



**PROPOSED AMMENDMENTS TO THE INFORMATION AND COMMUNICATION TECHNOLOGIES
(FEES) REGULATIONS 2021**

A Report on the Regulatory Impact Assessment undertaken by the
Zambia Information and Communications Technology Authority Regarding Revision of Spectrum Annual
Assignment Fees

NOVEMBER, 2021

Executive Summary

This paper outlines the key findings of the Regulatory Impact Assessment (RIA) on proposed revision of spectrum annual assignment fees in the Information and Communication Technologies (Fees) Regulations undertaken by the Zambia Information and Communications Technology Authority (hereafter referred to as the Authority) between January, 2017 and June, 2020. The Authority is mandated in Section 6(2b) of the Information and Communication Technologies Act No.15 of 2009 to provide for the national frequency plans and facilitate the efficient use and allocation of frequency spectrum in Zambia. Frequency spectrum is a scarce natural resource and a key input in the ICT sector.

The current fees came into force in 2010 following the issuance of Statutory Instrument No. 34, The Information and Communication Technologies (Fees) Regulations, 2010. The key objective of the proposed spectrum price revision is to ensure that spectrum fee charges reflect the current and true economic value of spectrum in Zambia.

The Authority commissioned a spectrum audit and pricing review in 2017 to assess the value of spectrum in Zambia considering that the spectrum fees had not been revised since 2010. The consultant ATDI of France conducted the pricing review and proposed revised spectrum annual assignment fees for the Authority's consideration.

In addition, the Authority carried out a regional spectrum fees benchmark study of Kenya, Tanzania, Uganda, Namibia and South Africa. The countries were selected for benchmark as they have some similar social economy, geographic and demand and supply factors according to the June 2016 Report 'Zambia ICT Gap Analysis' submitted to the World Bank. The results of the study indicated that the current spectrum fee charges are well below average and do not reflect the true value of spectrum in Zambia.

Based on the results of the ATDI price review and the benchmark study, the Authority proposed revision of fees and consequently conducted a public consultation inviting comments to get views from industry stakeholders and the public. Various operators and interest groups responded to the publication.

The key recommendation of this report is that the proposed revised spectrum assignment fees should be adopted.

Adopting the proposed revision of the spectrum annual assignment fees will ensure that the key economic and technical factors that affect spectrum pricing are well accounted for in the determination of the price paid. Furthermore, the proposed price structure will encourage network investment and improvement of quality of service (QoS) by not penalizing denser transmitter deployment in the same allotment areas. The proposed revisions will also enhance the value that its holders place on it and in turn optimize its

use. The revision will consequently increase revenue to the treasury and return true value to the public for profitable business use of this natural scarce resource

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1.0. PURPOSE

This report outlines the key findings of the Regulatory Impact Assessment (RIA) on the proposed revision of spectrum annual assignment fees in Zambia undertaken by the Zambia Information and Communications Technology Authority (ZICTA) between January 2017 and December, 2020.

2.0. BACKGROUND

- 2.1 The current fees came into force in 2010 following the issuance of Statutory Instrument No. 34, The Information and Communication Technologies (Fees) Regulations, 2010.
- 2.2 In 2017, the Authority engaged a consultant, Advanced Topographic Development and Images (ATDI) of France to assess the value of the mobile broadband spectrum, fixed broadband, microwave links and broadcasting spectrum in Zambia and provide, where necessary, proposals for price revision.
- 2.3 Additionally, the Authority carried out a regional spectrum fees benchmark study of Kenya, Tanzania, Uganda, Namibia and South Africa in 2020. The countries were selected for benchmark as they have similar social economy, geographic and demand and supply factors according to the June 2016 Report 'Zambia ICT Gap Analysis' submitted to the World Bank. The results of the study indicated that the current spectrum fee charges are well below average and do not reflect the true value of spectrum in Zambia.
- 2.4 Based on the results of the ATDI price review and the benchmark study, the Authority proposed revision of annual fees and consequently conducted a public consultation inviting comments to get views from industry stakeholders and the public. The consultation process was part of a mandatory process under the Business Regulatory Review Authority Act No. 3 of 2014 which requires any public body to undertake a RIA prior to making any changes to the legal and regulatory environment. Various operators and interest groups responded to the publication.
- 2.5 Industry stakeholders raised several concerns regarding impact on consumer prices, quality of services (QoS), investment and network deployment. Consequently, the Authority reviewed the initial proposed fees to considering these industry views and opinions.
- 2.6 The report highlights the findings of price review study by the consultant ATDI and the benchmark study. The paper provides a summary of the findings of the RIA for the proposed revision of the

spectrum fees. The report presents an assessment of the options available to the Authority in dealing with the demonstrated problem with the 2010 spectrum fees being below the current regional average and not reflecting the true economic value of the spectrum.

2.7 The Authority is mandated to regulate the use of spectrum in line with the ICT Act. As part of its mandate to manage the scarce resource efficiently and effectively, the Authority is required to ensure that the price paid for spectrum in Zambia reflects its true value

3.0. PROBLEM STATEMENT

- 3.1. Radio frequency spectrum (spectrum) is a high-value limited resource and as such the Government and the people of Zambia should be compensated for its exploitation. Spectrum is used to convey information wireless from one place to another. According to the findings of the study conducted by ATDI on spectrum fees, the current spectrum fees for Zambia do not reflect the true economic value of the spectrum.
- 3.2. In addition to the fees being charged on existing spectrum bands not being reflective of the true economic value, there are no fees for the newly opened high-value spectrum bands in the 700 MHz and 800 MHz bands for mobile service and 23 GHz band.
- 3.3. The current pricing criteria has the potential to discourage network investment and deployment by charging fees per transmitter rather than per channel. Industry players have raised a similar concern.
- 3.4. Further, the current pricing criteria does not adequately provide for economic and technical factors that drive differentiation in value for frequency bands. For example, the market-driven differentiation in value between FM frequency channels below 90 MHz in the sound broadcasting industry or the difference in value between sub-1 GHz spectrum and the mid-bands due to different propagation characteristics.
- 3.5. The Authority undertook a regional benchmark to ascertain how the prices for spectrum in Zambia compared with those in similar countries, such as Tanzania, Uganda, Nigeria, Rwanda, Senegal, Botswana, Zimbabwe and Lesotho. A benchmark was conducted in these countries as they have similar social, economic, geographic and demand and supply factors according to the June 2016 Report 'Zambia ICT Gap Analysis' submitted to the World Bank. The table below shows the comparison in spectrum prices between the benchmark countries and Zambia.

Table 1 Comparison of Prices for Microwave Point to Point Links

No.	Country	Microwave Spectrum fee Dollars (USD)
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1	Zambia-Current	51.60 per transmitter
2	Tanzania	1000.00 per MHz
3	Uganda	120 per site
4	Nigeria	396.15 per hop (6/78GHz); 277.30 per hop (15GHz)
5	Kenya	560 per site
6	Rwanda	580 (5.6/7GHz); 312 (8/10/17GHz)
7	Senegal	N/A
8	Botswana	27 per link
9	Zimbabwe	400 per 1 MHz countrywide
10	Lesotho	97.05 per 1MHz

Table 2 Comparison of Prices for Digital Terrestrial Television (DTT)

No.	Country	DTT fee in Dollars (USD)
1	Zambia-Current	619.20 Urban, 258 Rural per transmitter
2	Tanzania	1000
3	Uganda	ERP6440-12885W=2200; 12885-19330W=2700 ERP 3865 W =1350; ERP 3865-6440W;
4	Nigeria	N/A
5	Kenya	3600-Zone A and 1786 Zone B
6	Rwanda	5,537 Urban, 110 rural
7	Senegal	N/A
8	Botswana	66.21 for 0-10KW;141.88 Above 10KW
9	Zimbabwe	N/A
10	Lesotho	164.34 :0-1KW; 285.82 above 1KW

