

6 GHz ECONOMIC IMPACT STUDIES IN NIGERIA

Final Report



Telecom Advisory Services

New York - Buenos Aires - Madrid - Bogota - Quito

New York, February 24, 2022

THE PURPOSE OF THE PROJECT IS TO ESTIMATE THE CUMULATIVE ECONOMIC VALUE OF THE 1200 MHz ALLOCATION OF THE 6 GHz BAND IN NIGERIA

	GDP impact	Producer Surplus	Consumer Surplus
Aligning spectrum decision with other advanced economies		X	
Enhance broadband coverage and improve affordability	X		X
Increase speed by reducing Wi-Fi congestion	X		X
Deployment of AR/VR solutions	X	X	
Deployment of IoT	X	X	
Reduction of Enterprise wireless costs		X	
Cellular traffic offloading		X	
Wi-Fi Municipal	X		X
Benefits to consumers of free Wi-Fi traffic offered in public sites	X		X
Residential Wi-Fi Devices and equipment		X	X

SEVERAL FACTORS IN NIGERIAN TELECOMMUNICATIONS WILL DRIVE THE ECONOMIC IMPACT OF THE 6 GHz BAND ALLOCATION

- Potential for the development of the WISP industry (and Hotspots) to reach the middle-class population due to economic issues, considering that the main reason to not use internet is data cost (32.5% of the population)
- As an example, a 1 GB Mobile Broadband plan represents 1.71% of the GNI (Source: A4AI)
- The impact on the total population will also be limited since there are infrastructure issues that limit adoption
 - 6% of households with a computer (Source: UIT & RIA)
 - 32% of the population is available to use internet from a mobile device (Source: GSMA)
 - 66% of households with connection to the electricity grid (Source: RIA)
- Importance of public Wi-Fi as a means of connection: 6% of the population uses these networks at least once a month. But that networks are only available in the main cities of the country
- Local ICT equipment market is relatively developed, which could benefit from 6 GHz Wi-Fi allocation. The country has potential to develop specific economic hardware to sell in the region
- The potential impact of 6 GHz will be limited by the low adoption of FBB in households (adoption rate of less than 1%) and with limited deployment of fiber network in the country

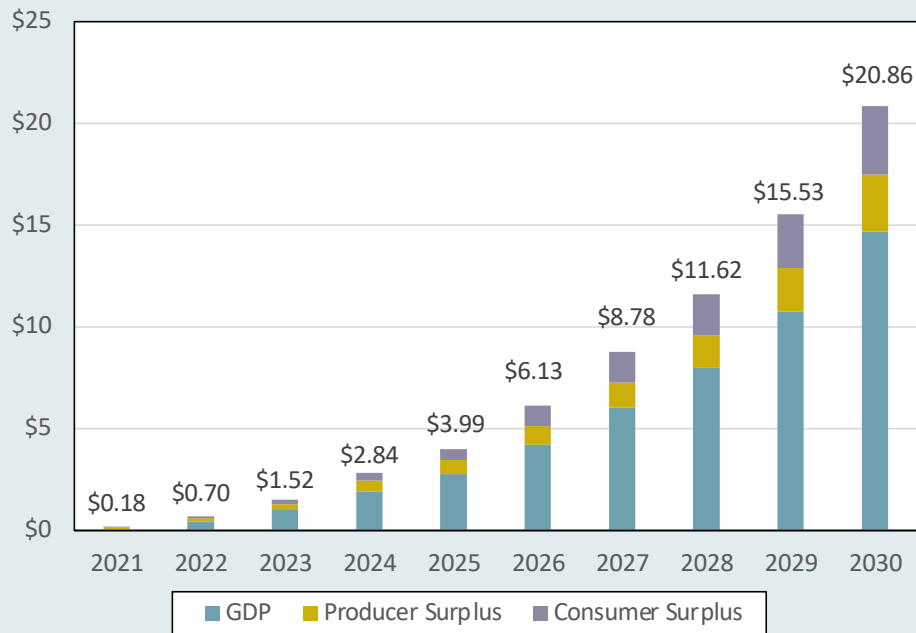
THE ALLOCATION OF THE WHOLE 6 GHZ BAND WILL RESULT IN AN ACCUMULATED ECONOMIC VALUE BETWEEN 2021 AND 2030 OF US\$ 72.14 BILLION

	GDP impact	Producer Surplus	Consumer Surplus
Aligning spectrum decision with other advanced economies		\$0.16	
Enhance broadband coverage and improve affordability	\$7.24		\$0.06
Increase speed by reducing Wi-Fi congestion	\$0.14		\$0.08
Deployment of AR/VR solutions	\$16.44	\$3.31	
Deployment of IoT	\$11.03	\$4.14	
Reduction of Enterprise wireless costs		\$0.76	
Cellular traffic offloading		\$1.18	
Wi-Fi Municipal	\$12.02		\$3.62
Benefits to consumers of free Wi-Fi traffic offered in public sites	\$3.02		\$1.19
Residential Wi-Fi Devices and equipment		\$0.96	\$6.79

