

COMPETITION AND REGULATION CHALLENGES IN THE INTERNET VALUE CHAIN

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RIS

Recently, questions were raised about the role that telcos play in the Internet value chain and whether NRAs / Govs should reorder it

1. A joint statement of CEOs of Deutsche Telekom, Vodafone, Telefonica and Orange was released on 14 February 2022 that **called upon large content platforms "to contribute to the cost of the European digital infrastructure that carries their services."**
2. Large ISPs have successfully lobbied the South Korean regulator to **overwrite commercial peering agreements, prescribing IP transit and dictating the prices.**
3. Australian telco CEOs have argued that **revenues are declining and that their businesses have negative returns.** The CEOs claim that the return on investment is lower than their cost of capital.

Applying affect sizes and using publicly available data to address competition and regulation challenges in the Internet Value chain

1	Are revenues and profits declining due to OTTs and Should CAPS contribute to the cost of digital infrastructure?
2	How to measure progress toward the next generation Internet
3	What is the impact of over-taxing on broadband use?

**ARE REVENUES AND PROFITS
DECLINING DUE TO OTTS, AND
SHOULD CAPS CONTRIBUTE TO THE
COST OF DIGITAL INFRASTRUCTURE?**

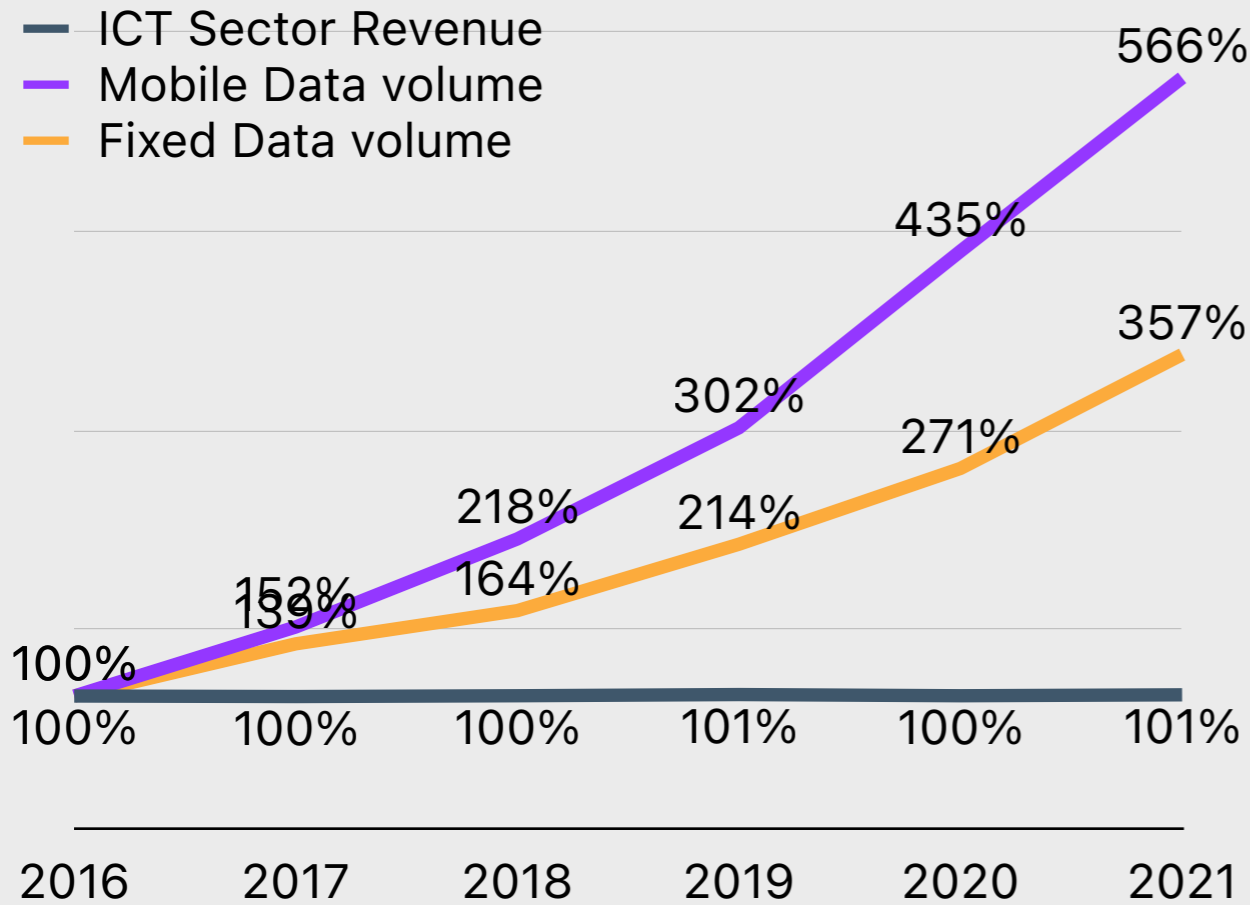
Protect analogue business model for Voice and SMS against OTTs to safeguard investment

