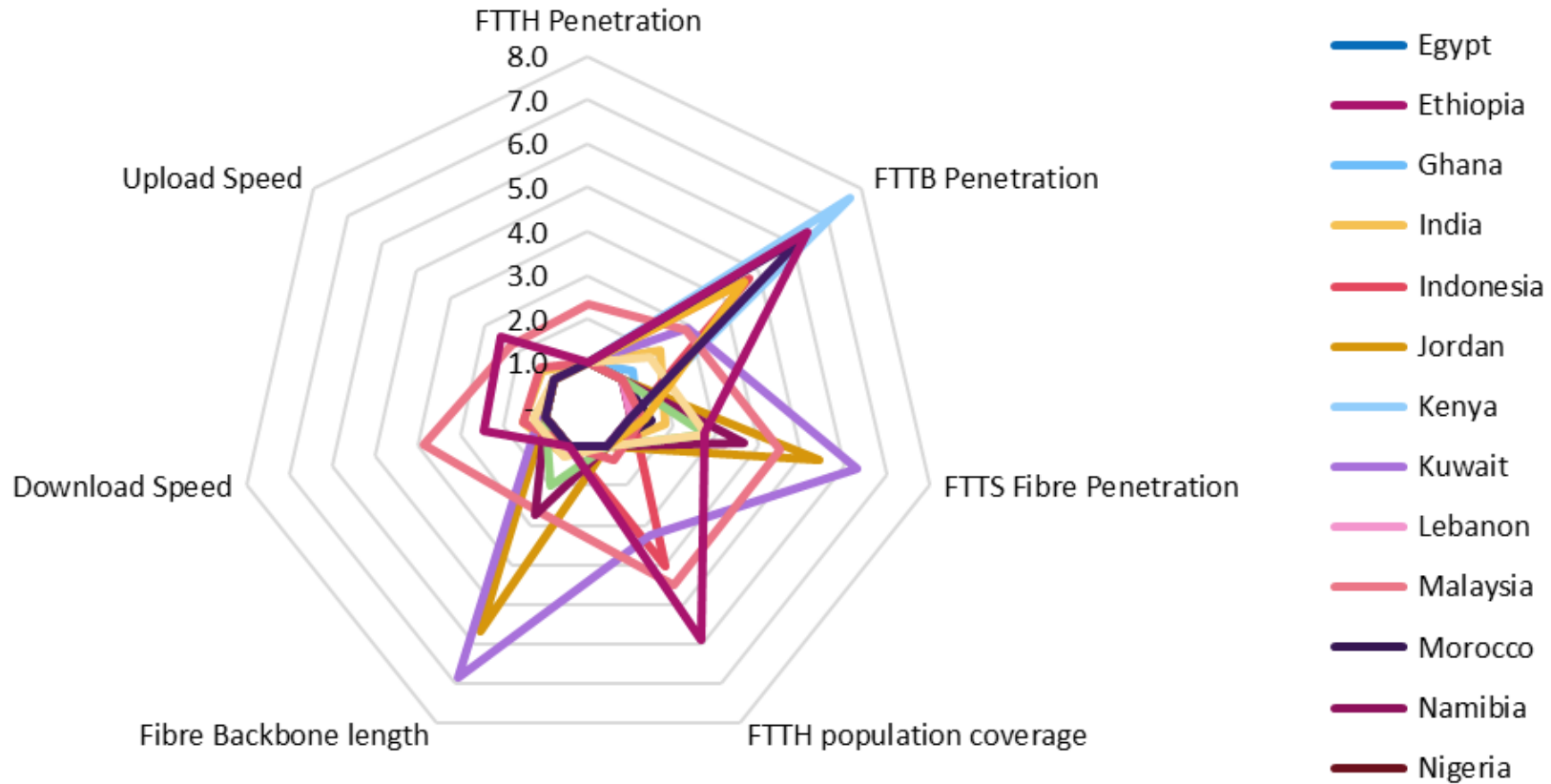
# Cluster 2 countries need to continue to push fiber penetration