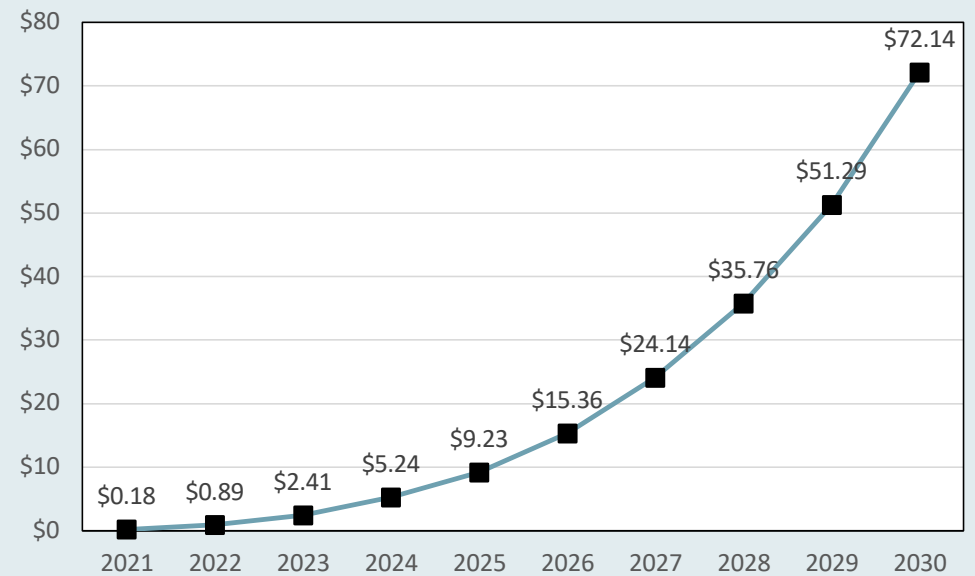
THE TOTAL ECONOMIC VALUE INCREASES OVER TIME WITH SIGNIFICANT ACCELERATION TOWARDS THE END OF THE PERIOD DUE TO THE VALUE LEVERAGE CAPABILITY OF 6 GHz