- ☼ Telcos provided last-mile connectivity to their customers ever since the first phone call in 10 March 1876. Only the types of services have evolved.
- ☼ Mobile 1G was about voice, 2G about SMS since then, any further iteration has been investment into data connectivity.
- ☼ The transition to data-centric business model is inevitable.

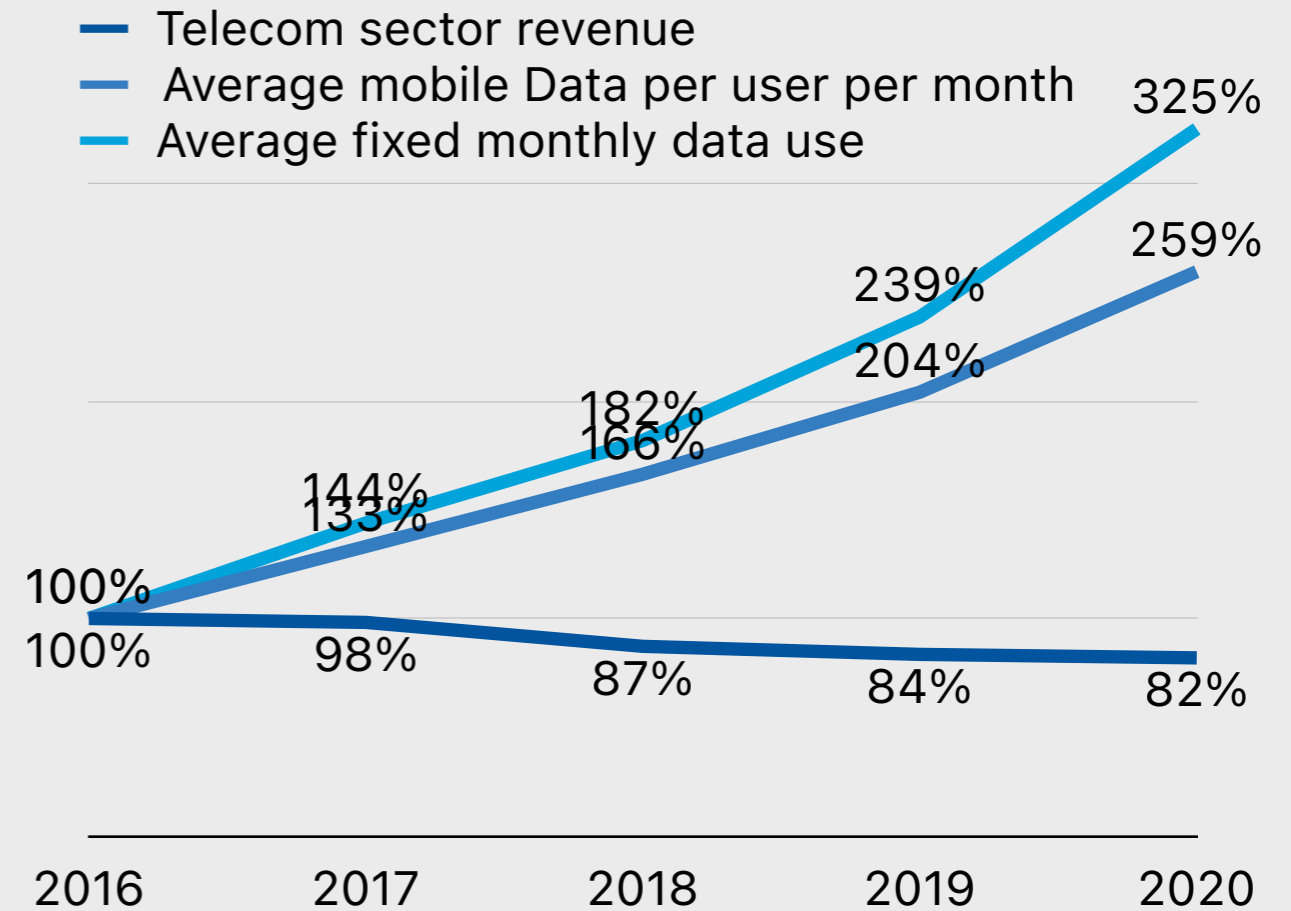
Transition to a digital - data-centric business model