Select Cluster 2 Countries Individual Scores

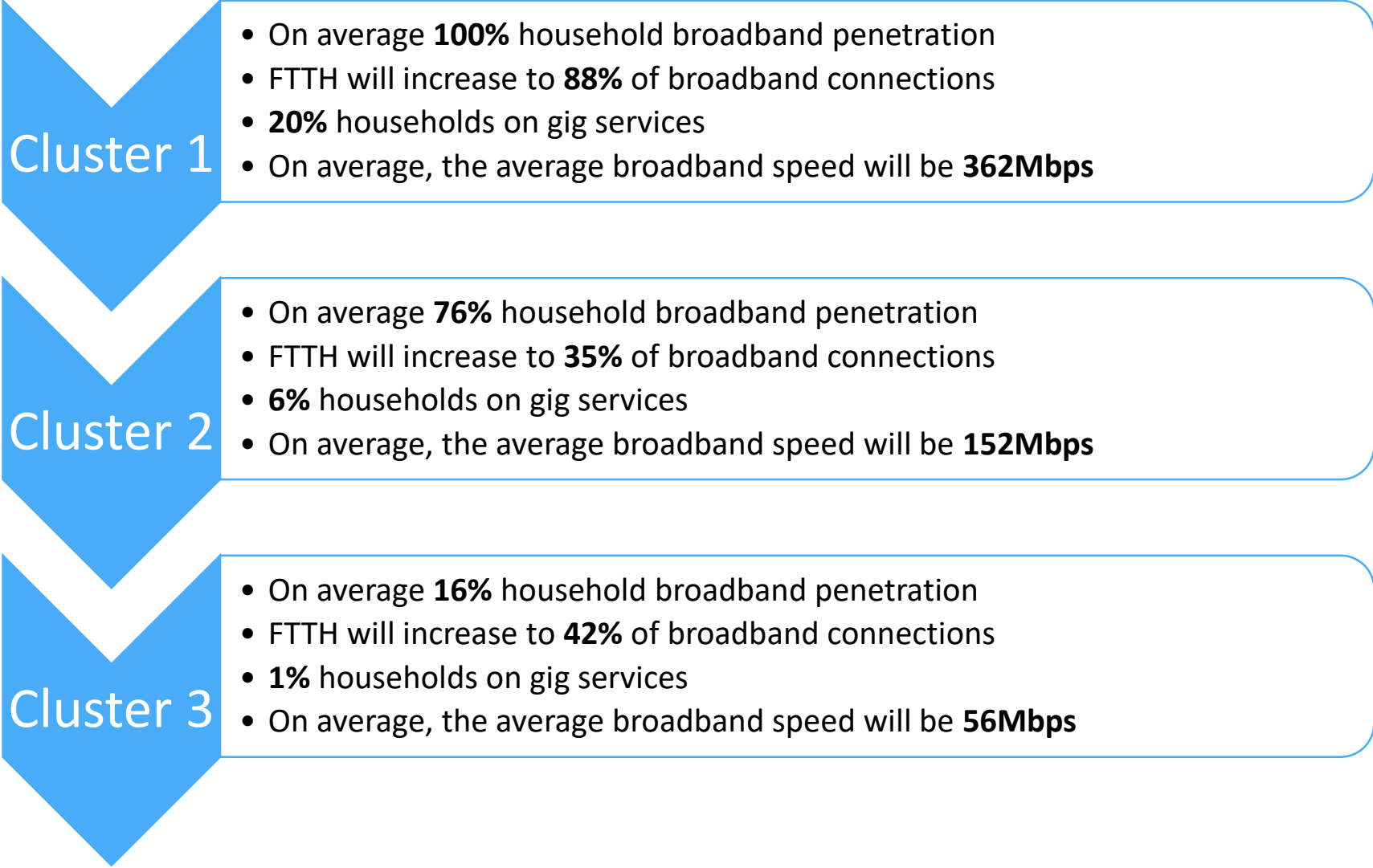


# Cluster 3 countries need to build on early investments

### Cluster 3 Individual Metric Scores



# The future will see further fiber investment



# Conclusions and recommendations

- **Broadband is essential for future GDP growth**
- **Fiber connectivity is the most future oriented technology**
- **Not all countries are equal:**
  - **Where FTTH penetration is already high** – continue to invest in the backhaul network and enterprise services to move to a gigabit network and beyond;
  - **Where broadband penetration is high but FTTH is still low** – investment strategies to enable a faster migration to fiber access must be considered.
  - **Where broadband is still in its infancy** – a strategy to move to a fiber-first network, focusing initially on major cities and to connect mobile base stations should be considered; in more emerging broadband markets, focus should be first on fiber backhaul to enable other more suitable technologies such as 5G-FWA.
- **A comprehensive approach must be taken:**
  - A. A national broadband plan, with concrete and ambitious goals around coverage and ultra-high speeds matched by legislation designed to encourage investment;
  - B. Remove all barriers to access to key infrastructure such as ducts and building access;
  - C. Financial incentives such as taxation, subsidies or public investment should be considered;
  - D. Support network sharing agreements between operators to eliminate network overbuild and help manage investment costs.
- **Upcoming complementary whitepaper : “Global Fiber Development Index: 2020”**

# Thank You

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