NIGERIA: IMPACT OF 6 GHz ALLOCATION

Annual Economic Value



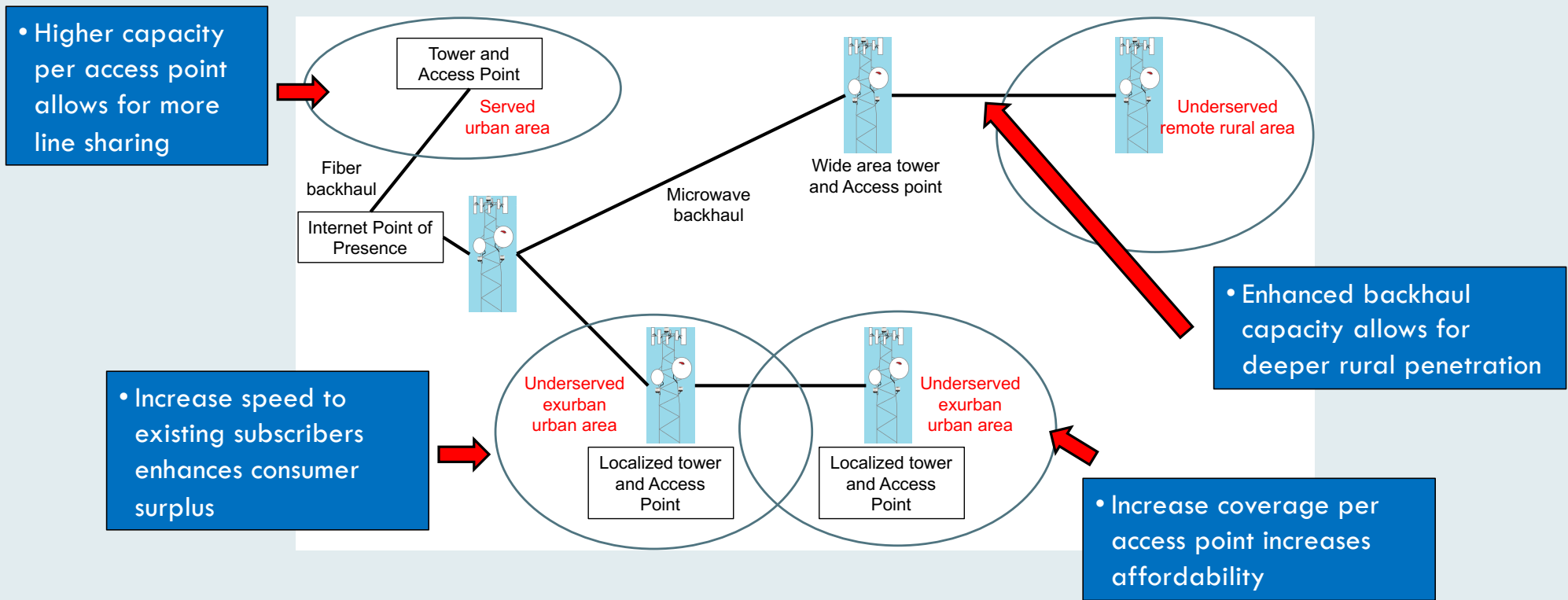
Cumulative Economic Value



Source: TAS analysis

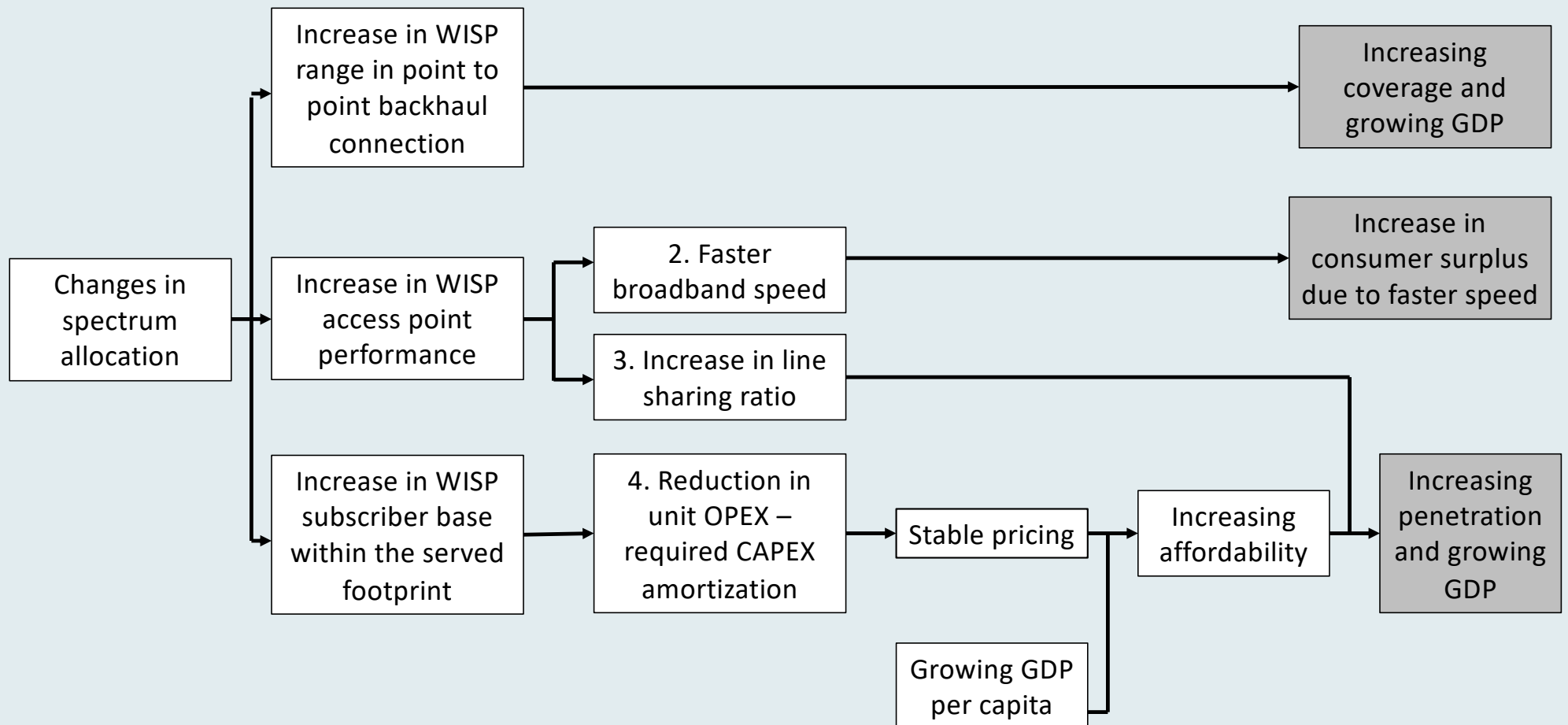
SPECTRUM ALLOCATION IS A TECHNOLOGY ENABLER OF WIRELESS ISPs ABILITY TO CONTINUE TACKLING THE DIGITAL DIVIDE