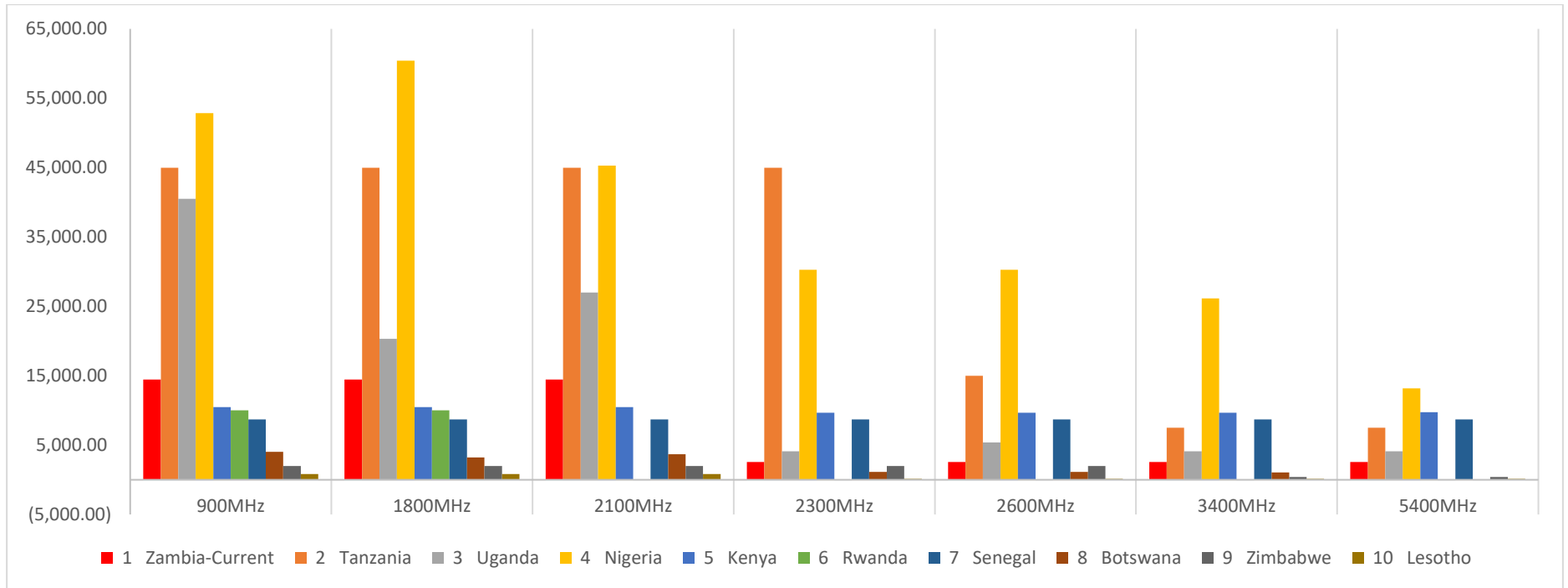


Figure 3 Comparison of Prices of Mobile and Broadband Fixed Wireless Access Frequency Band

RISK ASSESSMENT

Loss of Revenue

Encourage holding and inefficient use

Discourage network roll out

There is an urgent need to address the above matters. If the situation is left as it is, the Government and the people of Zambia will not get a fair value of spectrum resources.

4.0. OBJECTIVES

4.1. General Objective

To manage the utilization of spectrum in Zambia in order to encourage effective and efficient utilization of spectrum and improve service delivery to the nation by 2023.

To provide socio-economic benefit to all Zambians by 2022 by ensuring that the full value of radio spectrum frequency is reflected by xx %;

To revise the spectrum fees to reflect the true economic value of the spectrum;

To enhance the pricing spectrum resources in order for the country to get full value from spectrum resources;

4.2. Specific Objective

(a) To ensure that the assigned spectrum is used efficiently in order to achieve 96% population coverage by 2026;

(b) To facilitate utilization of three new spectrum bands in order to improve service delivery and introduction of new technologies by 2024;

(c) To ensure the Government obtains the full value of the radio spectrum by 2022 in order to provide socio-economic benefit to all Zambians by increasing revenue realisation from spectrum by xxx%;

5.0. IDENTIFICATION OF OPTIONS

The Authority identified three options namely –

- (a) maintain status quo;
- (b) introduction of the ICT (Radio Frequency Spectrum) Regulations; or
- (c) co-regulation.

5.1. MAINTAINING THE STATUS QUO

This option entails that the Authority continues to regulate the allocation and usage of spectrum using the current ICT (Fees) Regulations Statutory Instrument No. 48 of 2017. Maintaining the status quo will benefit the operators and possibly the consumer as the spectrum will be accessed at a cheaper rate. However, the current Regulations do not reflect the full economic value of the spectrum. This will imply that the spectrum that is a scarce natural resource will remain undervalued as the price paid will be below its economic value.

In addition, the Regulations do not provide fees for newly introduced bands such as 700 and 800 MHz band. This will impede innovation and the use of new technologies that would enhance digitization.

Further, the current Regulations discourage investment in network expansion by charging per transmitter instead of per channel. This has proved to be costly to the operators and ultimately contributes to lower quality of service.

The current Regulations do not take into consideration the advantages and disadvantages of the technical propagation characteristics of different bands used for same service in the determination of fees. This means that operators will pay the same fee for different bands that require different levels of investment to cover the same area.

5.2. INTRODUCTION OF THE ICT (RADIO FREQUENCY SPECTRUM) REGULATIONS

This option entails the introduction of the ICT (Radio Frequency Spectrum) Regulation to provide for revised fees and newly opened bands. Further, the current Regulations will be amended by repealing the provisions on spectrum fees, which will form part of the new Regulations.

Adopting the proposed revision of the spectrum fees will ensure that the key economic and technical factors that affect spectrum pricing are well accounted for in the determination of the price paid. Further, the proposed price structure will encourage network investment and improvement of quality of service (QoS) as operators will be free to invest into as many base stations as possible without incurring more costs.

The proposed revision of the spectrum fees will also enhance the value that its holders place on it and in turn optimize its use. The Authority does not expect a negative impact on operators and consumers as a result of the revised spectrum fees. Appreciating the true economic value of spectrum and valuing it accurately enabled the Authority to competitively assign 40 MHz in the 800 MHz band for USD26m as an initial one-off access fee, through a Restricted Granting Procedure pursuant to Section 54(6) of the ICT Act. Despite the use of the Restricted Granting Procedure, there was no negative impact on the operators and consumers.

In coming up with the proposal for revised fees, the Authority considered the challenges experienced by FM broadcasters. Despite the band 87.5 to 108Mhz spectrum being of high value, the fees were maintained for rural areas and users of spectrum above 90Mhz in urban areas. An upward adjustment is being proposed for spectrum below 90Mhz to reflect its full economic value as set out in [Annex 1](#).

The revision of spectrum fees will increase the socio-economic benefit to all Zambians and return true value to the public of this natural scarce resource.

5.3. CO-REGULATION

Under this option, the operators will determine the fees payable for spectrum. In addition, the operators will be responsible for monitoring and enforcement of spectrum usage. Co-regulation is faster and more flexible than regulatory approach. Further, it may reduce regulatory cost to the state. However, there is a possibility of collusion in the sector to undervalue the spectrum. This will not reflect the full economic value of the spectrum and consequently will lead to -

- i. loss of revenue for government;
- ii. inadequate resources for spectrum management for the Authority; or
- iii. regulatory capture.

This option is undesirable as it will not serve public interest.

6.0. COMPARISON OF COSTS AND BENEFITS OF OPTIONS

6.1. MAINTAINING THE STATUS QUO

No.	Description	Costs	Benefits
1	Government		
	Planning	5,700,000.00	
	Licencing	2,000,000.00	
	Monitoring and inspection	1,260,505.00	
	Enforcement	300,000.00	
	Spectrum fees		111,867,895.11
2	Businesses		
	Spectrum fees	111,867,895.11	
3	Consumers		
	Percentage of spectrum in the cost of service	0	

6.2. INTRODUCTION OF THE ICT (RADIO FREQUENCY SPECTRUM) REGULATIONS

No.	Description	Costs	Benefits
1	Government		
	Planning	5,700,000.00	
	Licencing	2,000,000.00	
	Monitoring and inspection	1,260,505.00	
	Enforcement	300,000.00	
	Spectrum fees		145,428,263.64
2	Businesses		
	Spectrum fees	145,428,263.64	
3	Consumers		
	Percentage of spectrum in the cost of service	0	

6.3. CO-REGULATION

No.	Description	Costs	Benefits
1	Government		
	Planning	5,700,000.00	
	Licencing	2,000,000.00	
	Spectrum fees		111,867,895.11
2	Businesses		
	Spectrum fees	111,867,895.11	
	Monitoring	1,260,505.00	

	Enforcement	300,000.00	
3	Consumers		
	Percentage of spectrum in the cost of service	0	

7.0. STAKEHOLDER CONSULTATION

The Authority undertook stakeholder consultations with the broadcasters, mobile service operators and internet service providers. The consultations took the form of physical stakeholder consultative meetings, call for comments published in the print media and targeted circulation for comments. The stakeholder consultative meetings were held between 2018 at the Authority's Lumumba Office. In November, 2019 a call for comments was published in the print media with a thirty days consultation period. In addition to the call for comments published in the print media, the Authority did the circulation for comments by email to relevant stakeholders.

