

# **The Status of Telcos**

## **QoS-The Gambia Context**

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PURA

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# Outline

Introduction-  
Gambia

QoS  
Monitoring

Enforcement

# INTRODUCTION - The Gambia

PURA

- Is surrounded by Senegal except for its western coast on the Atlantic Ocean.
- It has an area of 10,689 square kilometers (4,127 sq mi) with a population of 2.6 million.
- Banjul is the capital while the largest cities are Serekunda and Brikama.



# WHO WE ARE

The Public Utilities Regulatory Authority (PURA) is The Gambia's independent multi-sector regulator established by the Government under PURA Act 2001, to regulate the following sectors:

- Broadcasting
- Electricity
- Telecommunications
- Transportation
- Water & Sewage
- Postal
- Other public utilities, if deemed necessary





## Current regulated Sectors:

- Telecommunication
- Electricity
- Water and sewage
- Downstream Petroleum
- Broadcasting

The Authority reports to the Ministry of Finance and economic Affairs, and coordinates with line ministries responsible for each regulated sector in executing its functions.



# WHAT WE DO



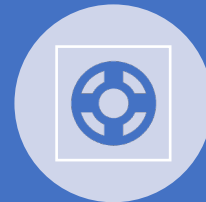
TO SET UP  
NECESSARY  
GUIDELINES.



TO ENSURE  
COMPLIANCE BY  
PUBLIC UTILITIES.



TO ENSURE THE  
CONTINUITY OF  
SERVICE DELIVERY



TO PROTECT  
OPERATORS'  
INTERESTS



TO PROTECT AND  
PROMOTE  
CONSUMERS'  
INTERESTS.

# WHAT WE DO Cont.



**To promote the availability,  
accessibility, and affordability.**



**To promote efficient development  
of regulated sectors**



**To promote and enhance general  
knowledge, sensitization, and  
awareness**

# Current GSM Market Status

GSM market constitutes of 4 players.

3 million subscribers.

Mobile usage penetration rate is 115%

3G penetration rate is 46%

4G penetration rate is 19%





# Current Digital Finance Status

**80% of the population are unbanked.**

**Mobile money penetration rate is 16%.**

**Two operators have mobile money services since 2016.**



# Telecoms - Quality of Service Monitoring

The Gambia Context





# QoS Legal Instrument

- ❖ IC Act 2009
- ❖ PURA Act 2001
- ❖ Enforcement Regulation 2010
- ❖ QoS guideline 2022
- ❖ Type Approval guidelines 2013

# Measurement and Data Acquisition



**SOLUTION IS CDR BASE**



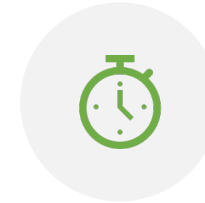
**PURA INSTALL SERVERS  
IN OPERATORS  
PREMISES**



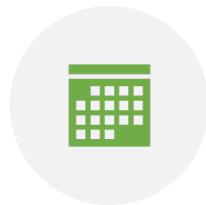
**RAW DATA CONSISTING  
OF COUNTER RECORDS  
IS PUSHED  
AUTOMATICALLY TO  
PURA SERVERS.**