IMPACT OF SPECTRUM ALLOCATION ON A WISP NETWORK



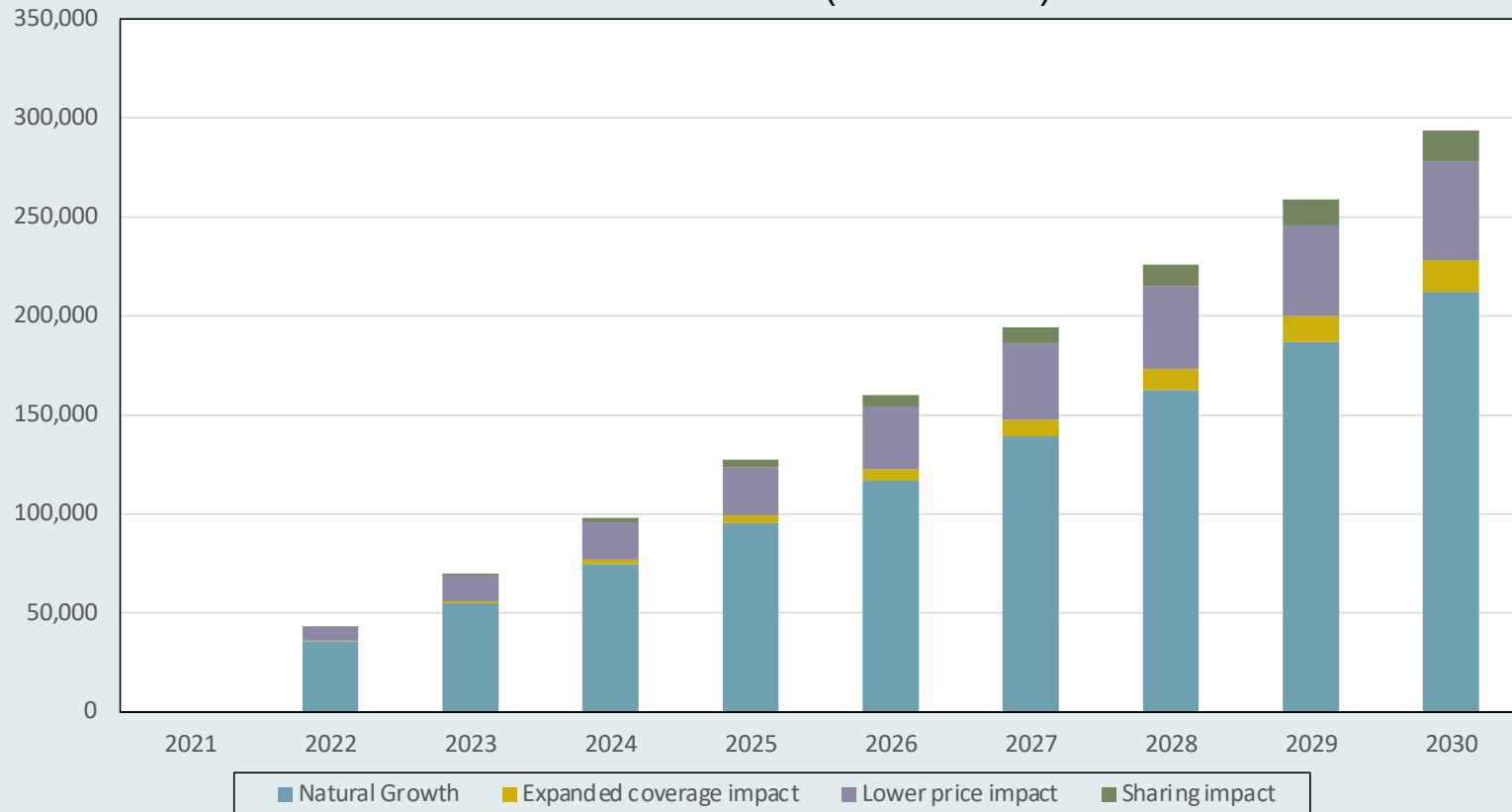
Source: Telecom Advisory Services analysis

THE METHODOLOGY FOR ESTIMATING THE ECONOMIC IMPACT ON THE WISP SECTOR OF SPECTRUM CHANGES IS STRUCTURED AROUND THREE EFFECTS