Table 8 Summary of Public Consultation Responses and Authority Comments

No.	TOPIC	RESPONDENT	COMMENT	AUTHORITY RESPONSE
1	COUNTRYWIDE LICENSING	ISAPZ	The proposal to move certain bands from regional licensing to from to country wide licensing is expensive and will have a negative impact on delivery of connectivity.	Fees under these bands are subject to proration where the applicant is licenced to provide service in specified regions only.
2	COST OF CONSUMER SERVICES	ISPAZ	It was observed that compounding 2600MHz band to country wide will result into an increase by 1340% in consumer services. This is because spectrum cost is a fixed cost of sale in delivery of internet.	<p>Fees under these bands are subject to proration where the applicant is licenced to provide service in specified regions only.</p> <p>Consequently, spectrum pricing in 2600MHz will be pro-rated accordingly when an operator choses to offer services on a regional basis.</p>
3	COMPETITIVE LANDSCAPES	ISPAZ	The proposed price change will hinder setup of startup of ISP business with limited budget who intend to target regional markets. This will further reduce number of	Fees under these bands are subject to proration where the applicant is licenced to provide service in specified regions only.

			players on the market and hence impact competition.	
4	QUALITY OF SERVICE AND USER EXPERIENCE	ISPAZ	The proposed license fee increase for fixed services is high and it will discourage ISPs from using licensed frequencies for service delivery. This will in turn affect the quality of service as they will opt for unlicensed congested bands.	<p>Considering the spectrum prices in benchmark countries, we are of the opinion that this revision is measured and only brings the price of spectrum in Zambia to the average level in the region.</p> <p>Further, the Authority is aware of need to open more unlicensed (open access) spectrum and is currently considering 70/80 GHz and 60 GHz bands for unlicensed and light licensing authorization. It is envisioned that this will greatly reduce the cost of PtP, PtMpt and mesh dense networks. New guidelines</p>

				<p>for these bands will be issued before end of 2021.</p> <p>The Authority is also actively participating in regional and international studies and meetings to consider the feasibility of refarming the 6 GHz band for unlicensed use by 2024.</p>
5	GENERAL	AIRTEL	<p>Claim that they were not engaged in the process of study and determination unlike the NGN study</p>	<p>Airtel Zambia fully participated in the Price Model review study in 2016 where they were part of the consultation on views regarding the appropriate price models.</p> <p>Further, this open and unrestricted public consultation itself further provided Airtel with an opportunity to make</p>

				presentations on any aspect of the proposed fees.
6	Increase in the cost of doing business	AIRTEL	There has been an increase in the cost of doing business such as energy, kwacha depreciation, and high taxes, etc and increase in spectrum fees will worsen the already bad situation.	<p>ZICTA reviews annual audited financial statements from all licensed MNOs and is aware of the macro-economic environment and its impact on the ICT industry.</p> <p>The fees under review have not been reviewed for 11 years and the benchmark study (that included some countries where Airtel itself also operates) clearly demonstrated spectrum in Zambia is undervalued and needs to be reviewed.</p>
7	Impact on consumer pricing (validity of NGN)	AIRTEL	Considering that the cost of radio spectrum was an input in the NGN cost study, the radio spectrum fees revision should entail a new 'cost of service' study should be	We understand and note that spectrum is a direct factor in determining the cost of ICT good and services.

			<p>commissioned to determine MTR. From reading the document, we think the headlines of the problems in your market are definitely clear for the authorities. The solution is to have the right approach for this problem. A good whitelist/blacklist solution, in combination with a solid Import validation system, could set major steps to solve this problem and to increase VAT revenue</p>	<p>However, considering the spectrum prices in benchmark countries, we are of the opinion that this revision is measured and only brings the price of spectrum in Zambia to the average level in the region.</p>
8	Quantum of proposed fees	AIRTEL	<p>The proposed fees will be in excess of 76%</p>	<p>Considering the spectrum prices in benchmark countries, we are of the opinion that this revision is measured and only brings the price of spectrum in Zambia to the average level in the region.</p> <p>The Authority has not reviewed spectrum prices for 11 years. In South Africa, ICASA reviews spectrum fees annually based on</p>

				the average Consumer Price Index (CPI) or inflation.
9	Excessive increase in spectrum fees will discourage investment in ICT sector.	GSMA	The proposed spectrum fees will increase operator annual spectrum fees by 75%.	<p>Considering the spectrum prices in benchmark countries, we are of the opinion that this revision is measured and only brings the price of spectrum in Zambia to the average level in the region.</p> <p>The Authority has not reviewed spectrum prices for 11 years. In South Africa, ICASA reviews spectrum fees annually based on the average Consumer Price Index (CPI) or inflation.</p>
10	Impact on consumer cost to communicate.	GSMA	Spectrum price has a direct relation with the cost of ICT good and services.	<p>Agreed but increase is long overdue.</p> <p>Comparator Analysis – required.</p>
11	Single Frequency Network (SFN)	GOTV	GOTV Supports the review of spectrum pricing. However, considering the high inflation rate, businesses has slowed down.	In essence the charge proposed is per channel rather than per transmitter as per current trend.

			<p>The service provider proposes to ZICTA to allow only single frequency networks as opposed to multi frequency networks. SFN are spectral efficient and users must be encouraged to reuse frequency so that operators can be charged on channels rather than charge per transmitter.</p>	<p>The operator shall not be charged for reusing a channel in the same broadcasting area.</p>
8	Designation of Rural and Urban areas	GOTV	<p>The Authority designation of areas is only based on one parameter, population not factors like electricity supply, topography, number of television sets in an area, etc. The Authority must consider taking into consideration such factor when designating areas into urban or rural. The Authority should also develop a third set of area categorization called semi urban</p>	<p>ZICTA's main mandate is the regulation of ICTs and therefore categorization of areas in Zambia is obtained from central statistics (CSO) office or we simply align ourselves to the CSO categories.</p>

9	Price Increase	GOTV	<p>Sudden sharp increase (172% in the case of GOTV) coupled with other charges such as Taxes can negatively impact on growth and investment levels.</p> <ul style="list-style-type: none"> • Seek to understand what necessitated the increase. • Cost will be passed on to consumers 	<p>Considering the spectrum prices in benchmark countries, we are of the opinion that this revision is measured and only brings the price of spectrum in Zambia to the average level in the region.</p> <p>The Authority has not reviewed spectrum prices for 11 years. In South Africa, ICASA reviews spectrum fees annually based on the average Consumer Price Index (CPI) or inflation.</p>
10	Inconsistency with the 7NDP which says' a consistency and coherent business policy environment to foster business, increased	GSMA	Such significant increase in spectrum fees may not align with the 7NDP and consequently hinder sectoral growth.	Considering the spectrum prices in benchmark countries, we are of the opinion that this revision is measured and only brings the price of spectrum in Zambia to the average level in the region.

	investment in ICT infrastructure.			The Authority has not reviewed spectrum prices for 11 years. In South Africa, ICASA reviews spectrum fees annually based on the average Consumer Price Index (CPI) or inflation.
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Based on the price model review and the benchmark study, the Authority proposed fee revisions and conducted a public consultation to gather views and opinions from industry stakeholders and the public.

The public consultation provided the Authority with information on the industry stakeholders that will be affected by the proposed revisions and, from their perspective, how they will be affected by the proposed price changes.

The Authority received five (5) responses to the public consultation as summarized in Table ___ below. It should be noted that ISPAZ and GSMA associations represent a huge number ICT industry stakeholders views and opinions.