	Analogue	Digital
Business model	Service	Connectivity
Metric	Minutes and SMS	Bandwidth or throughput
Cost sensitivity	Distance, duration and location matter	Time, distance and location insensitive
Billing	Access and usage billing (voice and SMS off-net / on-net, peak / off-peak)	Simple access billing
Traffic Monitoring	Detailed traffic monitoring as part of the billing system	Usage monitoring limited to data use
Postpaid subscribers	Detailed vetting to reduce risk or revenue loss and expenses that arise from call termination and subsidized handsets	<ul style="list-style-type: none"> • Postpaid risk limited to revenue of one billing cycle • No external expense risks • Prepaid and postpaid do not need to be distinguished by pricing • Postpaid may be extended without significant vetting
Network infrastructure	GSM 1G and 2G	2.5G, 3G, 4G, 5G

In mature markets, revenue growth is no longer driven by new subscribers



Germany - revenue and data usage trends as percent of the 2016 value (Bundesnetz Agentur)



UK - revenue and data usage trends as percent of the 2016 value (Ofcom)

- ✿ Someone with a 300GB data allocation per month and an average data use of 40GB per month is not moving to a higher package any time soon.
- ✿ Someone with an unlimited data allocation per month will not move to a higher package unless more speed and lower latency are offered.
- ✿ Only new use-cases can bring back the growth figures of the past.

Value creation along the Global Internet Value Chains shows that the expansion over the last 12 years benefited all segments. The connectivity segment tripled in revenues, refuting claims of a declining telecom sector.

Segment	Example activities	2008		2015		2020		Growth
		USD billion	Share %	USD billion	Share %	USD billion	Share %	
Content Rights	Premium content rights	37	3%	66	2%	186	3%	403%
Online Services	e-Travel, video and audio publishing, gaming, gambling, search, social media, information & reference, cloud based services, other online services	477	40%	1,595	48%	3,792	57%	695%
Enabling Technologies & Service	Web design & hosting, payment systems, advertising exchanges, CDNs	188	16%	442	13%	812	12%	332%
Connectivity	Mobile access, tower crows, fixed access	229	19%	586	18%	988	15%	331%
User Interface	Hardware devices, software and systems	251	21%	659	20%	897	13%	257%
Total		1,182		3,348		6,675		465%
Source:	https://www.gsma.com/publicpolicy/wp-content/uploads/2022/05/Internet-Value-Chain-2022.pdf							

Market access to the last mile is restricted by operating and spectrum licenses. As a result, the connectivity segment is still the most profitable segment of the Internet value chain and returns are significantly higher than the cost of capital.