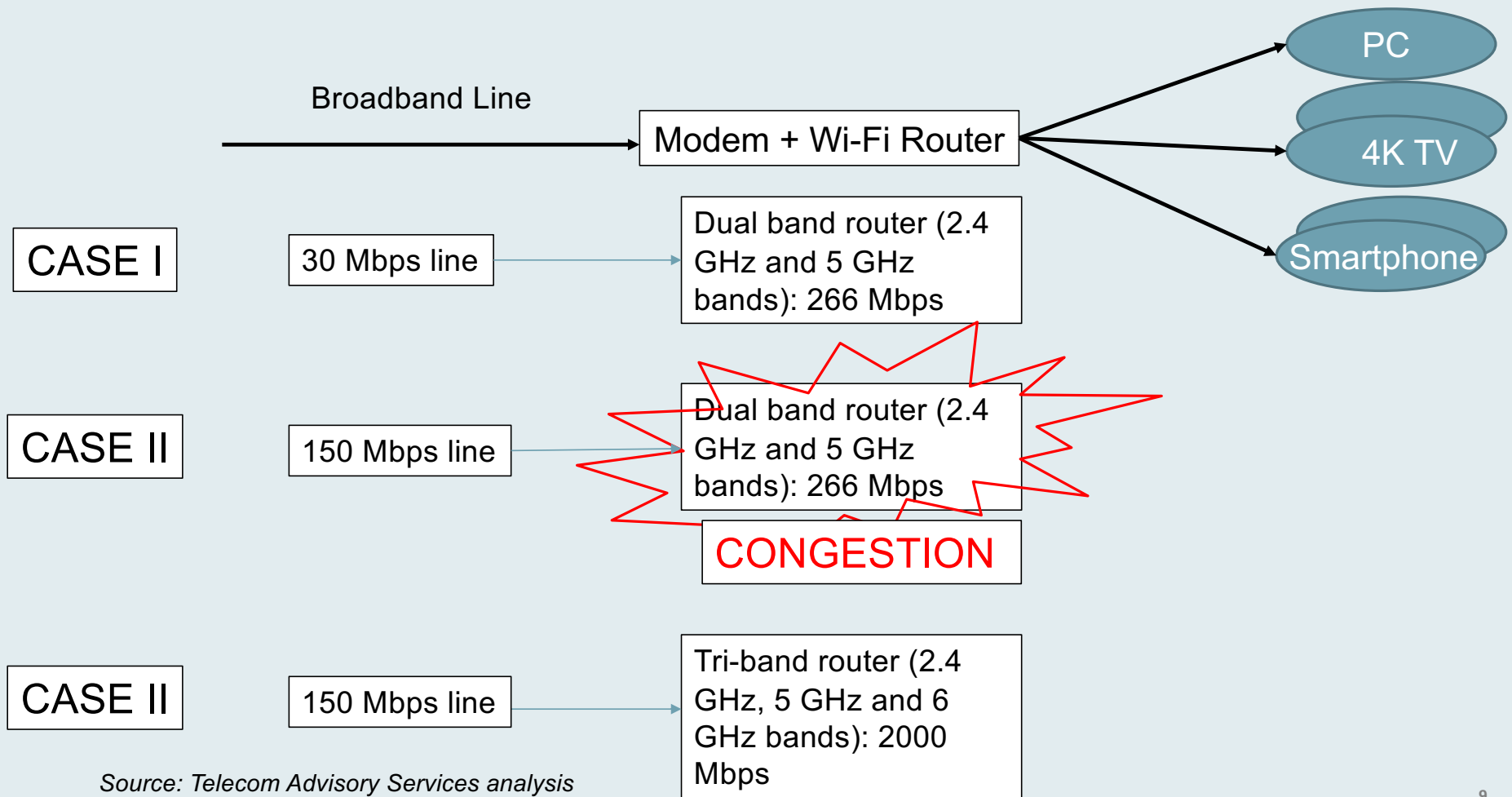
THE DEVELOPMENT OF WISP OPERATORS THANKS TO THE CONTRIBUTION OF THE 6 GHZ BAND WILL PLAY AN IMPORTANT ROLE IN CLOSING THE DIGITAL DIVIDE

NIGERIA: IMPACT ON CLOSING THE DIGITAL DIVIDE DUE TO WISP WITH 1,200 MHz ALLOCATION(2021-2030)



Source: TAS analysis

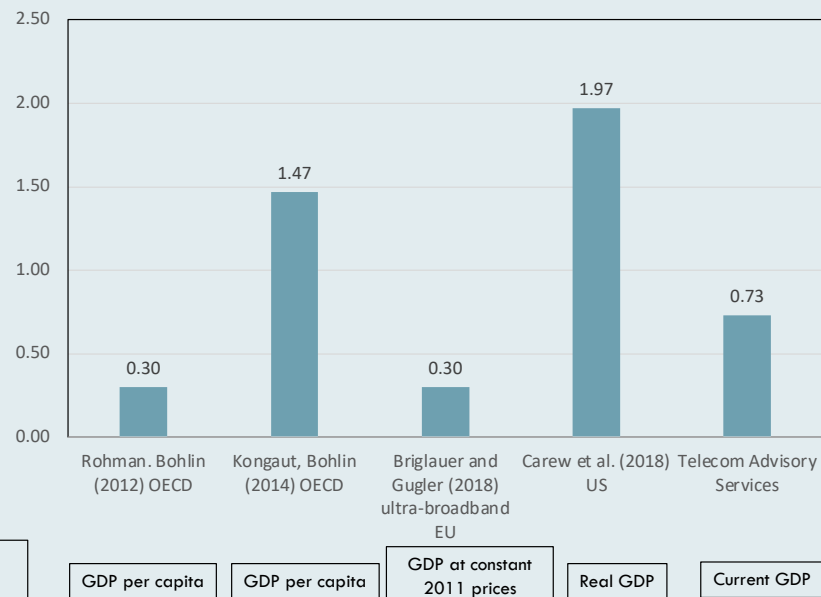
IN ADDITION, WI-FI 6 IS ALSO A GOOD APPROACH TO DEAL WITH RESIDENTIAL BROADBAND SERVICE CONGESTION



