Answers to journal requirements:

**Point 1:** Please provide separate figure files in .tif or .eps format.

**Response 1:** We have provided separate figure files in tif format using the Preflight Analysis and Conversion Engine (PACE) digital diagnostic tool [https://pacev2.apexcovantage.com/](https://pacev2.apexcovantage.com/)

**Point 2:** We do not publish any copyright or trademark symbols that usually accompany proprietary names, eg (R), (C), or TM (e.g. next to drug or reagent names). Please remove all instances of trademark/copyright symbols throughout the text, including R on page 7.

**Response 2:** We have removed all instances of trademark/copyright symbols in entire paper.

**Point 3:** We have noticed that you have uploaded Supporting Information files, but you have not included a list of legends. Please add a full list of legends for your Supporting Information files after the references list.

**Response 3:** We have added a full list of legends for Supporting Information files.

**Point 4:** Please amend your Data Availability Statement and indicate where the data may be found.

**Response 4:** You can find the data by clicking on the following link [https://we.tl/t-TShZcdTNl6](https://we.tl/t-TShZcdTNl6)

**Point 5:** Some material included in your submission may be copyrighted. According to PLOS’s copyright policy, authors who use figures or other material (e.g., graphics, clipart, maps) from another author or copyright holder must demonstrate or obtain permission to publish this material under the Creative Commons Attribution 4.0 International (CC BY 4.0) License used by PLOS journals. Please closely review the details of PLOS’s copyright requirements here: PLOS Licenses and Copyright. If you need to request permissions from a copyright holder, you may use PLOS's Copyright Content Permission form.

**Response 5:** As suggested in editor's request no. 2, we have removed all instances of trademark or copyright symbols in the text including the materials and methods section.
Potential Copyright Issues:

**Point a:** Fig 3 & 4: Please confirm (a) that you are the photographer; or (b) provide written permission from the photographer to publish the photo(s) under our CC-BY 4.0 license.

**Response a:** We confirm that we are the photographer of Fig 3 and 4.

**Point b:** Figure 1: please (a) provide a direct link to the base layer of the map (i.e., the country or region border shape) and ensure this is also included in the figure legend; and (b) provide a link to the terms of use / license information for the base layer image or shapefile. We cannot publish proprietary or copyrighted maps (e.g. Google Maps, Mapquest) and the terms of use for your map base layer must be compatible with our CC-BY 4.0 license.

**Response b:**

**Figure 1:** (a) You can find the base layer of the map by clicking on the following link [https://wetransfer.com/downloads/35bb7497e44f3d01f1d33fb898b5ac5e20230302141053/f19fde8f3c4ece2432f7105c13d2cb020230302141107/3111b1](https://wetransfer.com/downloads/35bb7497e44f3d01f1d33fb898b5ac5e20230302141053/f19fde8f3c4ece2432f7105c13d2cb020230302141107/3111b1). (b) The terms of use / license information for the base layer image or shapefile are included in the link. Furthermore, we used data from the open access site DIVA-GIS ([https://www.diva-gis.org/Data](https://www.diva-gis.org/Data)) and the basemap of the Abidjan district provided by the Centre de Cartographie et de Teledetection (CCT) from Bureau National d’Etudes Techniques et de Developpement (BNETD). The handling was done with the free access program QGIS ([https://www.qgis.org/fr/site/forusers/download.html](https://www.qgis.org/fr/site/forusers/download.html)).
Response to Reviewers Comments

The authors thank the reviewers for their detailed and comprehensive comments that will help make the paper stronger. We will address all the comments and suggested corrections as best as we can, below.

Reviewer: 1#

Point 1: Line 26-27, not MPN.
Response 1: We have deleted MPN.

Point 2: Line 32, risk of exposure (E). And you can bold and italized E for the entire paper.
Response 2: We have bolded and italized E in the entire paper.

Point 3: Line 35, risks of exposure (Es).
Response 3: We replace risks of exposure (Es) by risks of exposure (E)

Point 4: Line 34 and 36, I could not find those percentage number in the results section.
Response 4: We replaced the percentage number by risks of exposure of dominant pathways.

Point 5: Line 55, the author should find literature that can be accessed (better open access) to support this instead of citing a high-level meeting.
Response 5: We have inserted a literature that better supports the idea.

Point 6: Line 56, provide population density number here.
Response 6: We provide population density number of Abobo Municipality.

Point 7: Line 69, I think you can introduce the SaniPath tool here and talked about that it has been deployed in many countries. You may cite their new published paper: Wang, Y., Mairinger, W., Raj, S. J., Yakubu, H., Siesel, C., Green, J., ... & Moe, C. L. (2022). Quantitative assessment of exposure to fecal contamination in urban environment across nine cities in low-income and lower-middle-income countries and a city in the United States. Science of The Total Environment, 806, 151273. And then talk about the study objectives here.
Response 7: We appreciate the reviewer’s insightful suggestion; we have taken these suggestions into consideration and added a new paragraph about the SaniPath tool and where it has been deployed. So, we talked about the study objectives. Then we cited Raj et al. 2020 study.