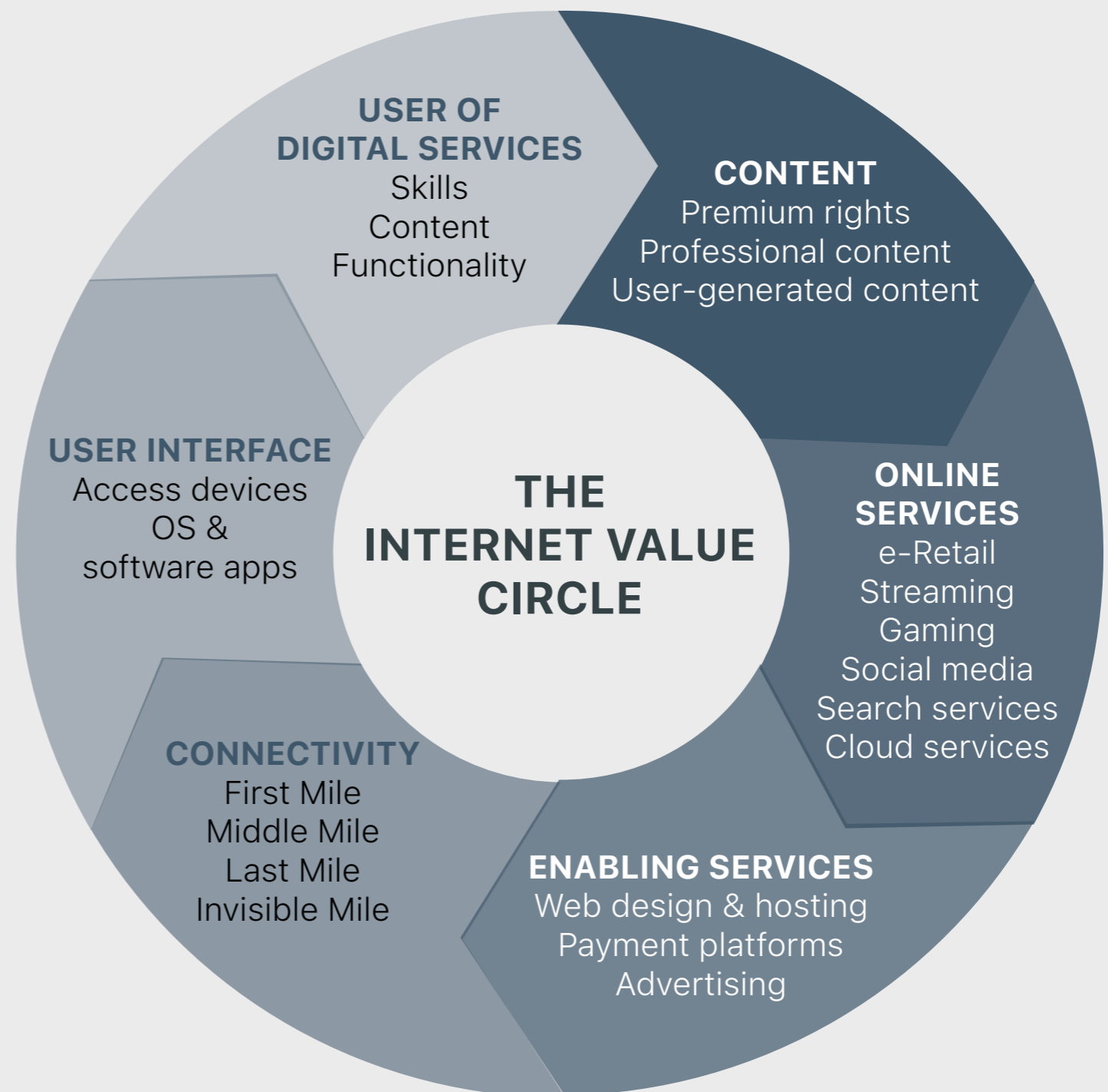
Segment	Sectors	EBITDA margin	Return on Equity	Cost of Capital
Content Rights	Broadcasting	19.5%	13.4%	5.5%
	Entertainment	12.8%	4.8%	6.9%
Online Services	Advertising	7.4%	5.6%	7.0%
	Information Services	23.8%	15.9%	7.7%
	Retail (Online)	7.4%	26.7%	8.6%
	Software (Entertainment)	24.4%	32.0%	8.1%
Enabling Technologies & Service	Telecom Equipment	14.2%	11.4%	7.2%
	Software (Internet)	7.9%	4.3%	7.2%
Connectivity	Telecom (Wireless)	29.3%	14.0%	4.7%
	Telecom Services	30.6%	12.9%	5.2%
User Interface	Electronics (Consumer & Office)	8.4%	14.6%	7.1%
	Software (System & Application)	25.1%	20.5%	7.6%
Average across 94 sectors		12.0%	13.2%	5.7%
Source:		Aswath Damodaran, Stern University, updated 2022/01/05		

The Internet is a connected ecosystem

Telcos benefit from the demand for content and the supply of content.

BEREC 2022:

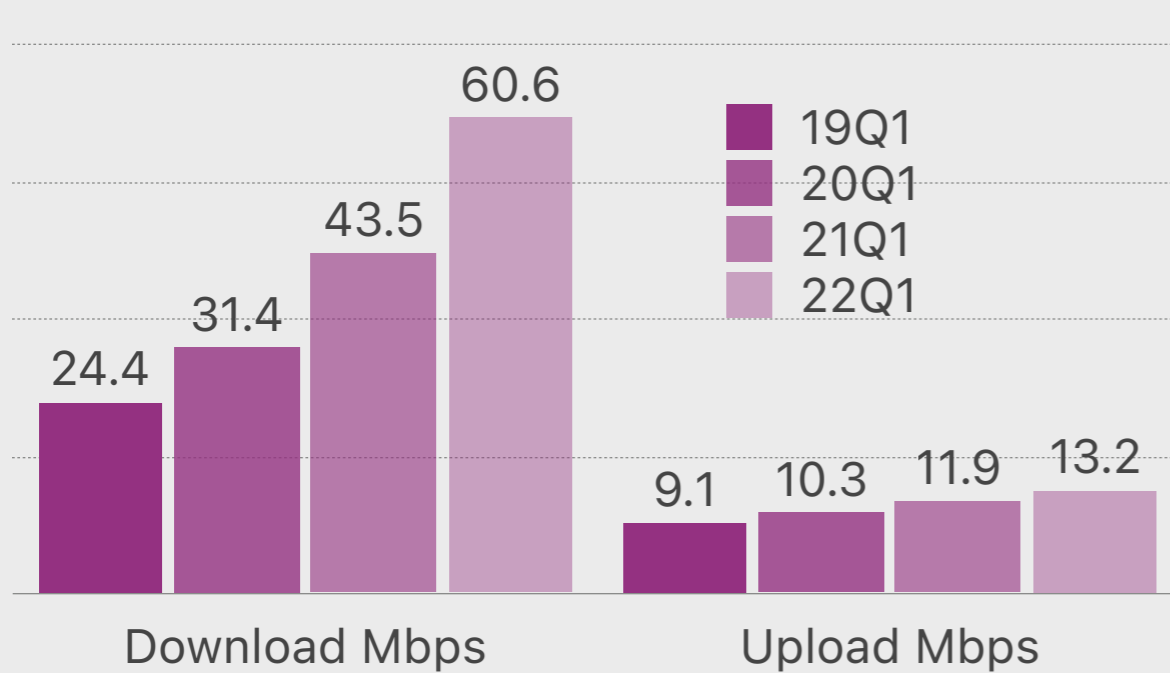
- ✿ Higher demand for content translates into demand for better speeds and data allowances ie increased revenues.
- ✿ Mutual interdependence means claims by telcos for payment from Content Access Providers (CAPs) to access their networks are ignoring this interdependence.
- ✿ Costs of the access network are recovered from end-user charges
- ✿ No justification for the claim that CAPs are free-riding on telco networks and that telcos are unable to cover their costs.



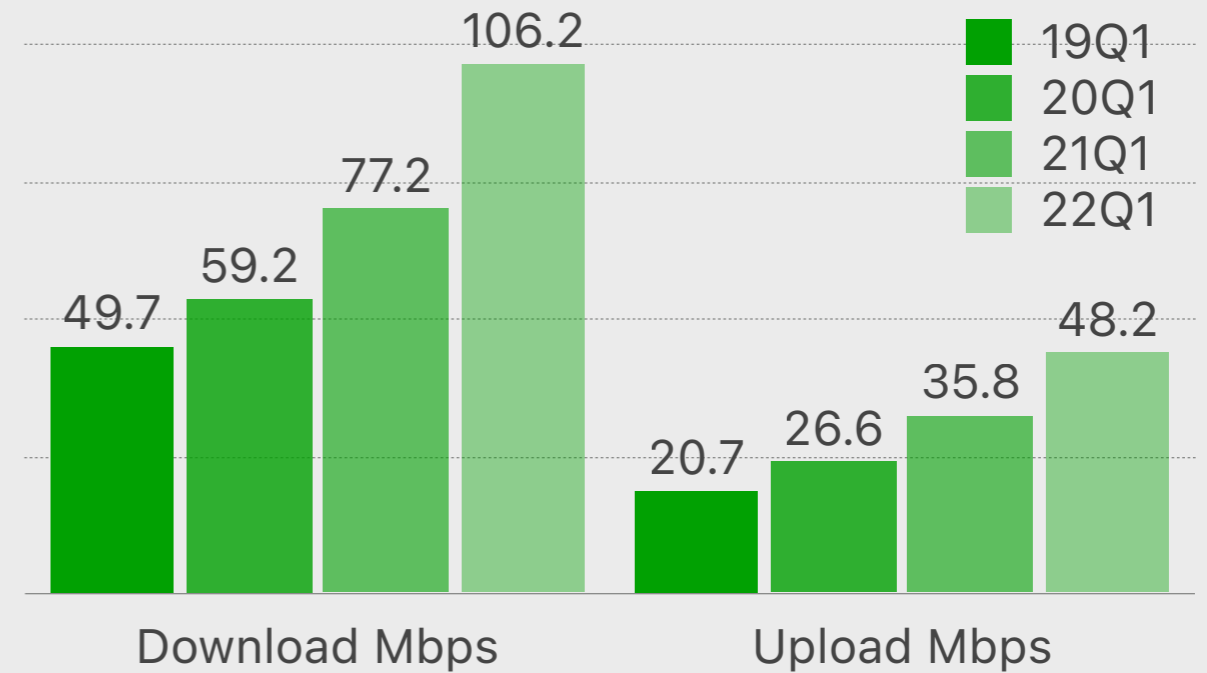
MEASURING PROGRESS: NEXT GENERATION INTERNET INDEX (NGII)