Source: Telecom Advisory Services analysis

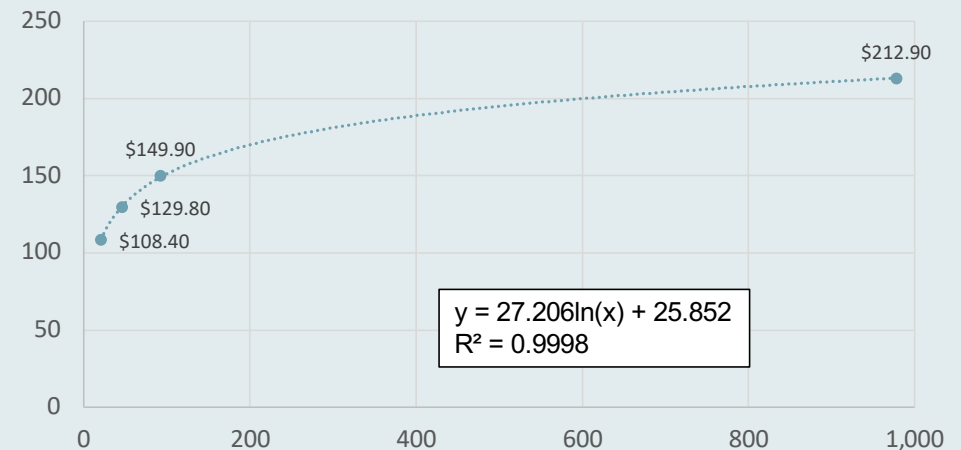
RESEARCH EVIDENCE INDICATES THAT THE INCREASE IN BROADBAND SPEED HAS A POSITIVE IMPACT ON ECONOMIC GROWTH AND CONSUMER SURPLUS

STUDIES MEASURING THE GDP IMPACT ON BROADBAND SPEED (IMPACT OF 100% INCREASE IN SPEED ON GDP) (%)



Sources: compiled by Telecom Advisory Services analysis

LOG CURVE OF RELATIONSHIP BETWEEN BROADBAND SPEED AND CONSUMER SURPLUS



Sources: Nevo et al. (2016); Liu et al. (2018); Telecom Advisory Services analysis

TOTAL CUMULATIVE VALUE OF GDP IMPACT RESULTING FROM INCREASING BROADBAND SPEED BY REDUCING WI-FI CONGESTION AMOUNTS TO US\$ 143 MILLION

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
(8) Mean speed with no 6 GHz (Mbps)	16.33	21.34	28.06	34.55	41.83	50.65	61.33	74.26	89.92	108.89
(9) Mean speed with 6 GHz (Mbps)	16.33	21.36	28.13	34.74	42.33	51.88	63.98	79.18	98.62	124.30
(10) Speed increase due to 6 GHz	0.00%	0.09%	0.24%	0.55%	1.20%	2.42%	4.33%	6.62%	9.67%	14.16%

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
(11) Impact speed on GDP	0.26%	0.26%	0.26%	0.26%	0.73%	0.73%	0.73%	0.73%	0.73%	0.73%
(12) Discount factor due Nigerian lower FBB adoption	3.36%	3.41%	3.46%	3.51%	3.56%	3.62%	3.67%	3.72%	3.78%	3.83%
(13) Increase in GDP (%)	0.00%	0.00%	0.00%	0.00%	0.0003%	0.0006%	0.0012%	0.0018%	0.0027%	0.0040%
(14) Nigeria GDP Billion US\$	\$514	\$588	\$669	\$757	\$854	\$964	\$1,089	\$1,230	\$1,389	\$1,568
(15) Impact (US\$ Million)	\$0	\$0	\$0	\$0	\$3	\$6	\$13	\$22	\$37	\$62

Total cumulative return to speed: US\$ 143 Million

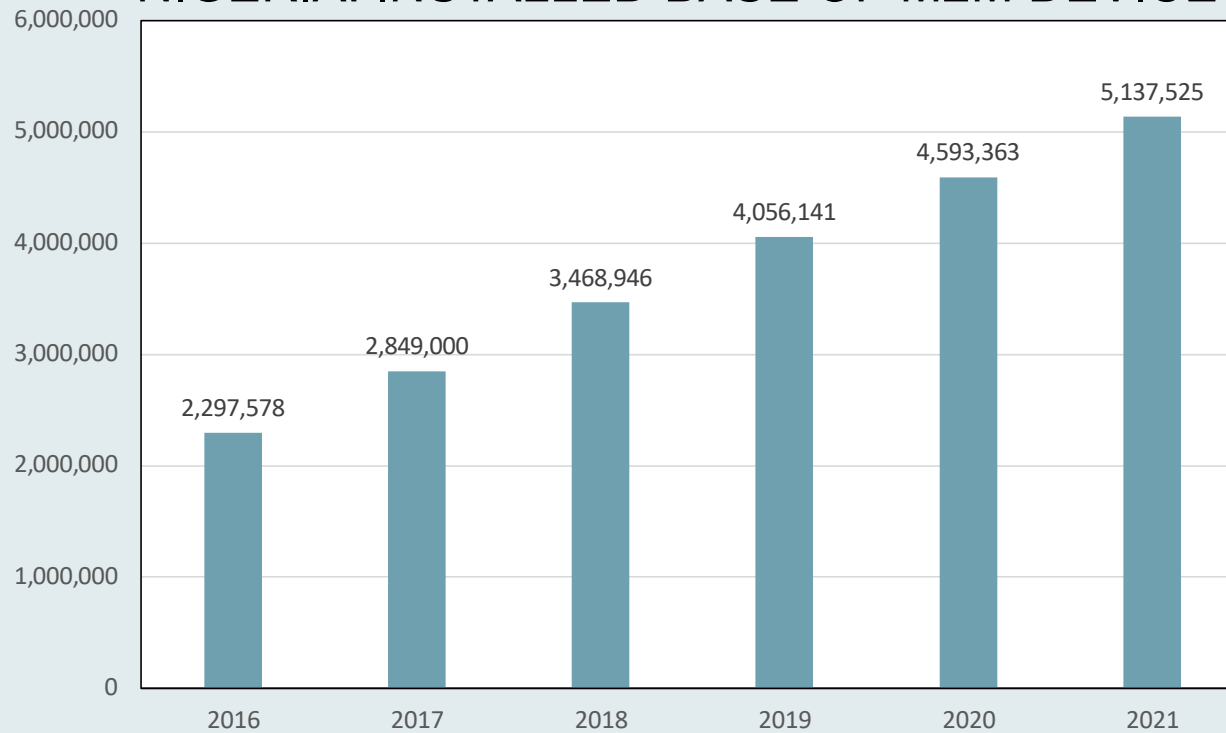
TOTAL CUMULATIVE CONSUMER SURPLUS IMPACT RESULTING FROM INCREASING BROADBAND SPEED BY REDUCING WI-FI CONGESTION AMOUNTS TO US\$ 85 MILLION