1.0. PROPOSED SPECTRUM ANNUAL FEES REVISIONS

The proposed revisions to the spectrum annual assignment fees are shown Table 1.

Table 1 Current and Proposed Spectrum Annual Assignment Fees

Spectrum band	Band limits	Current		Fee mode
		Fee mode	Unit fee (ZMW)	
Miscellaneous				
Application Processing Fee	-	Per Application	K66.60	<i>Per Application</i>
Duplicate licence	-	Per issue	K66.60	<i>Per issue</i>
Class Licences				
Radio location	-	Per transmitter (station)	K83.40	<i>Per transmitter (station)</i>
Citizen Band	27MHz	Per transmitter (station)	K49.80	<i>Per transmitter (station)</i>
Radio Model licence	-	Per transmitter (station)	K66.60	<i>Per transmitter (station)</i>
Aeronautical Commercial Licence	All Aeronautical bands	Per channel per broadcasting area	K1,666.80	<i>Per channel per broadcasting area</i>
Aeronautical Non-	All Aeronautical	Per channel per	K833.40	<i>Per channel per</i>

Spectrum band	Band limits	Current		Fee mode
		Fee mode	Unit fee (ZMW)	
commercial Licence	bands	broadcasting area		<i>broadcasting area</i>
Aircraft Certification	All Aeronautical bands	Per Aircraft	K416.70	<i>Per Aircraft</i>
Amateur licence	All Amateur bands	Per certificate	K104.10	<i>Per certificate</i>

Broadcasting

FM Sound Broadcasting	87.5 – 108MHz	Per transmitter (station)	Lusaka, Copperbelt and Livingstone broadcasting areas: K5,000.10 Others: K1,666.80	<i>Per channel per broadcasting area</i>
SW/MW Sound Broadcasting	535.5 – 1606.5 kHz 4750 – 5060 kHz 5900 – 26100 kHz	Per transmitter (station)	K5,000.00	<i>Per channel</i>
TV Broadcasting - Terrestrial	470 – 694 MHz	Per transmitter (station)	Lusaka, Copperbelt and Livingstone broadcasting areas: K10,000.00 Others: K4,166.70	<i>Per channel per broadcasting area</i>

Land Mobile

Spectrum band	Band limits	Current		Fee mode
		Fee mode	Unit fee (ZMW)	
Land Mobile - HF	0.009 -30MHz	Per channel per broadcasting area	Standard HF shared channel: K833.40 per channel.	<i>Per channel per broadcasting area</i>
			Standard HF exclusive channel: K1,666.80 per channel.	
			Special channels (Emergency channel, common use channels): Free	
Land Mobile VHF/UHF	138 – 174MHz 230 – 235MHz 335.4 – 399MHz 406 – 415MHz 425 – 430 MHz 440 – 450MHz	Per channel per broadcasting area	Standard (simplex) channel: K833.40 per channel per broadcasting area.	<i>Per channel per broadcasting area</i>
			Special channels (Emergency channel, common use farmers channels): Free.	
Maritime bands	All maritime bands	Per channel per broadcasting area	Standard (simplex) channel: K833.40 per channel per broadcasting area.	<i>Per channel per broadcasting area</i>
			Special channels (Emergency channel, common use maritime channel): Free.	
SADC HF Cross Border	Cross-border channels	Per licence	K1,666.80	<i>Per licence</i>
Commercial (Community) Repeater	-	Per licence	K4,166.70	<i>Per licence</i>
Paging Commercial Licence	-	Per licence	K16,666.80 - Country wide	<i>Per licence</i>

Mobile and Broadband Fixed Wireless Access

Spectrum band	Band limits	Current		Fee mode
		Fee mode	Unit fee (ZMW)	
450 MHz Band	452.5 – 457.5 MHz / 462.5 – 467.5 MHz	Per 1MHz per province	K4,166.70 (K41,667.00 - Countrywide)	<i>Per 1MHz - Countrywide</i>
700 MHz Band	703 – 733 MHz / 758 – 788 MHz	N/A	N/A	<i>Per 1MHz - Countrywide</i>
800 MHz Band	832 – 862 MHz / 791 – 821 MHz	N/A	N/A	<i>Per 1MHz - Countrywide</i>
900 MHz GSM-R	876 – 880 MHz / 921 – 925 MHz	Per 200KHz - Countrywide	K46,666.80	<i>Per 200KHz - Countrywide</i>
900 MHz Band	880 – 915 MHz / 925 – 960 MHz	Per 200KHz - Countrywide	K46,666.80 (K233,334.00 per 1MHz Countrywide)	<i>Per 1MHz - Countrywide</i>
1800 MHz Band	1 710 – 1 785 MHz / 1805 – 1880 MHz	Per 200KHz - Countrywide	K46,666.80 (K233,334.00 per 1MHz Countrywide)	<i>Per 1MHz - Countrywide</i>
2100 MHz Band (FDD)	1 920 – 1 980 MHz / 2110 – 2170 MHz	Per 200KHz - Countrywide	K46,666.80 (K233,334.00 per 1MHz Countrywide)	<i>Per 1MHz - Countrywide</i>
2100 MHz Band (TDD)	2010 – 2025 MHz	Per 200KHz - Countrywide	K46,666.80 (K233,334.00 per 1MHz Countrywide)	<i>Per 1MHz - Countrywide</i>
2300 MHz band	2300 – 2400MHz	Per 1MHz per province	K4,166.70 (K41,667.00 - Countrywide)	<i>Per 1MHz - Countrywide</i>
2600 MHz band	2500 – 2690MHz	Per 1MHz per province	K4,166.70 (K41,667.00 - Countrywide)	<i>Per 1MHz - Countrywide</i>
3500 MHz band	3400 – 3600MHz	Per 1MHz per province	K4,166.70 (K41,667.00 - Countrywide)	<i>Per 1MHz - Countrywide</i>
5400 MHz band	5470 – 5720MHz	Per 1MHz per province	K4,166.70 (K41,667.00 - Countrywide)	<i>Per 1MHz per province</i>

Spectrum band	Band limits	Current		Fee mode
		Fee mode	Unit fee (ZMW)	
10.5GHz band	10.15-10.3 GHz / 10.5-10.65 GHz	Per 1MHz per province	K4,166.70 (K41,667.00 - Countrywide)	Per 1MHz per province
Fixed Links				
Fixed Point to Point Links	5 GHz	Per transmitter	K833.40	Per 1 MHz Country Wide
	6/7/8 GHz			
	11 GHz			
	13 GHz			
	15 GHz			
	18 GHz			
	23 GHz			
Unlicensed Spectrum and PPDR				
ISM Bands	All Unlicensed bands	N/A	Free	Per transmitter
Public Protection and Disaster Relief	All PPDR bands	-	-	N/A
Satellite Services				
All Satellite bands	-	Per transmitter (Dependant on the station type)	Cross Border: K39,000.00	Per Station Earth
			Domestic Urban: K4,166.70	
			Domestic Rural: K1,666.80	
			-	
			Radio Determination: Free	
			Satellite Based Devices: K416.70	
			Satellite News Gathering: K416.70	

2.0. ASSESSMENT OF AVAILABLE OPTIONS

2.1. The following options are available to the Authority regarding the revision of spectrum annual fees:

Option One: Maintain current fees

Option Two: Adopt the proposed revised fees

3.0. PREFERRED OPTION BY THE AUTHORITY

Option Two is the preferred option by the Authority from the two options considered. The choice is based on the assessment provided in the preceding section which demonstrated that the option will reflect the true value of the spectrum and provide various benefits to the ICT sector. The option will also adequately address the identified shortcomings in the current fee schedule.

4.0. IMPLEMENTATION PLAN FOR THE PREFFERED OPTION

To implement the proposed revisions to the spectrum annual assignment fees, several actions will be required to be undertaken by the Authority and the Ministry of Transport and Communications. These steps are highlighted in the implementation plan below.