An immersive AR/VR experience requires fast symmetrical broadband and low latency

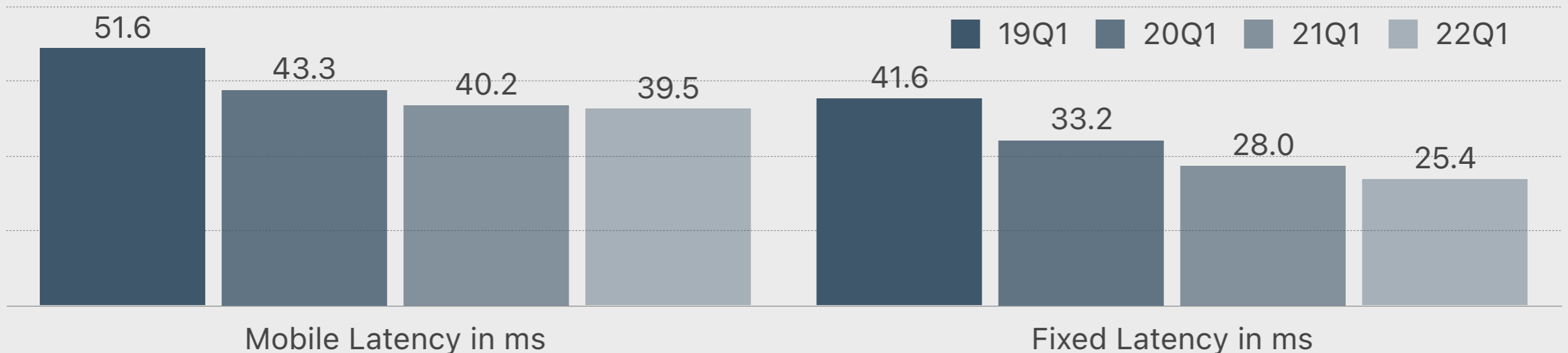
Mobile



Fixed



Latency



RIS **Next Generation Internet Index (NGII) is based on absolute objectives, not ranking relative to other countries** ¹²

Index value	0%	100%	Source
Average upload speeds	below 10 Mbps	100 Mbps or more	Ookla data for good
Average latency	more than 50ms	5ms or less	Ookla data for good
20GB per month as % of GNPC per month	more than 5%	less than 1%	RIS & Worldbank
National Cyber Security Index	0	100	e-Governance Academy

- ✿ **Fast Internet s measured in upload speeds for mobile and fixed.** Average upload speeds of 100Mbps or more score 100%, and below 10Mbps score 0%. Values in between are evenly spaced.
- ✿ **Latency is grouped into 11 categories.** A score of 100% if a country has a latency of 5ms or lower and a score of 0% if the average latency is more than 50ms.
- ✿ **Affordability is measured as the lowest cost of 20 GB valid for a month for prepaid customers in a country.** Countries where 20 GB cost less than 1% of GNICM will score 100%. Countries where 20 GB prepaid cost more than 5% of GNI per capita per month will score 0%. Values in between are evenly spaced.
- ✿ **Cybersecurity is measured using the National Cyber Security Index (NCSI).** Global live index, which measures the preparedness of countries to prevent cyber threats and manage cyber incidents. The maximum score according to the NCSI is 100.