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
(1) Average Download Speed	16.33	21.34	28.06	34.55	41.83	50.65	61.33	74.26	89.92	108.89
(2) New Average Download Speed	16.33	21.36	28.13	34.74	42.33	51.88	63.98	79.18	98.62	124.30
(3) Demand for average download speed	\$46.90	\$54.98	\$63.82	\$72.52	\$81.78	\$92.34	\$95.96	\$99.58	\$103.21	\$106.83
(4) New Demand for average download speed	\$46.90	\$54.99	\$63.86	\$72.61	\$81.99	\$92.79	\$96.76	\$100.80	\$104.96	\$109.34
(5) Additional Monthly Consumer surplus	\$0.00	\$0.01	\$0.04	\$0.09	\$0.21	\$0.45	\$0.80	\$1.21	\$1.75	\$2.51
(6) Additional Yearly Consumer Surplus	\$0.00	\$0.15	\$0.44	\$1.06	\$2.50	\$5.43	\$9.62	\$14.57	\$20.98	\$30.10
(7) Fixed Broadband Connections with Wi-Fi (Millions)	0.671	0.707	0.745	0.785	0.827	0.871	0.917	0.966	1.017	1.071
(8) Impact (USD Millions)	\$0	\$0	\$0	\$1	\$2	\$5	\$9	\$14	\$21	\$32

Total cumulative consumer surplus : US\$ 85 million

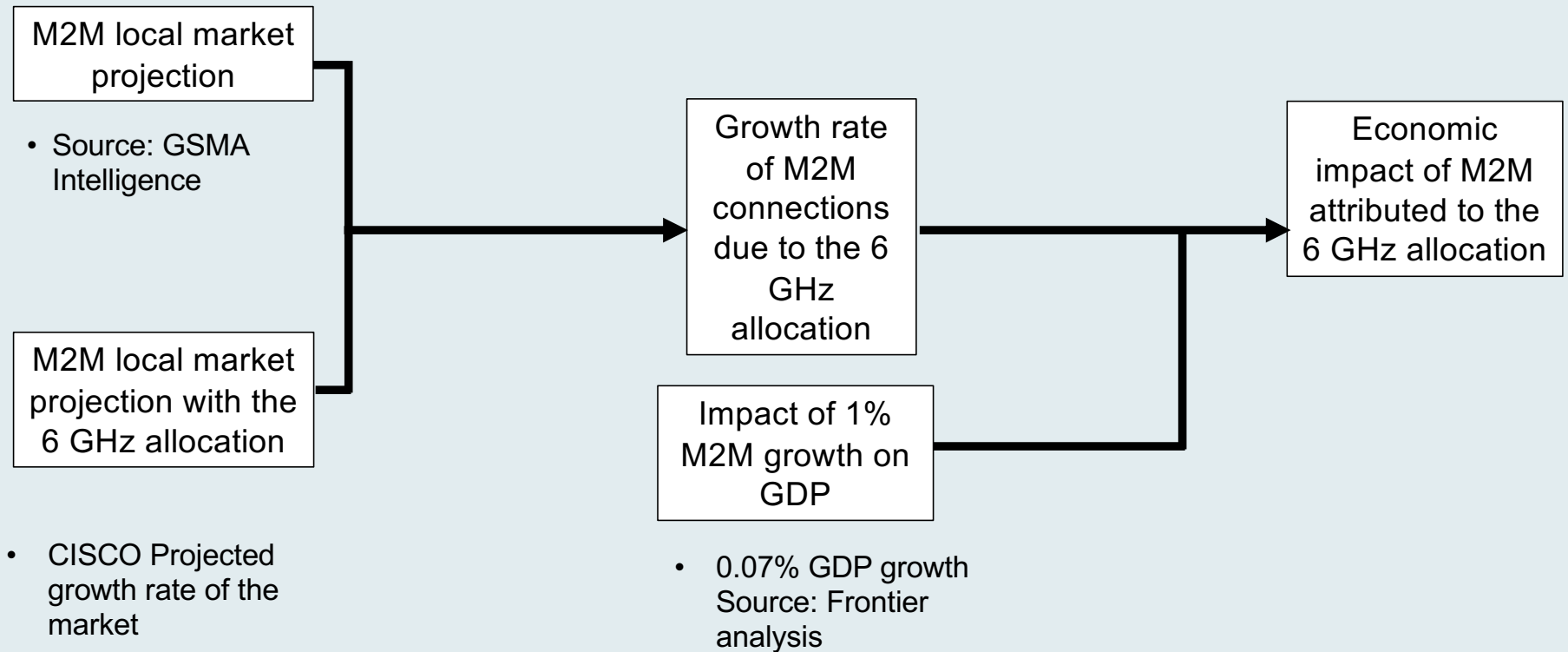
WITH A TOTAL MARKET ESTIMATE OF \$1,03 BILLION, THE NIGERIAN IoT SEGMENT IS QUITE SIZABLE