Table 2 Implementation Plan

Objective	Activities	Responsibility	Timeline
Revisions Spectrum Annual Assignment Fees to reflect the true economic value of the spectrum and address identified inadequacies	Revoke Statutory Instrument No. 48, The Information and Communication Technologies (Fees) Regulations, 2017 and issue new Statutory Instrument	MTC ZICTA Ministry of Justice	Q4, 2021
	Issue the Spectrum Annual Assignment Fees Guidelines	ZICTA	Q1, 2022

5.0. KEY FACTORS IN SPECTRUM PRICING

- 5.1. The price of spectrum is dependent on various key factors like social, economic, and technical parameters like per capital GDP, cost of spectrum management, bandwidth, and coverage, population, among others.
- 5.2. The determination and establishment of spectrum fees are closely linked to economic and market conditions and technical factors such as type, efficiency and quality of technologies and services. The ITU 2016 guidelines on the Review of Spectrum Pricing Methodologies and the Preparation of Spectrum Fee Schedules shows linkages of economic and technical factors on spectrum price as depicted Figure 1.

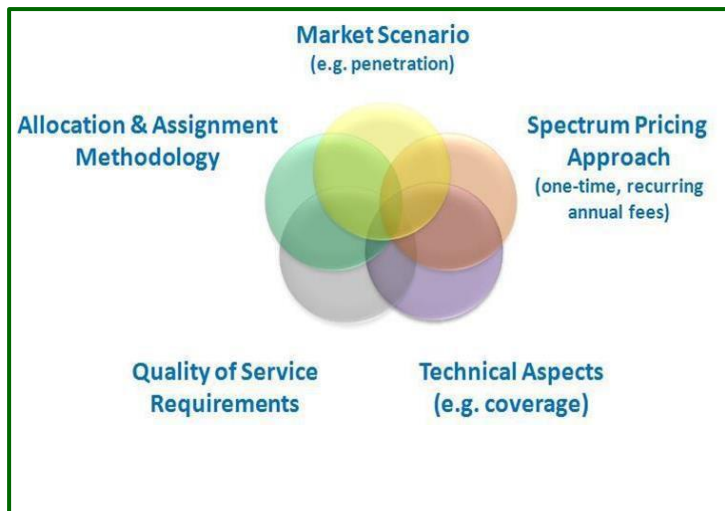


Figure 1 Spectrum Price Factor Interlinkages

- 5.3. Spectrum propagation characteristic is the main factor that affects the cost of spectrum. Lower spectrum bands have better signal propagation characteristics allowing for fewer sites to provide the needed coverage for a given area, and a better in-building coverage. The need for fewer sites (and hence lower network costs) together with better service quality tends to make spectrum in lower frequency bands more valuable than higher bands. The extent to which lower frequency bands provide benefits over higher frequency band will vary with the characteristics of the market to be served.
- 5.4. Other technical factors that affect cost of spectrum include:
- a) Shared use or exclusive use
 - b) Amount of spectrum (bandwidth) used
 - c) Coverage area
 - d) Type of radio service and purpose of spectrum use
 - e) Effective Isotropic Radiated Power
 - f) Level of frequency re-use
- 5.5. The size of the population in the coverage area will determine the economic potential. National income levels influence the percentage of the population that takes up the service and the extent to which they use those services. The expected level of competition in the downstream market will also affect expected Average Revenue per User, and thereby lead to differences between markets in the value of spectrum and annual fees. Costs will be higher, if the population is spread out over a larger coverage area.

5.6. Other economic factors that affect cost of spectrum are:

- a) Taxes
- b) GDP per capital
- c) Competition

6.0. PRICE MODEL REVIEW

6.1. Current Spectrum Pricing Model

ZICTA spectrum fees are calculated using the following formula:

$$Sf = F \times B \text{ (MHz)} \times \rho \times \dots\dots\dots (1)$$

Sf: stands for spectrum fee.

F: stands for the fee as set by the Authority and applied in accordance with the frequency band of the spectrum assigned.

B(MHz): stands for the total assigned bandwidth.

ρ: stands for re-use factor. This is equal to one (01) for each specified region relating to which spectrum has been dedicated to a user and ten nine (10) in all cases where spectrum is dedicated to a user for the whole country.

σ: stands for the sharing factor. This is equal to one (01) for each specified region relating to which spectrum is shared.

6.2. ATDI Proposed Spectrum Pricing Model

The consultant ATDI proposed that all individual spectrum fees are calculated based on Opportunity Cost and Administered Incentive Pricing (AIP) fee formula, represented by this general functional form:

$$Sf = F \times B \times \rho \times \sigma \times I \times M_{pub} \dots\dots\dots (2)$$

Sf: Spectrum fee

F: fee Modifier applied in accordance with the frequency band characteristics

B (MHz): total assigned bandwidth in Megahertz (MHz)

ρ: regional re-use factor; equals to one (1) for each specified region relating to which spectrum has been dedicated to a user; ten (10), where spectrum is dedicated to a user for whole country

σ: operator sharing factor; equals to one (1) for each specified region relating to which spectrum has been dedicated to a user.

σ is relevant mainly to BWA and fixed microwave links, as MNOs cannot share spectrum.

I : Site location: Urban or Rural Areas I is an arbitrary factor unit, relative coefficient 0 to 1; it serves as a modifier. I is 1 for Urban and fraction for Rural set according to service and band

M_{pub} (K/MHz): Basic price unit of 1 MHz, set by ZICTA, depends on Public Interest. It considers GDP per capita, may change annually depending on inflation and treasury factors.

Except S_f (Kwacha), M_{pub} (Kwacha /MHz) and B (MHz), all other parameters have no units as they serve as modifiers.

- 6.3. The modifier I defines the socio-economic development within urban rural and areas and classifies different fees. I has two (2) value 1 for Urban Districts and fractional value for Rural Districts depending on service and band concerned. Table 5 shows the Urban Districts as per CSO data and note that any district outside this table will be considered rural.

Table 3 Urban Areas as per CSO data

No.	Urban Centre Name	Licensing Area Reference Centre Coordinates	
1	Lusaka	28°22'00" E	15°26'00" S
2	Kitwe	28°13'00" E	12°47'00" S
3	Ndola	28°38'00"E	12°59'00"S
4	Kabwe	28°15'00" E	14°10'00" S
5	Chingola	27°51'00"E	12°32'00"S
6	Mufulira	28°14'00"E	12°33'00"S
7	Livingstone	25°59'00" E	17°30'00" S
8	Luanshya	28°24'00"E	13° 8'00" S
9	Chipata	32°36'00" E	13°35'00" S
10	Kasama	31°10'00" E	10°12'00" S
11	Solwezi	26°25'00" E	12°10'00" S
12	Mansa	28°53'00" E	11°10'00" S
13	Chililabombwe	27°50'00"E	12°22'00"S
14	Mazabuka	27°44'00"E	15°51'00"S
15	Kafue	28°10'00"E	15°45'00"S
16	Choma	26°58'00"E	16°50'00"S
17	Kalulushi	28° 5'00"E	12°50'00"S
18	Mongu	23°08'00"E	15°15'00"S

- 6.4. Fee F , Specifics for RF: 450–2100 MHz

Formula (2) emphasizes the value of mobile 900 MHz band. Due to the mobile economy of scale and propagation characteristics of the 900 MHz band, the frequency bands around 900 MHz are from the economic point of view more valuable than any other, and so they have a higher value.

Moreover, in lower frequencies (450–470 MHz), there is insufficient bandwidth to provide for the Zambian operators capacity and broadband communications. Consequently, two relative functions [F(f); F(900)max=1] are defined to describe the idea, which is illustrated in Figure 2. The rationale behind this recommendation is the popularity of mobile services and the increasing use by existing operators means the frequency band has an increasing marginal value. This, coupled with the fact that there are likely to have all potential operators keen to run services in this band, means the bands are considered subject to excess demand. Figure 2 illustrates the relative cost of spectrum as a function of frequency band. Taking frequency band 900 MHz band as the most valuable band F(900)max=1 and the relative value of F (f) is continuous.

