

Treatment Coverage Survey for Mass Drug Administration for Schistosomiasis and Geo-Helminthiasis in the health districts of N'Zérékoré and Lola, Guinea

June 25, 2018

Table of Contents

1) Executive Summary	3
2) Introduction.....	3
3) Objectives.....	3
4) Methodology	4
a) Study site.....	4
b) Sampling.....	4
c) Data collection method and procedure	4
d) Data analysis.....	4
5) Results.....	4
a) Survey Respondents	4
b) Treatment Coverage	6
c) Reported versus Surveyed Coverage	7
d) Reasons for not taking treatment	8
e) Sensitization Methods	9
6) Discussion.....	9
7) Conclusion	10
8) Recommendations.....	11

1) Executive Summary

We conducted a two-stage randomized cluster survey to validate the reported coverage of Schistosomiasis (SCH) and Soil-transmitted helminths (STH) interventions in two of three districts in the Forest Region of Guinea where mass drug administration was conducted in May 2018. In total, 3,304 people from 1,466 randomly selected household in 57 villages were interviewed. Survey coverage of combined treatments was 78.0% overall. The reported coverage declared by the program was 90.9% in Lola and 92.6% in N'Zérékoré, while the treatment coverage survey results were 80.1% for Lola and 76.3% for N'Zérékoré. Despite the discrepancies between reported and surveyed coverages in both districts, the results were considered valid because both districts exceeded the 75% minimum coverage threshold recommended by WHO for SCH and STH interventions. The survey results also demonstrated that 59.4% of children were treated in school settings which was consistent with nationally reported data. Amongst respondents who were not treated, 51.2 % admitted distributors never offered medicine to them though they were present in the community and 32.3% were absent during distribution.

2) Introduction

In Guinea, SCH and STH are endemic in 31 and 17 health districts (DS), respectively, and co-endemics in 15 DS. The deworming project for SCH and STH supported by Sightsavers and GiveWell was implemented by the Ministry of Health in three health districts, namely N'Zérékoré, Lola and Yomou in 2017/8 (year 2 of the project). The project aims to reduce the prevalence and intensity of infection by targeting at least 492,109 school-age children through MDA with praziquantel and albendazole.

Deworming activities for this year was planned in the first quarter but was ultimately conducted in May 2018 due to the late arrival of drugs from WHO. Drugs were administered to children by measuring their size against a calibrated stick with every child receiving from one to four tablets of praziquantel and one tablet of albendazole at schools and focal points in the community. Treatment with both drugs was recorded in treatment records and tallied at health centers for central reporting.

Table 1 presents the reported coverages for the project in the Forest Region focal area.

Table 1: Summary of 2018 MDA Treatments by District

Region	Target	Total Treated School	Total Treated Community	Reported Coverage (%)
N'Zérékoré	346,442	109,609	211,313	92,6
Lola	152,731	38,697	97,479	90,9
Yomou	99,820	31,595	57,631	89,4

3) Objectives

- Check coverage reported by MDA for SCH / STH N'Zérékoré and Lola
- Analyze the difference between the reported coverage by the district and validate coverage
- Determine the main sources of information used during MDA

- Make recommendations to improve the next MDA

4) Methodology

a) Study site

The survey was conducted in two districts – N'Zérékoré and Lola from June 9-14, 2018. These two districts where MDA was conducted were randomly selected amongst three (N'Zérékoré, Yomou and Lola). A three-day training with field practical was conducted prior to field deployment. The list of villages was provided by the health district teams (see Appendix One). The purpose of the study was explained to each household head and dependents. Verbal consent was obtained from household heads.

b) Sampling

The survey followed a two-stage cluster sampling methodology based on WHO recommended guidelines for coverage surveys. In Guinea, the district is the reporting unit; clusters were defined as villages (enumeration areas (EA)) in sous-prefectures. In the first stage 177 and 199 EA were listed in Lola and N'Zérékoré districts, respectively. Lola is considerably more rural than N'Zérékoré with an estimated total population of 184,216 and 630,563, respectively. Thirty EA were randomly selected utilizing the WHO Coverage Survey Sample Builder. The survey assumed coverage to be 75% with a 95% confidence interval. Due to the methodology used, the design effect was set at 4 and non-response at 12%. An estimated sample size of 1310 individuals per district was calculated. Based on an estimated household size of six and two persons of survey ages 5 to 14 years old, a total of 22 households were necessary to sample per EA.