**THE RAW DATA  
RECORDS MUST BE  
TRANSFERRED IN .CSV  
FORMAT**



**THE MEASUREMENT  
PERIOD IS ON AN  
HOURLY (24/7) BASIS**

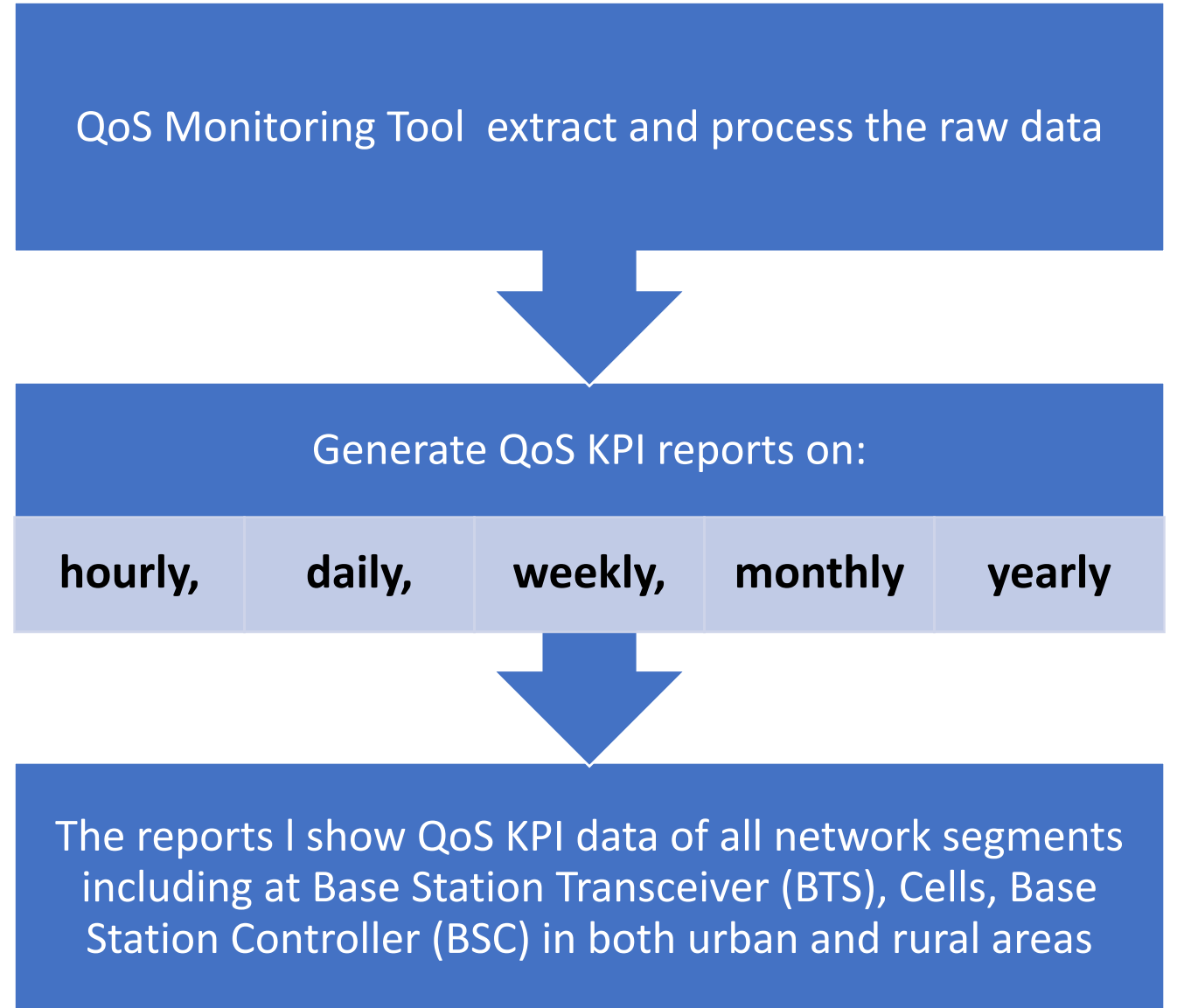


**LICENSEES SHALL PROVIDE  
THE UP-TO-DATE  
UPDATED 2G,3G AND 4G  
CELLS MAPPING BY THE  
5TH OF EACH MONTH IN  
EXCEL FORMAT.**



**DATA AVAILABILITY  
SHALL NOT BE LESS  
THAN 96%.**

# Reports



# KPIs for 2G Network @ busy hour

Parameter	Target value
Cell Availability	$\geq 96\%$
Call Setup Success Rate	$\geq 96\%$
Call Drop Rate	$\leq 2\%$
Handover Success Rate	$\geq 96\%$
Call Success Rate	$\geq 96\%$
SDCCH Availability Rate	$\geq 96\%$
TCH Availability Rate	$\geq 96\%$
SDCCH congestion rate	$\leq 2\%$
TCH Congestion Rate	$\leq 2\%$
TCH Drop Rate	$\leq 2\%$

# KPIs for 3G Network @ busy hour

Parameter	Target value
Data Availability	≥ 96%
Cell Availability	≥ 96%
CS RRC Call setup success Rate	≥ 96%
CS Radio access bearer call Setup success Rate	≥ 96 %
CS voice call setup success rate	≥ 96 %
CS voice call drop rate	≤ 2%
CS HO 3G-2G	≥ 96 %
PS RRC Call setup success Rate	≥ 96%
PS Radio access bearer call Setup success Rate	≥ 96%
PS call setup success rate	≥ 96%
PS call drop rate	≤ 2%
PS HO 3G-2G	≥ 96 %
Soft Ho Success Rate	≥ 96 %