At 900 MHz F(f)max=F(900)=1, and at other frequencies, F(f)=

- F(450) = 0.87 F(f)max
- F(600) = 0.94 F(f)max
- F(800) = 0.99 F(f)max
- F(2100) = 0.17 F(f)max

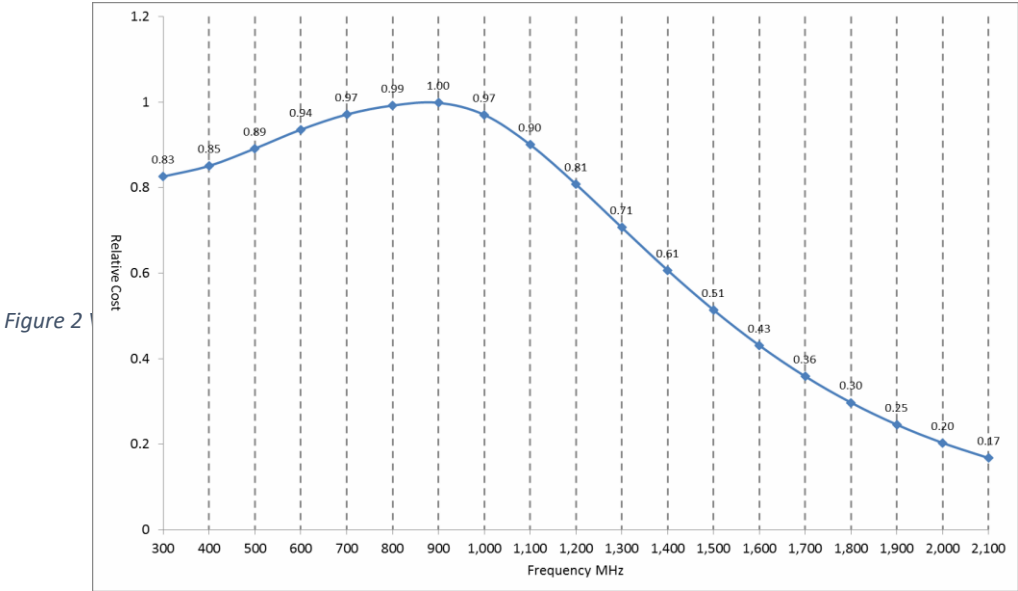


Figure 3 The modifier F for the band 450-2100 MHz

The procedure described above for the calculation of the public fee applies to the authorization of use of any mobile frequency within the range 450 to 2,100 MHz. The following Formulas 3 and 4

can therefore be used to calculate modifier F for bands at with centre frequency at or less than 900 MHz and for bands greater than 900 MHz, respectively.

$$F(f) = \frac{0.05 + 0.011 \times 10^{-6 \left(\log \left(\frac{f}{900} \right) \right)^2}}{0.0611} \dots\dots\dots (3)$$

$$F(f) = \frac{0.001 + 0.06 \times 10^{-6 \left(\log \left(\frac{f}{900} \right) \right)^2}}{0.0611} \dots\dots\dots (4)$$

6.5. Factor F - Specifics for RF: Broadband Wireless Access, ISPs, 2.3–10.5 GHz

In higher RF, coexistence and re-use are easier, due to the excessive propagation attenuation, and lower antenna side lobes; moreover, there is more available Spectrum. Therefore, regarding ISPs 2.3/2.6/3.5/5.4/10.5 GHz ISP bands, the interest of ZICTA is that when possible, higher RF will be used. The factor F(f) looks as:

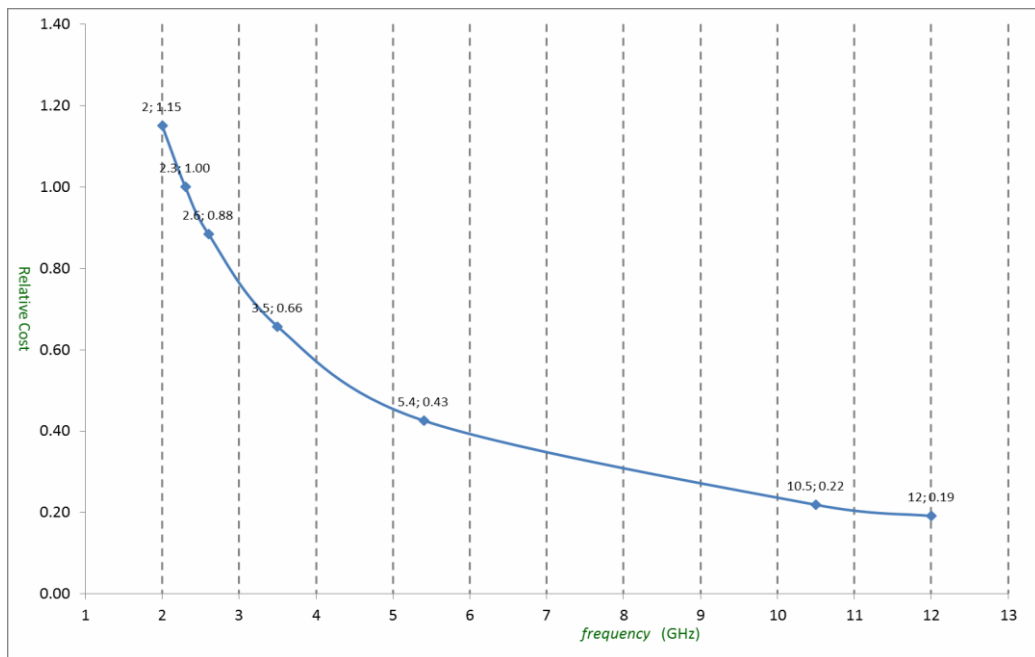


Figure 4 Modifier F for 2.3 - 10.5 GHz

The Equation 5 may also serve for RF below 2.3 GHz and above 12 GHz; e.g. F is (2.3/2)=1.15 for 2 GHz, and F is 0.19 for 12 GHz.

$$F(f_{GHz}) = \frac{2.3}{f_{GHz}} \dots\dots\dots(5)$$

Equation (5) provides this relative coefficient for the different BWA bands:

F (2.3 GHz) = Fmax=1 for 2.3 GHz ISPs

- F(2.6 GHz) = 0.88 for 2.6 GHz
- F(3.5 GHz) = 0.66 for 3.5 GHz
- F(5.4 GHz) = 0.43 for 5.4 GHz
- F(10.5 GHz) = 0.22 for 10.5 GHz

6.6. Factor F-Specific for RF: Specifics for Point to Point Links

The two relative functions [F (f); F(6)max=1] are illustrated in the following Figure 4. The factor F(f) looks as:

$$F(f_{GHz}) = \frac{6}{f_{GHz}} \dots\dots\dots (6)$$

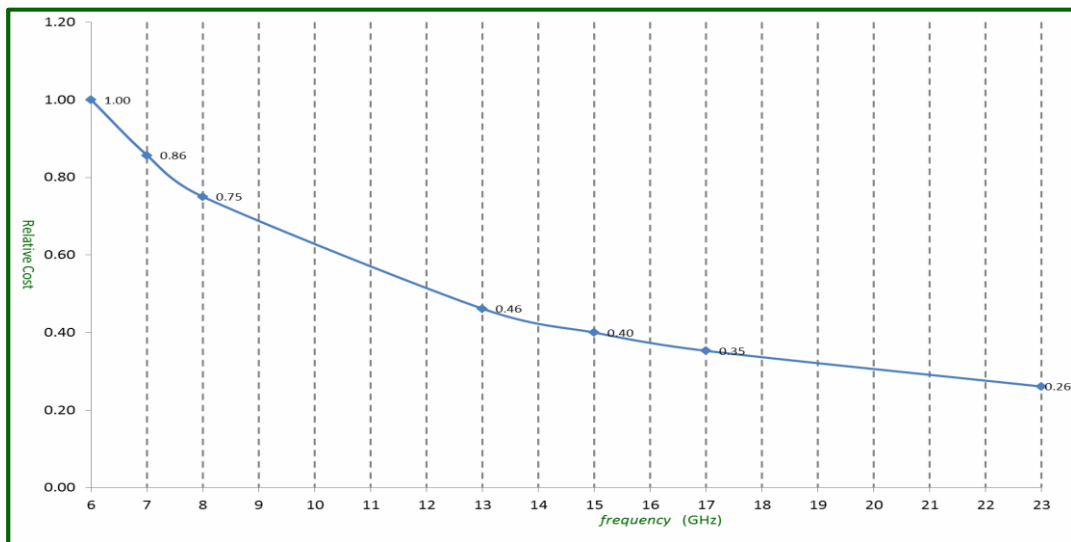


Figure 5 Modifier F showing the relative cost of spectrum for point-to-point frequency bands

Equation (6) provides this relative coefficient for the different PtP bands with F (6 GHz) = Fmax=1 for 6 GHz links

- F(7 GHz) = 0.86 for 7 GHz links
- F(8 GHz) = 0.75 for 8 GHz links
- F(13 GHz)= 0.46 for 13 GHz links
- F(15 GHz)= 0.40 for 15 GHz links
- F(17 GHz)= 0.35 for 17 GHz links
- F(23 GHz)= 0.26 for 23 GHz links

6.7. Calculation of Fee

Table 5 denotes the proposed maximal **Mpub** values for the specified service. The proposed **Mpub** maybe changed depending on the current economic factors. Given that the annual fees are intended to optimize the use of the RF spectrum, and to maximize the treasury incomes. The value of Mpub is a balance between minimal fees, to advance new technologies, coverage and capacity; versus maximal fees, to avoid assignment to an operator that will not use the RF spectrum efficiently.