In the second stage sampling of the household was done using the segmentation method. The cluster was divided into segments of approximately 50 households each and one segment was randomly selected to include in the survey. All households in the segment were eligible to participate in the survey. If insufficient households were present to randomly select the target of 22, all households were selected. The head of every household was briefed on purpose and procedure of the survey and provided verbal consent to participate.

c) Data collection method and procedure

A questionnaire was designed using the CommCare survey software application and administered to each household in French or appropriate local language. Mobile phones were used to capture the responses for various questions responses in the questionnaire were automatically uploaded into a web-based database. A total of 32 surveyors collected data working in pairs.

d) Data analysis

Data were cleaned and analyzed using Stata 15.0 (StataCorp, College Station, TX). Estimates were adjusted for the number of clusters to account for the survey methodology. No weights were provided as the sample selection was considered self-weighting.

5) Results

a) Survey Respondents

A total of 3,304 school-aged children were enumerated in 1,466 households. The distribution by district is presented in Table 1. Among respondents, 66% reported responding to the questions themselves; only 8% had a proxy response provided because they were too young.

Table 1: Surveyed Individuals and Households by District

District	Enumerated Individuals	Households
Lola	1,453	691
N'Zérékoré	1,851	775
Total	3,304	1,466

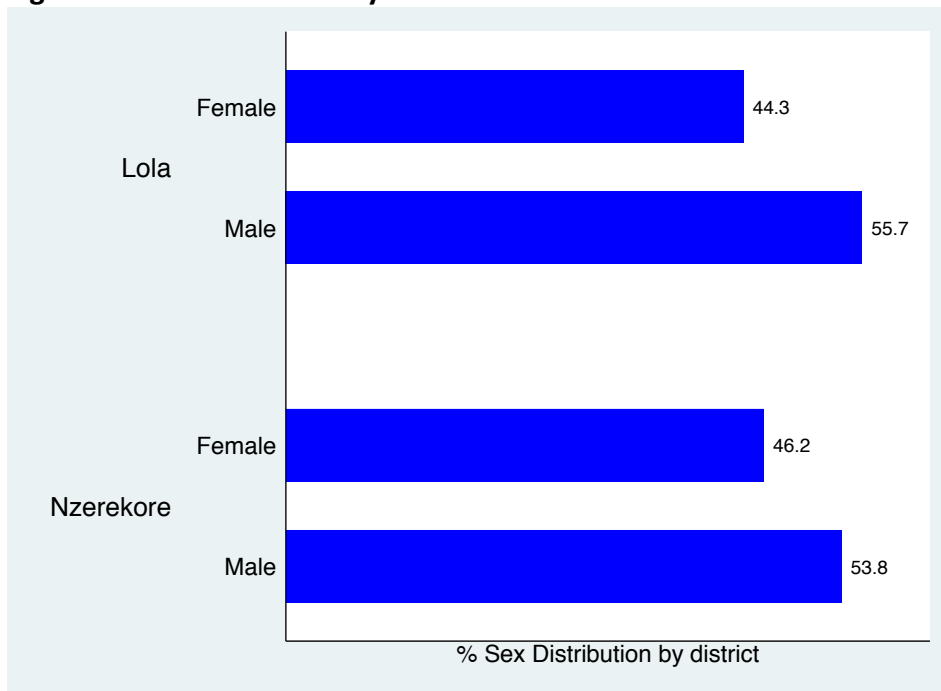
Table 2 presents socio-demographic statistics for the surveyed population. Among the children surveyed, 54.6% were males. Children aged 5-9 years were more numerous with 53.1%; however, differences at district level were not statistically significant.

