EBOLOWA-AKOM II-KRIBI ROAD CONSTRUCTION PROJECT

NOISE MESUREMENTS

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INTRODUCTION

As part of the mission to collect data on the biophysical environment on the corridor of the Ebolowa-Akom II-Kribi road construction project, the noise parameter was collected in ten localities in the two Division crossed by this road axis. The data were collected in the localities of Tala and Lendi in the Kribi 1er Subdivision, Afan Oveng and Adjap in the Niete Subdivision, Ndjabilobé and Akom II in the Akom II Subdivision, Nkong Yebae in the Ebolowa 2nd Subdivision and Mvieng, Azem and Ebolowa Si II in the Ebolowa 1st Subdivision.

These points were chosen in relation to their location in the corridor; in particular: the situation in the areas of great affluence and their suburbs and areas, the Subdivisions capitals crossed and the purely rural areas. The table below presents the ten noise measurement points on the corridor.

Table 1: Sound level measurement points

N°	Subdivision	QUARTIER / VILLAGE	GPS	Altitude (m)	Elevation (m)	Wind speed km/h
1	KRIBI I	Tala	X : 02°56 212 Y : 009°54 470	166	17	18
2	KRIBI I	Lendi Aviation	X : 02°55 034 Y : 009°55 970	246	56	17
3	NIETE	Afan Oveng	X : 02°50 632 Y : 010°05 268	114	61	15
4	NIETE	Adjap	X : 02°48 968 Y : 010°11 411	137	92	17
5	AKOM II	Ndjabilobé	X : 02°48 557 Y : 010°20 848	111	102	16
6	AKOM II	Akom II	X : 02°48 869 Y : 010°33 027	463	410	14
7	EBOLOWA 2	Nkong Yebae	X : 02°48 453 Y : 010°50 190	753	675	12
8	EBOLOWA 1	Mvieng	X : 02°50 605 Y : 010°57 119	706	615	13
9	EBOLOWA 1	Azem	X : 02°52 889 Y : 011°06 762	651	594	11
10	EBOLOWA 1	Ebolowa si 2	X : 02°54 090 Y : 011°9 054	645	585	12

I MATERIALS AND METHODOLOGY

- **Presentation of the material used**

The equipment used in the project is the SAUTER SW1000 version 1.1 January 2018 sound level meter, which is an excellent quality professional sound level meter.

- **Methodology used**

Calculation of the calibration coefficient:

To calculate the sensitivity, we make used of the following formulas. Also, it should be noted that the sensitivity enables to calculate the calibration coefficient and to type it directly into the sound level meter.

CalF = 20*log (Sens/50) + offset

Direction = 50*10 ((Calibration coefficient offset) /20)

CalF = calibration factor in decibels (dB);

Sens = microphone sensitivity in Mv/Pa;

CalF = offset of the calibration coefficient in decibels, this value is the calibration result by optional measurement method by using the 50-mV signal. The offset is a specific deviation of the device that differs for each sound level meter.

- The calibration coefficient thus obtained (90dB) was entered manually into the device by using the proper keys of the sound level meter. The device was then programmed for an integration time of one hour for 24 cycles. To ensure continuous measurements for 24 hours, a continuous power source capable of powering the sound level meter for more than 24 hours was used. This is a power bank with a capacity of 1000 A below illustrated.

- **Period**

The measurements were carried out from February 1 to 12, 2022.

II-PRESENTATION AND INTERPRETATION OF RESULTS

- **Presentation of results**

Tables 2 and 3 below present the summaries of the day and night noise averages obtained at the ten measurement points along the corridor

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Table 2: Summary of noise averages during the day

P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	Average day On project	DAY STANDARD	
											Residential, institution, education	Industrial, commercial
78,25	63,72	59,78	56,18	61,52	61,46	61,79	63,44	67,05	69,66	64.31	55 dB	70 dB

Table 3: Summary of noise averages at night

P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	Average night on project	STANDARD night	
											Residential, institution, education	Industrial, commercial
74,35	55,80	56,52	62,01	60,72	53,91	57,54	56,34	58,36	64,32	59.98	45 dB	70 dB

- **Interpretation of results**

From the tables above, noise averages in the project area vary between 56.18 dB and 78.25 dB during the day (07:00 to 22:00) and between 53.91 and 74.35 dB at night (10 p.m. to 7 a.m.). The localities where more noise is recorded during the day than the night are respectively the areas of the two large cities which are PK 0 (Kribi) and PK fin (Ebolowa). This is due to the intense traffic, the presence of a large demography and the presence of IGAs.

The average noise in the entire project area is 64.31dB during the day and 59.98dB at night. The standards call for 55 dB during the day in residential, institutional and educational areas, and 70 dB in industrial and commercial areas. The average sound level during the day in the project area is higher than the normal value corresponding to residential, institutional and educational zones in all ten measurement points and lower than the value dedicated to industrial and commercial zones except point 1 at which the average daytime noise value exceeds the level required for industrial and commercial areas. The noise level at night is also higher than the normal value set for residential, institutional, educational areas in the 10 measurement points, but is lower in industrial and commercial areas except for point 1 which has a value average noise higher than the normal value related to these areas.

CONCLUSION

In short, overall, the daytime and nighttime noise averages are above acceptable values in residential, institutional and educational areas but below the acceptable level for industrial and commercial areas. The point that is an exception to this generality is point 1 located in an area with very high traffic in the town of Kribi which records a little over 70 dB on average day and night.

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