ADTI proposed the following Mpub to that will determine the price of spectrum in Zambia and according to ATDI, this will reflect the correct spectrum value.

Table 4 Basic price Unit as a function of frequency band

Mpub	Service	RF (MHz)	Maximal Annual Fee (Kwacha/MHz)
Mpub_TV	UHF TV	470-694	No change
Mpub_cel	Cellular	450–2,300	K400,000
Mpub_BWA	BWA	2,300–10,650	K80,000
Mpub_PtP	PtP	1,350–24,000	K100,000

7.0. REGIONAL BENCHMARKING

Table 5 Public Consultation Respondents

No.	Respondent	Address
1	Africonnect Zambia Limited	STAND NO. 4015. THE GALERY OFFICE PARK, LAGOS ROAD. LUSAKA
2	Airtel Zambia Limited	PO BOX 320001 LUSAKA
3	Internet Service Providers Association of Zambia (ISPAZ)	C/O ZAMNET COMESA BUILDING. P.O BOX 388299 LUSAKA
4	GSM Association (GSMA) Industry organization that represents the interests of	GSMA FLOOR 2 DELTA CORNER ANNEX CHIROMOROAD/RING ROAD

	mobile network operators worldwide	NAIROBI KENYA.
5	GoTV	GOTV ZAMBIA P.O BOX 320011 LUSAKA

7.1. Table 8 shows a summary of the views and comments received in the consultation conducted in November 2019

Table 6 Summary of Public Consultation Responses and Authority Comments

No.	TOPIC	RESPONDENT	COMMENT	AUTHORITY RESPONSE
1	COUNTRYWIDE LICENSING	ISAPZ	The proposal to move certain bands from regional licensing to from to country wide licensing is expensive and will have a negative impact on delivery of connectivity.	There is new model includes a modifier I that will enable the Authority to assign spectrum with a countrywide fee mode on a regional basis.
2	COST OF CONSUMER SERVICES	ISPAZ	It was observed that compounding 2600MHz band to country wide will result into an increase by 1340% in consumer services. This is because spectrum cost is a fixed cost of sale in delivery of internet.	There is new model includes a modifier I that will enable the Authority to assign spectrum with a countrywide fee mode on a regional basis. Consequently, spectrum pricing in 2600MHz will be pro-rated accordingly when an operator choses to offer services on a regional basis.

3	COMPETITIVE LANDSCAPES	ISPAZ	The proposed price change will hinder setup of startup of ISP business with limited budget who intend to target regional markets. This will further reduce number of players on the market and hence impact competition.	There is new model includes a modifier I that will enable the Authority to assign spectrum with a countrywide fee mode on a regional basis.
4	QUALITY OF SERVICE AND USER EXPERIENCE	ISPAZ	The proposed license fee increase for fixed services is high and it will discourage ISPs from using licensed frequencies for service delivery. This will in turn affect the quality of service as they will opt for unlicensed congested bands.	<p>Considering the spectrum prices in benchmark countries, we are of the opinion that this revision is measured and only brings the price of spectrum in Zambia to the average level in the region.</p> <p>Furthermore, the Authority is aware of need to open more unlicensed spectrum and is currently considering 70/80 GHz and 60 GHz bands for unlicensed and light licensing authorization. It is envisioned that this will greatly reduce the</p>

				<p>cost of PtP, PtMpt and mesh dense networks. New guidelines for these bands will be issued before end of 2021.</p> <p>The Authority is also actively participating in regional and international studies and meetings to consider the feasibility of refarming the 6 GHz band for unlicensed use by 2024.</p>
5	<p>Claim that they were not engaged in the process of study and determination unlike the NGN study</p>	AIRTEL		<p>Airtel Zambia fully participated in the Price Model review study in 2016 where they were part of the consultation on views regarding the appropriate price models for mobile and fixed link spectrum.</p> <p>Furthermore, this open and unrestricted public consultation</p>

				<p>itself further provided Airtel with an opportunity to make presentations on any aspect of the proposed fees.</p>
6	Increase in the cost of doing business	AIRTEL	<p>There has been an increase in the cost of doing business such as energy, kwacha depreciation, and high taxes, etc and increase in spectrum fees will worsen the already bad situation.</p>	<p>ZICTA reviews annual audited financial statements from all licensed MNOs and is aware of the macro-economic environment and its impact on the ICT industry.</p> <p>The fees under review have not been reviewed for 11 years and the benchmark study (that included some countries where Airtel itself also operates) clearly demonstrated spectrum in Zambia is undervalued and needs to be reviewed.</p>

7	Impact on consumer pricing (validity of NGN)	AIRTEL	<p>Considering that the cost of radio spectrum was an input in the NGN cost study, the radio spectrum fees revision should entail a new 'cost of service' study should be commissioned to determine MTR. From reading the document, we think the headlines of the problems in your market are definitely clear for the authorities. The solution is to have the right approach for this problem. A good whitelist/blacklist solution, in combination with a solid Import validation system, could set major steps to solve this problem and to increase VAT revenue</p>	<p>We understand and note that spectrum is a direct factor in determining the cost of ICT good and services.</p> <p>However, considering the spectrum prices in benchmark countries, we are of the opinion that this revision is measured and only brings the price of spectrum in Zambia to the average level in the region.</p>
8	Quantum of proposed fees	AIRTEL	<p>The proposed fees will be in excess of 76%</p>	<p>Considering the spectrum prices in benchmark countries, we are of the opinion that this revision is measured and only brings the price of spectrum in Zambia to the average level in the region.</p>

				<p>The Authority has not reviewed spectrum prices for 11 years. In South Africa, ICASA reviews spectrum fees annually based on the average Consumer Price Index (CPI) or inflation.</p>
9	<p>Excessive increase in spectrum fees will discourage investment in ICT sector.</p>	GSMA	<p>The proposed spectrum fees will increase operator annual spectrum fees by 75%.</p>	<p>Considering the spectrum prices in benchmark countries, we are of the opinion that this revision is measured and only brings the price of spectrum in Zambia to the average level in the region.</p> <p>The Authority has not reviewed spectrum prices for 11 years. In South Africa, ICASA reviews spectrum fees annually based on the average Consumer Price Index (CPI) or inflation.</p>

10	Impact on consumer cost to communicate.	GSMA	Spectrum price has a direct relation with the cost of ICT good and services.	Agreed but increase is long overdue. Comparator Analysis – required.
11	Single Frequency Network (SFN)	GOTV	GOTV Supports the review of spectrum pricing. However, considering the high inflation rate, businesses has slowed down. The service provider proposes to ZICTA to allow only single frequency networks as opposed to multi frequency networks. SFN are spectral efficient and users must be encouraged to reuse frequency so that operators can be charged on channels rather than charge per transmitter.	In essence the charge proposed is per channel rather than per transmitter as per current trend. The operator shall not be charged for reusing a channel in the same broadcasting area.
8	Designation of Rural and Urban areas	GOTV	The Authority designation of areas is only based on one parameter, population not factors like electricity supply, topography, number of television sets in an area, etc. The Authority must consider taking into consideration such factor when designating areas into urban or rural. The Authority	ZICTA's main mandate is the regulation of ICTs and therefore categorization of areas in Zambia is obtained from central statistics (CSO) office or we simply align ourselves to the CSO categories.