Table 2: Socio-demographic distribution of the children surveyed

Category	Observations (n=3,304)	Percentage per Category
Sex		
Female	1,499	45.4%
Male	1,805	54.6%
Age		
5-9 years	1,754	53.1%
10-14 years	1,550	46.9%
School status		
Enrolled	2,575	77.9%
Not-enrolled	729	22.1%

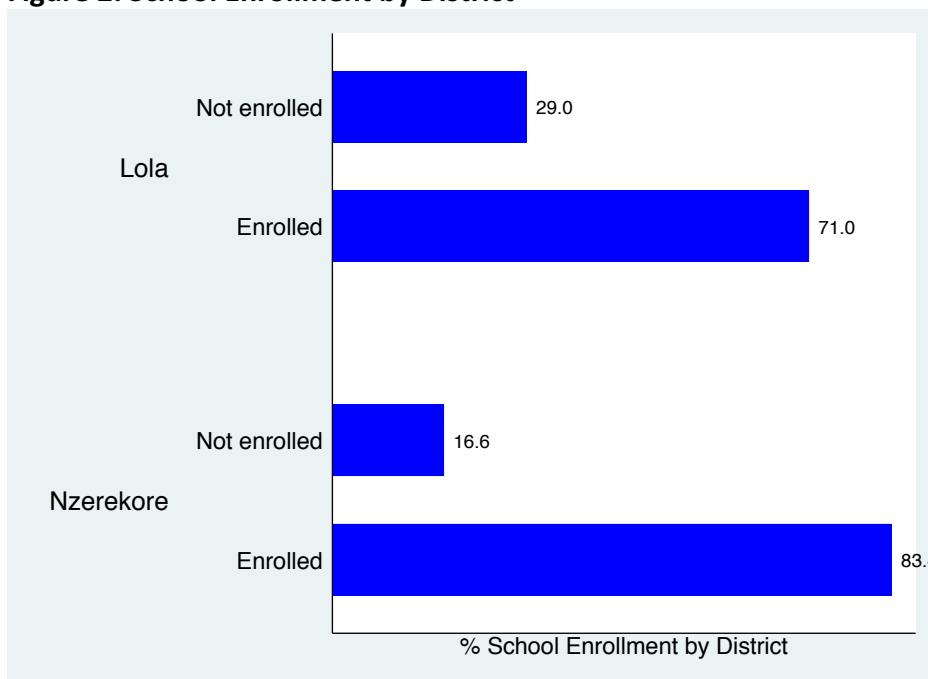
As demonstrated in Figure 1, there was a significant difference in sex distribution at the district level. Males were more likely to be survey respondents in each district (Lola: OR 1.26 (1.08,1.45), $p < 0.00$; N'Zérékoré: OR 1.16 (1.05, 1.29), $p = 0.01$).

Figure 1: Sex Distribution by District



More children reported being enrolled in school than not; however, respondents in N’Zérékoré (83.4%) were more likely to be enrolled than in Lola (71.0%) as shown in Figure 2.

Figure 2: School Enrollment by District



b) Treatment Coverage

Table 3 presents the results by district for the surveyed coverage. Overall 78.0% of respondents reported taking both medications, which were provided at the same time, per

protocol. Partial ingestion of the combined therapy was noted in each district. A greater percentage of respondents in N'Zérékoré than Lola reported not taking any medication at 16.5%. Overall, 12.5% of respondents did not take any medication.