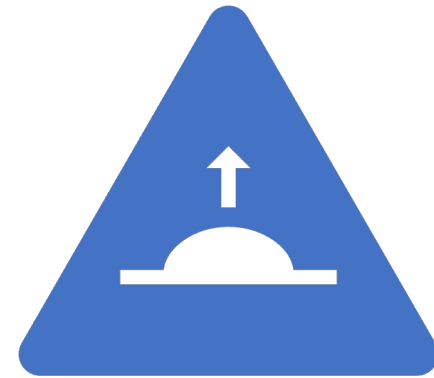
# KPIs for 4G Networks @ busy hour

Parameter	Target value
Data Availability	≥ 95%
Cell Availability	≥ 99 %
RRC Call setup success Rate	≥ 98%
RRC Drop Rate	≤ 5%
EPS Radio access bearer call Setup success Rate	≥ 98 %
EPS Radio access bearer Drop Rate	≤ 2%
Call setup success rate	≥ 98 %
CS Fall Back Success Rate	≥ 98%
Ho Success Rate (4G)	≥ 97 %
Inter Rat Ho Success Rate	≥ 96%
Cell DI Throughput	≥ 10Mbps
Cell UI Throughput	≥ 1Mbps



# ENFORCEMENT

Failure to meet the minimum standard of each of the KPIs as specified by the Authority, a fine will be imposed per month as stipulated the guideline



## 2G Enforceable KPIs

<b>PARAMETERS</b>	<b>Target Value</b>
Cell Availability	<b><math>\geq 96\%</math></b>
Call Setup Success Rate	<b><math>\geq 96\%</math></b>
Call Drop Rate	<b><math>\leq 2\%</math></b>
Handover Success Rate	<b><math>\geq 92\%</math></b>

# 3G Enforceable KPIs

<b>PARAMATERS</b>	<b>Target Value</b>
<b>Cell Availability</b>	<b>&gt;=96</b>
<b>CS voice call setup success rate</b>	<b>&gt;=96</b>
<b>CS voice call drop rate</b>	<b>&lt;=2</b>
<b>PS call setup success rate</b>	<b>&gt;=96</b>
<b>PS call drop rate</b>	<b>&lt;=2</b>
<b>Soft Ho Success Rate</b>	<b>&gt;=96</b>

# 4G Enforceable KPIs

## PARAMETERS

## Target Value

Cell Availability

$\geq 99$

EPS Radio access bearer Drop Rate

$\leq 2$

Call setup success rate

$\geq 96$

CS Fall Back Success Rate

$\geq 96$

Ho Success Rate (4G)

$\geq 96$

Cell DL Throughput

10Mbps

Cell UL Throughput

1Mbps

# How to Calculate Fine for 2G KPIs

**U = unit fine  
per KPI =  
D400,000.00**

**Fine = U\*N  
Fine=400000\* 8  
=3,200,000**

**N= Number of  
failed KPIs in  
each Region**

	ACCESSIBILITY	RETAINABILITY	MOBILITY	
Threshold	>=95%	>=95%	<=2%	>=95%
REGION	Call Setup Success Rate @ BH	Call Success Rate @ BH	Call Drop Rate @ BH	HO Success @ BH
GBA	96.59%	96.05%	0.55%	98.88%
CRR	95.86%	94.92%	0.97%	95.14%
LRR	95.27%	94.59%	0.71%	97.29%
NBR	90.99%	90.02%	1.07%	95.32%
URR	95.03%	94.07%	1.01%	97.69%
WCR	93.31%	92.18%	1.22%	94.80%

# How to Calculate Fine for 3G KPIs

**U = unit fine  
per KPI =  
D200,000.00**

**Fine = U\*N  
Fine=200000\* 6  
=1,200,000**

**N= Number of  
failed KPIs in  
each Region**

	ACCESSIBILITY		RETAINABILITY		MOBILITY
Threshold	>=95%		>=95%	<=2%	>=95%
REGION	CS voice Call Setup Success Rate @ BH	PS Call Setup Success Rate @ BH	CS voice Call Drop Rate @ BH	PS Call Drop Rate @ BH	Soft HO Success Rate @ BH
GBA	98.83%	98.74%	0.20%	8.98%	99.92%
CRR	NO 3G COVERAGE IN THIS REGION				
LRR	99.46%	98.16%	0.17%	36.28%	99.97%
NBR	99.13%	99.16%	0.20%	27.10%	99.97%
URR	96.06%	63.97%	0.26%	27.12%	99.96%
WCR	98.27%	98.42%	0.37%	17.73%	99.91%

# How to Calculate Fine for 4G KPIs

**U = unit fine  
per KPI =  
D150,000.00**

**Fine = U\*N**

**N= Number of  
failed KPIs in  
each Region**

# CONCLUSION



PURA has established technical and legal mechanism for monitoring and enforcement of QoS to ensure that consumers are protected.



Monitoring is designed to benchmark ITU recommended standards and internal best practices.



However, there is growing need for proactive monitoring of end-to-end QoS





THE END

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Thank you for listening