NGII scores by sub region for Q1 2022

Subregion	NGII	Fast Internet	Latency	Affordability	Cyber security
Western Europe	67%	38%	62%	83%	83%
Northern Europe	65%	43%	60%	77%	80%
Southern Europe	63%	33%	55%	75%	89%
Eastern Asia	51%	50%	67%	40%	46%
South-Eastern Asia	47%	32%	56%	56%	44%
Northern America	46%	35%	35%	40%	73%
Australasia	44%	30%	35%	50%	59%
Western Asia	41%	22%	49%	51%	43%
Southern America	34%	15%	38%	42%	41%
Southern Asia	26%	8%	33%	30%	36%
Central Asia	26%	12%	36%	32%	25%
Northern Africa	25%	2%	24%	32%	44%
Central America	25%	11%	49%	8%	31%
Caribbean	23%	15%	40%	15%	20%
Eastern Europe	16%	8%	28%	4%	26%
Eastern Africa	16%	7%	23%	7%	27%
Southern Africa	12%	3%	20%	0%	23%
Western Africa	12%	5%	18%	0%	24%
Middle Africa	9%	3%	13%	0%	21%
Polynesia	4%	5%	0%	0%	13%
Melanesia	4%	3%	0%	0%	12%
Micronesia	1%	0%	0%	0%	5%

WHAT IS THE IMPACT OF OVER-TAXING ON BROADBAND USE?

RIS **Broadband networks enable the digital transformation of our economies and societies** 15

- ✿ Broadband access and use contributes to the economy directly through ICT sector growth and indirectly by improving productivity across all sectors.
- ✿ The direct contribution is measured by contribution to GDP and is captured in **national accounts**.
- ✿ The Indirect contribution can be measured using **econometric models**. Raul is the author of an ITU study from 2020 that provides affect sizes and which are widely used by regulatory and policy practitioners.

Kenya

		Source
GDP USD million	110,347	WDI 2022 (2021 data)
Tax to GDP ratio	14.3%	WDI 2022 (2020 data)
Productivity gain for additional 10% broadband penetration	2.46%	ITU Feb 2020
Additional GDP USD million	2,715	
Additional tax USD million	388	
Additional jobs	601,466	

https://researchictsolutions.com/ict-evidence-portal-africa/ict_evidence_portal_africa.php

Applying Affect sizes of the ITU 2020 study to estimate tax impacts for Africa



	Scenario 1	Scenario 2	Scenario 3	Current
% change in ICT sector excise duties or VAT	-20	-10	5	
Impact on ICT sector tax revenue				
ICT sector revenues USD million	3,261.6	2,946	2,472.5	2,630.3 (a)
ICT sector profits USD million	815.4	736.5	618.1	657.6 (b)
Corporate income tax revenue USD million	244.6	220.9	185.4	197.3 (c)
Personal income tax revenue USD million	50.9	46	38.6	41.0 (d)
VAT revenue USD million	521.9	471.4	395.6	420.9 (e)
Change in revenue from excise duties USD million	-526.1	-263	123.6	
ICT sector tax revenue USD million	291.3	475.2	743.2	659.2
Impact on the wider economy				
Mobile broadband penetration	63.2%	57.1%	47.9%	51% (f)
Change in broadband penetration	12.2%	6.1%	-3.1%	
Productivity impact	3.01%	1.51%	-0.75%	(g)
Additional or forgone GDP USD million	3,322.6	1,661.3	-830.6	
Tax effect on the wider economy USD million	475.1	237.5	-118.8	
Overall tax impact				
Total tax USD million	766.4	712.8	624.5	659.2
Change in overall tax revenue USD million	107.2	53.6	-34.7	
Change in overall tax revenue %	16.3%	8.1%	-5.3%	
Medium term change in jobs	736,194	368,097	-184,049	(h)

CONCLUSION

Conclusion

- ✿ The telecom sector remains one of the most profitable sectors.
- ✿ The market for each segment of the Internet value chain is still expanding
- ✿ The Internet is a connected ecosystem and telcos benefit from the broadband demand and supply
- ✿ Data usage is growing strongly while data revenues in mature markets: Streaming and AR /VR applications are currently the most potent avenues for ICT sector growth in combination with latency-based product differentiation.
- ✿ CPs and telcos have the same incentive for a high-quality user experience
- ✿ Cooperation of players in the Internet Value Chain will be necessary to make the Internet faster and more immersive
- ✿ The NGII spotlights the gap between the current state of Internet access and a AR-VR-ready future.
- ✿ Over taxing ICT sector is leads to lower not more tax income generally
- ✿ Affect sizes missing for mobile money adoption and use...similar to papers from Raul Katz.
- ✿ Solid research and detailed publicly available data are the foundation for an evidence-based dialogue.

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