Table 3: Survey Coverages by Medication and District

	Lola		N'Zérékoré		Total	
	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
PZQ + ALB	1164	80.1 (72.1, 86.2)	1413	76.3 (68.6, 82.7)	2577	78.0 (72.6, 82.6)
PZQ only	102	7.0 (3.4, 14.0)	19	1.0 (0.5, 2.2)	121	3.7 (1.9, 6.8)
ALB only	81	5.6 (2.6, 11.5)	113	6.1 (2.3, 15.1)	194	5.9 (3.1, 10.7)
None	106	7.3 (4.7, 11.2)	306	16.5 (11.1, 23.9)	412	12.5 (9.0, 17.0)

*adjusted for number of enumeration units and surveyed households

When analyzing each medication individually, each point estimate of treatment coverage by district was greater than 77%. See Table 4.

Table 4: Treatment Coverage by Individual Medication by District

	Lola	N'Zérékoré	Both
PZQ	87.1 (79.4, 92.2)	77.4 (69.9, 83.4)	81.7 (76.1, 86.2)
ALB	85.7 (79.8, 90.1)	82.4 (74.9, 88.1)	83.9 (79.2, 87.7)
n	1,453	1,851	3,304

Table 5 presents where respondents reported receiving treatment. More respondents reported receiving treatment in schools than at home. Receipt at schools was greater in N'Zérékoré with 67.3% versus Lola with 50.3%.

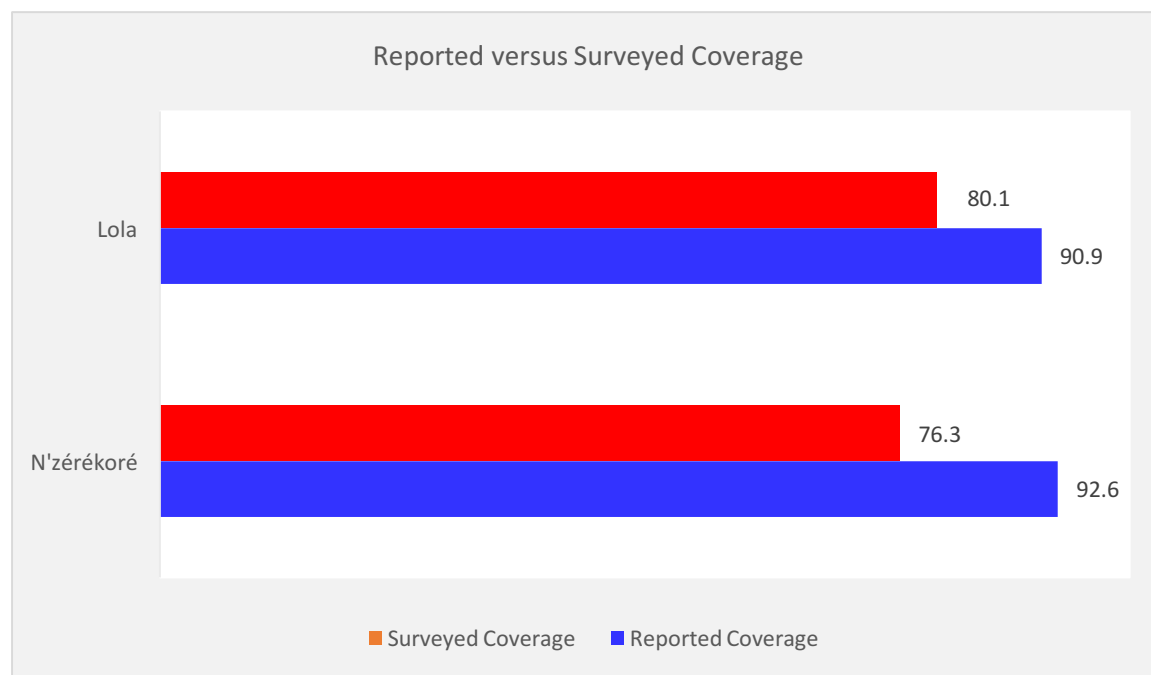
Table 5: Survey Coverage by Place of Treatment