NIGERIA: INSTALLED BASE OF M2M DEVICES



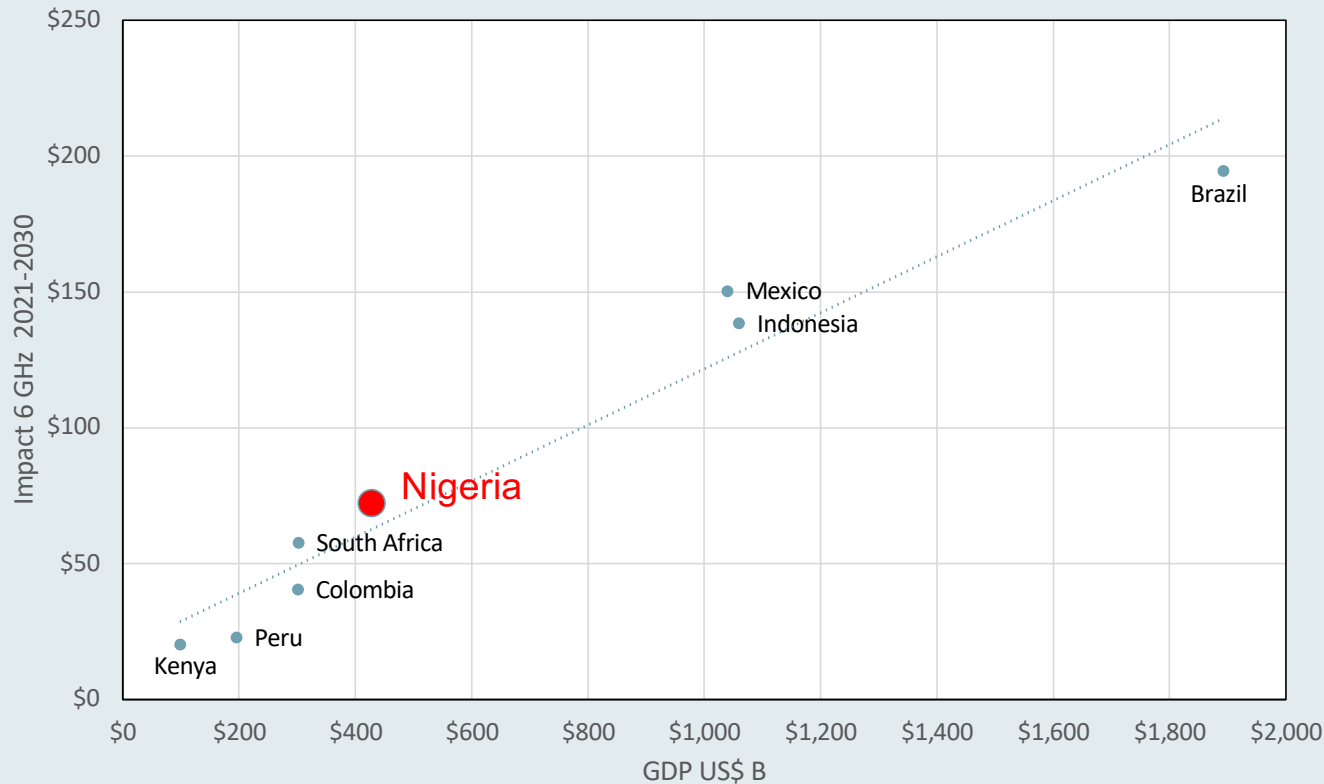
Source: GSMA Intelligence

METHODOLOGY FOR ESTIMATING THE ECONOMIC SPILLOVER OF IoT IN NIGERIA



THE ECONOMIC IMPACT OF THE DESIGNATION OF THE 6 GHz BAND FOR NIGERIA IS SIZABLE AND IN LINE WITH THE SIZE OF ITS ECONOMY

NIGERIA: IMPACT OF 6 GHz ALLOCATION IN RELATION WITH OTHER LATIN AMERICAN AND AFRICAN COUNTRIES



Country	Impact 2021-2030 (% 2030 GDP)
Kenya	20.43%
South Africa	19.12%
Nigeria	16.80%
Mexico	14.45%
Colombia	13.43%
Peru	11.71%
Brazil	10.28%
Indonesia	13.06%

Source: Telecom Advisory Services analysis

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