			should also develop a third set of area categorization called semi urban	
9	Price Increase	GOTV	<p>Sudden sharp increase (172% in the case of GOtv) coupled with other charges such as Taxes can negatively impact on growth and investment levels.</p> <ul style="list-style-type: none"> • Seek to understand what necessitated the increase. • Cost will be passed on to consumers 	<p>Considering the spectrum prices in benchmark countries, we are of the opinion that this revision is measured and only brings the price of spectrum in Zambia to the average level in the region.</p> <p>The Authority has not reviewed spectrum prices for 11 years. In South Africa, ICASA reviews spectrum fees annually based on the average Consumer Price Index (CPI) or inflation.</p>
10	Inconsistency with the 7NDP which says' a consistency and coherent business	GSMA	Such significant increase in spectrum fees may not align with the 7NDP and consequently hinder sectoral growth.	Considering the spectrum prices in benchmark countries, we are of the opinion that this revision is measured and only brings the

	<p>policy environment to foster business, increased investment in ICT infrastructure.</p>			<p>price of spectrum in Zambia to the average level in the region.</p> <p>The Authority has not reviewed spectrum prices for 11 years. In South Africa, ICASA reviews spectrum fees annually based on the average Consumer Price Index (CPI) or inflation.</p>
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8.0. PROPOSED PRICE REVISIONS AND COST IMPACT

- 8.1. In view of the feedback from the industry stakeholders, the Authority reviewed the prices proposed in the consultation to ensure that there was minimal impact on the cost of ICT goods and services in Zambia.

Table 7 Proposed Spectrum Fees after Public Consultation

RF Band (MHz)	Current (K)	ATDI (K) PER 1MHZ	ZICTA (K)PER 1MHZ	Proposed Reduction After Comment (PER 1MHZ)	Comments
900	233,334	400,000	400,000	K350,000	A reduction by 12.5% from proposal (countrywide)
1800	233,334.00	120,000	376,000	K300,000	A reduction by 20% from the proposed increase (countrywide)
2100	233,334	68,000	364,00	290,000	26% reduction from original proposal.(countrywide)
450	41,667	348,000	80,000	50,000	38% reduction from original proposal.
700	None	388,000	388,000	350,000	This still remains one of the highly valuable bands so a 10% reduction from the proposed
800	None	396,000	396,000	350,000	This still remains one of the highly valuable bands so a

					10% reduction from the proposed
2300	41,667	80,000	150,000	80,000	Reduced to as proposed by ADTI
2600	41,667	77,440	120,000	80,000	Reduced by 33.33% of original proposal
3500	41,667	52,800	120,000	52,800	Reduced to as proposed by ADTI
5400	41,667	34,400	5,000	4,166.70	Maintain current proposal is per province per 1Mhz
10500	41,667	17,600	2,500	4,166.70	Maintain current proposal is per province per 1Mhz.
5GHz	833.40 per Transmitter	86,000	7,000	K 5,000	28% reduction from proposed
6/7/8GHz	833.40 per Transmitter	86,000	6,020	4,000	33% reduction from proposed
11GHz	833.40 per Transmitter	50,000	3,500	2,500	29% reduction from proposed
13GHz	833.40 per Transmitter	46,000	3,500	2,500	29% reduction from proposed
15GHz	833.40 per Transmitter	40,000	3,500	2,500	29% reduction from proposed
18GHz	833.40 per Transmitter	33,000	2,310	2,000	13% reduction from proposed
23GHz	833.40 per Transmitter	26,000	2,310	2,000	13% reduction from proposed.

470-690(DTT)	K10,000 per transmitter in Livingstone, Lusaka and Copperbelt		K20, 000 per channel in urban areas. K10, 000 per channel in rural areas	K15, 000 per channel in urban areas. K7, 500 per channel in urban areas.	25% reduction from initial proposal.
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- 8.2. The revised prices were compared to the benchmark countries to assess the relative position in the region as shown in Figure 6. Considering the spectrum prices in benchmark countries, this revision is measured and only brings the price of spectrum in Zambia to the average level in the region.
- 8.3. To assess possible cost implications due to the proposed revision, a sample of six operators were used to assess how the changes in pricing will impact their respective spectrum bills.

Table 8 Assessment of Spectrum Cost Implications for Operators

Operator	Current Spectrum Bill	Proposed	% Increase
MTN	28,771,027.10	33,297,200.00	15%
AIRTEL	24,916,026.60	32,475,000.00	30%
PARATUS	472,506.90	572,640.00	21%
AFRICONNECT	1,430,848.80	2,006,110.00	40%
GOTV	161,667.00	330,000.00	104%
TOPSTAR	556,669.00	1,110,000.00	99.4%

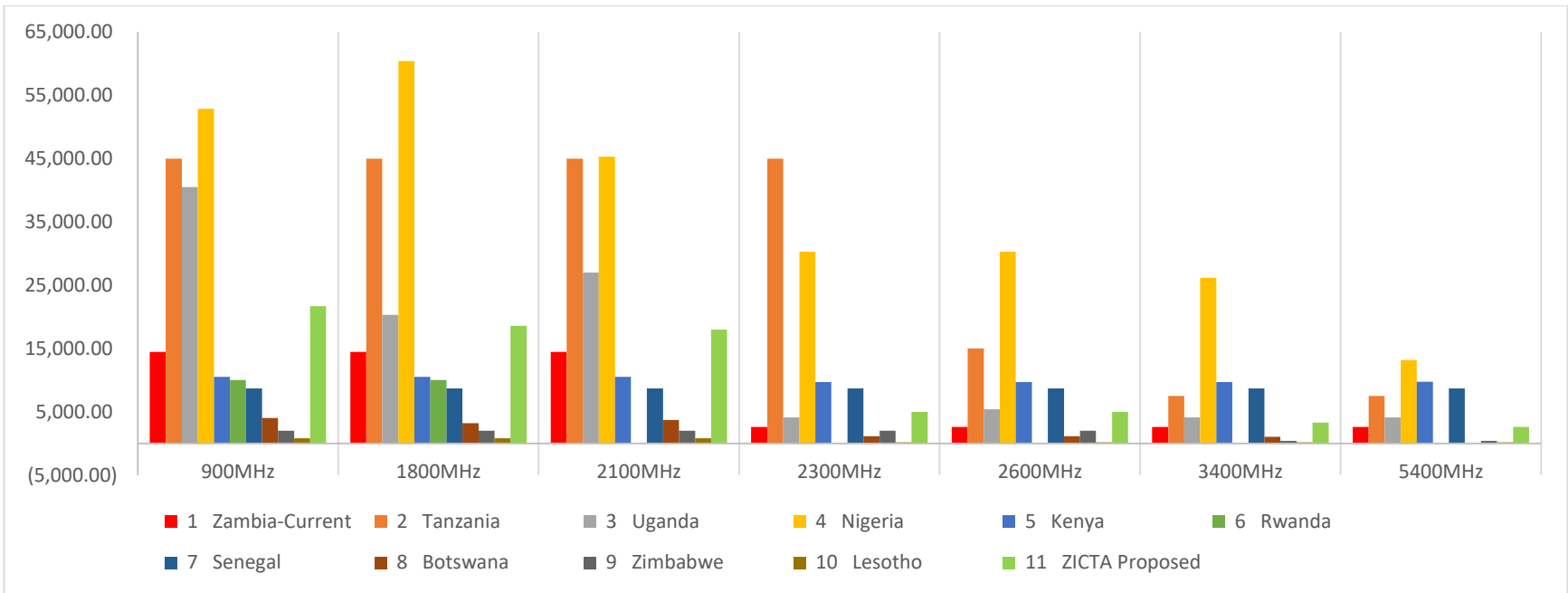


Figure 6 Comparison of Prices of Mobile and Broadband Fixed Wireless Access Frequency Bands

9.0. KEY RECOMMENDATION

The key recommendation of this report is that the proposed revised spectrum assignment fees should be adopted.

Adopting the proposed revision of the spectrum annual assignment fees will ensure that the key economic and technical factors that affect spectrum pricing are well accounted for in the determination of the price paid. Furthermore, the proposed price structure will encourage network investment and improvement of quality of service (QoS) by not penalizing denser transmitter deployment in the same allotment areas. The proposed revisions will also enhance the value that its holders place on it and in turn optimize its use. The revision will consequently increase revenue to the treasury and return true value to the public for profitable business use of this natural scarce resource.