	Lola		N'Zérékoré		Total	
	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
School	683	50.3 (40.3, 60.4)	1053	67.3 (58.8, 74.9)	1736	59.4 (52.5, 66.0)
Home	505	37.2 (26.7, 49.0)	462	29.5 (22.2, 38.2)	967	33.1 (26.8, 40.1)
Health facility	55	4.1 (1.6, 10.0)	12	0.8 (0.2, 3.5)	67	2.3 (1.0, 5.0)
Market	102	7.5 (1.6, 29.3)	3	0.2 (0.0, 0.5)	105	3.6 (0.8, 14.7)
Don't remember	4	0.3 (0.1, 1.0)	2	0.1 (1.1, 3.9)	6	0.2 (0.1, 0.5)
Other	8	0.6 (0.1, 2.5)	32	2 (0.00, 0.25)	40	1.3 (0.8, 2.4)

c) Reported versus Surveyed Coverage

Comparing the reported coverage and the surveyed coverages demonstrates that there were differences. In Lola, reported coverage was 90.9% versus 80.1%, found during the survey. In N'Zérékoré, reported coverage was 92.6% compared to 76.3% found during the survey. Despite these differences, the survey results in both districts exceeded the minimum treatment coverage threshold of 75% recommended by WHO.

Figure 3: Reported versus Surveyed Coverage by District



d) Reasons for not taking treatment

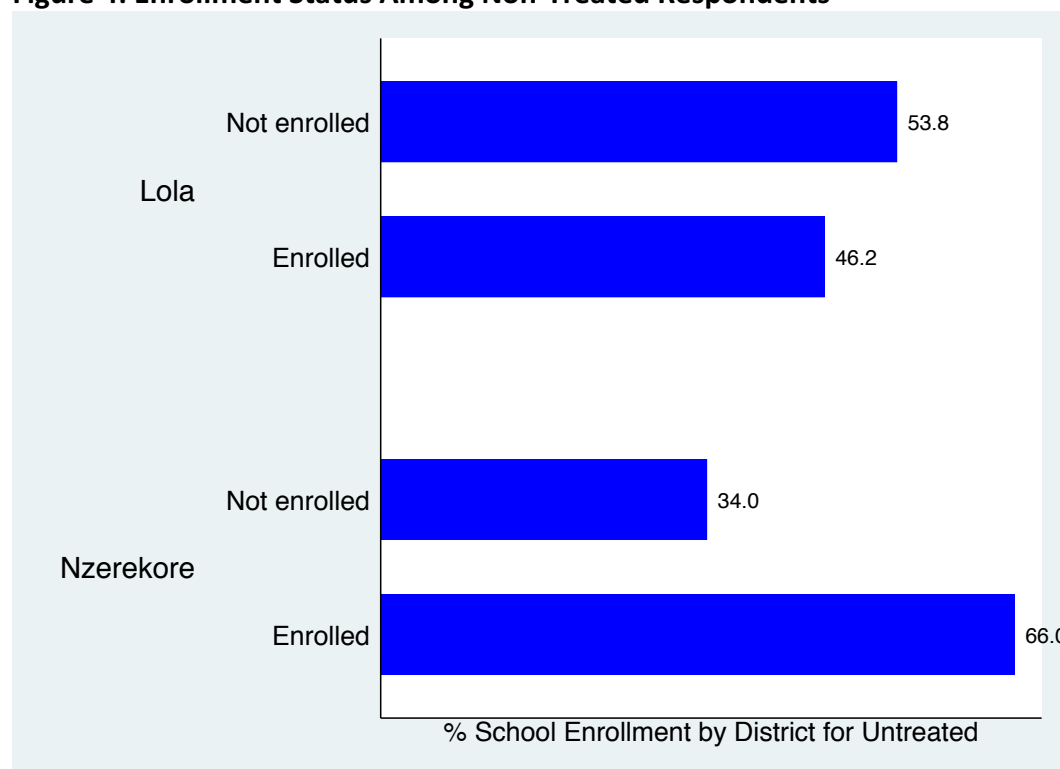
The majority of individuals who did not receive treatment were in N'Zérékoré and stated that they were present in the community during the MDA campaign but were not reached by a CDD or teacher. However, upon probing, a 32.3% of non-recipients were absent during the campaign.

Table 6: Reasons for non-treatment by district

Reason	Total	Obs	Lola	N'Zérékoré
Were not offered meds but present during campaign	51.2	211	20.9	79.1
Were not offered meds but absent during campaign	32.3	133	20.9	42.2
CDD did not come	0.7	3	0.5	0.9
Fear Side Effects	2.7	11	1.4	3.8
Didn't know CDD	0.2	1	0.5	0.0
Didn't eat before TX	1.5	6	1.9	0.9
Was sick/on other meds	0.5	2	0	0.9
Was absent	1.5	6	0.5	2.4
Don't know/remember	9.5	39	3.8	14.7
Total	100.0	412	100.0	100.0

Respondents were less likely to be treated if they were not enrolled in school as shown in Figure 4.

Figure 4: Enrollment Status Among Non-Treated Respondents



e) Sensitization Methods

Among the sources of information cited by the children surveyed, information was principally disseminated by teachers (41.5%), as shown in Table 7. Besides public announcements, other forms of mass sensitization were reported as shown below.

Table 7: Reported methods of sensitization by district (%)

Method	All Districts		By District	
	Total	Obs*	Lola	N'Zérékoré
Teacher	41.5	1359	36.0	64.0
CDD	25.5	837	34.2	65.8
Family	12.3	402	28.1	71.9
Public Announcements	7.3	238	59.2	40.8
Did not hear	3.6	119	93.3	6.7
Community leaders	3.2	104	17.3	82.7
Child told	2.0	66	4.5	95.5
Friend/Neighbor	2.0	66	13.6	86.4
Health Center	1.3	41	22.0	78.0
Radio	1.2	38	23.7	76.3
Place of worship	0.2	7	0.0	100.0

*multiple responses allowed

6) Discussion

The results of this survey demonstrated that 78.0% of surveyed children swallowed both praziquantel and albendazole. Surveyed coverage was 80.1% in Lola and 76.3% in

N'Zérékoré. While the surveyed coverage was less than the reported coverage, each district exceeded the WHO recommended threshold of 75%. Reported coverage is often high due to the difficulty in estimating the precise population of 5-14 year olds in this region. These results here show a marked improvement when compared to the first year of the program, where the surveyed treatment coverage was 57.6% in N'Zérékoré and reported coverage was nearly 100% in all districts.

In both districts, children were partially adherent - 3.7% of children swallowed praziquantel only and 5.9% albendazole alone. During the campaign, it was anecdotally reported that some children preferred albendazole to praziquantel because the praziquantel tablets are bitter, larger and could easily provoke vomiting, especially if taken on an empty stomach. These are common apprehensions about taking praziquantel that require more sensitization efforts.

The coverage survey analysis showed that most of the children (59%) were treated within school premises; 50.3% in Lola and 67.3% in N'Zerekore. According to the reported data, 59% of children in the region were treated in schools. These results are in line with the program strategy that emphasized school-based treatment in concert with the Ministry of Education and reflects the degree of child enrollment.

Amongst respondents who were not treated, 51.2 % admitted distributors never offered medicine to them though they were present in the community and 32.3% were absent during distribution. In N'Zérékoré, 66.0% of untreated kids were enrolled and 34% non-enrolled while in Lola, 53.8% were non-enrolled and 46.2% were enrolled.

Taken together, these results confirm that revisits in schools and communities were either ineffective or not done CDDs, especially since MDA was conducted during the agricultural season when kids are expected to support parents in the farms.

Lastly, the survey demonstrated the principal form of sensitization is the person providing the medication. These results are comparable to those found in other school-based programs. Additional efforts are required to broaden the sensitization to more individuals to ensure that children who miss treatment can receive it.

Challenges and difficulties encountered

- Due to the Ramadan period that was fast approaching and the desire to limit recall bias, this survey was conducted very rapidly one month after completion of MDA, which in itself was organized quickly after late receipt of medication.
- Access was limited and challenging to many selected villages due to the poor state of the roads in sample villages and heavy rainfall.
- The TCS coincided with agricultural activities and some households were absent.
- Doubling the sample size of TCS to two districts simultaneously taxed available resources to the project. Surveyors used their own smartphones during data collection, with batteries that easily ran down due to lack of electricity.

7) Conclusion

The purpose of the survey to verify and validate mass drug administration coverages for SCH and STH was effectively achieved in Lola and N'Zérékoré health districts. The reported

coverages were 90.9% in Lola and 92.6% in N'Zérékoré while the post MDA coverage survey revealed 80.1% in Lola and 76.3% in N'Zérékoré. Although there were discrepancies between reported versus surveyed coverages in both Lola and N'Zérékoré, the results were validated because both districts exceeded the 75% minimum coverage threshold recommended by WHO for SCH and STH interventions.

8) Recommendations

- Facilitators and supervisors should insist on revisits at home/schools during training of CDDs and supervision of MDA respectively.
- Improved health education/sensitization is needed by intensifying communication through media outlets and social mobilization before and during the campaign.
- Provision of additional data capture resources to facilitate data collection and periodic survey work.
- The national program should consider treating the region earlier in the year or adjusting the treatment scheme and requesting medication on the alternate WHO cycle to avoid the rainy season and the Ramadan period in the March to May months as has happened during the last two campaigns. The calendar will be similar and leave less time for activities before school closes for the next several years.

Appendix One

List of selected villages in N'Zérékoré

Selected Subunits	Subunit Names	Estimated # Households	# Segments to be formed per Subunit
1	Youssonon	138	3
2	Commercial	2053	41
3	Tilepoulou	1878	38
4	Ossud II	1357	27
5	Dorota I secteur 1 et 6	778	16
6	Wéssoua I	649	13
7	Belle vue 1	701	14
8	Gonia 1, Secteur 2	577	12
9	Gonia 2, Secteur 4	577	12
10	Nyenh 2, Secteur 1	763	15
11	Zebela Togba, Secteur 1	620	12
12	céoba	1223	24
13	Horoya I	773	15
14	Konipara	403	8
15	Nyéma Nord	290	6
16	Pampara	621	12
17	Kpai / pkayea	404	8
18	Mohomou sect 3 et 4	513	10
19	Nakouyakpala sect 3	453	9
20	Gbénéwily	195	4
21	Boma I	1686	34
22	Theaye	236	5
23	Koronta	352	7
24	Hermakonon	924	18
25	Bostadia	1018	20
26	Managboloï Vidéo club	591	12
27	Kpaghanlaye	686	14
28	Bowé Nord	303	6
29	Gbangoeta	425	9
30	Yalakpale	357	7

List of selected villages in Lola

Selected Subunits	Subunit Names	Estimated # Households	# Segments to be formed per Subunit
1	THUO	306	6
2	Thiépa	19	1
3	Gbanadou	82	2
4	Fakouroudouni	67	1
5	Mana-soba	162	3
6	Gama 1	286	6
7	Fanghan 2	366	7
8	Guelemata 2	126	3
9	GUEASSO	923	18
10	GARASSOU	233	5
11	MADINA	28	1
12	GUEWE	46	1
13	Diawassou	286	6
14	Yènèta	371	7
15	Lainé centre	624	12
16	Foromota	92	2
17	Wiyé	51	1
18	LOLA VILLE	3697	74
19	LOLA VILLE	3697	74
20	LOLA VILLE	3697	74
21	LOLA VILLE	3697	74
22	Gama Yalé	230	5
23	Gogota	606	12
24	Weyakoré	341	7
25	N'zoon	224	4
26	N'Zoo centre 2	235	5
27	Pora	126	3
28	Gblayehoumo 1	55	1
29	Gban	123	2
30	Sackota	68	1