Point 8: Line 71, for reference 10, you need to properly cite the SaniPath Tool User Guide here by providing a link of SaniPath website (maybe?).

Response 8: We took this comment into consideration and providing a link of SaniPath website.

Point 9: Line 71-79, these are methods and you have already described most of those in the methods section.

Response 9: We thank the reviewer for this comment and have deleted this paragraph.

Point 10: For Figure 1, the author can consider add another map to show the location of Abidjan in Cote D'Ivoire. Is this the green area in the small map of Figure 1? Please make a legend or add a caption explain it.

Response 10: We added another map to show the location of Abobo in District of Abidjan.

Point 11: Line 86, the longitude range is not matching the longitude range in Figure 1.

Response 11: We thank the reviewer for this comment, we adjusted the longitude on Figure 1.

Point 12: Line 99, Maybe replace the title of this subsection? It did not talk about the details of the data collection which are actually in the later subsections. Or you could make the following subsections (i.e., Choice of neighborhoods and exposure pathways; behavioral surveys; environmental sample collection; laboratory sample processing) embedded in the "Data collection" subsection.

Response 12: We took this comment into consideration and we embedded "Choice of neighborhoods and exposure pathways"; "Behavioral surveys"; "Environmental sample collection"; "Laboratory sample processing" in the Data collection subsection.


Response 13: We thank the reviewer for this comment. Here we cited Raj et al. 2020.

Point 14: Line 101-102, should it be "The SaniPath tool uses data from behavioral surveys (household, school, and community) and environmental samples to assess the exposure to fecal
Response 14: We agree with the reviewer's comment and have rewritten the sentence to make it clearer.

Point 15: Line 103, "described in Fig 2."
Response 15: We have taken the reviewer's comment into consideration by adding "described in Fig 2."

Point 16: Line 106, I think you should cite Raj et al. 2020 here instead of the user guide.
Response 16: Here we have mentioned Raj et al. 2020 instead of the user's guide as recommended by the reviewer.

Point 17: Line 110, what do you mean by "geographic survey"?
Response 17: The geographical survey is a walking visit that was carried out along the streets of the neighborhoods of the municipality in order to appreciate the type of housing, the sanitary facilities and the environmental conditions.

Point 18: Line 113, could you define the "common courtyards"?
Response 18: Common courtyards are composed of several households where residents use the same latrines and toilets.

Point 19: Line 114, delete "However,"
Response 19: we agreed with the reviewer’s comment and we have deleted it.

Point 20: Line 116, could the authors give a little more details about the existing sanitation infrastructure in Cluster II?
Response 20: Yes, we added details about existing sanitation infrastructure in the cluster II.

Point 21: Line 122, replace "important" with "large"?
Response 21: We took the comment into consideration by replacing important with large.

Point 22: Table 1, replace "Explanation" with "Definition"?
Response 22: We took the comment into consideration by replacing "Explanation" with "Definition".
**Point 23**: Lines 136-137, could the authors show the community survey results by gender?

**Response 23**: Sorry, the SaniPath tool does not offer the possibility to present the results in this form.

**Point 24**: Lines 136-137, could the authors show the community survey results by gender?

**Point 25**: Lines 137, replace "Figure 2" to "Figure 3a"?

**Response 25**: We took the comment into consideration by replacing "Figure 2" to "Figure 3a".

**Point 26**: Line 138, replace "Figure 3" to "Figure 3b"?

**Response 26**: We took the comment into consideration by replacing "Figure 3" to "Figure 3b".

**Point 27**: Lines 139-140, what's the age range for second grade class?

**Response 27**: at second grade class level, the average age of the pupils ranged from 10 to 15 years old.

**Point 28**: Line 142, replace "behavior and frequency of contact" with "contact behavior".

**Response 28**: We took the comment into consideration by replacing "behavior and frequency of contact" with "contact behavior".

**Point 29**: Line 146, what's "this activity" refer to? All types of surveys or only school surveys?

**Response 29**: we thank the reviewer for this comment. This activity refers to all behavioral surveys, including school, community and household surveys.

**Point 30**: Figure 3, do authors have proper IRB or permission to publish photos with the faces of participates?

**Response 30**: We had written permission from the women's association to publish photos taken during the interview, as well as photos of children going to schools in their intervention areas. So, the permission to publish has been attached to the supplementary material.

**Point 31**: Line 158, a proper reference is needed for reference 16.

**Response 31**: We have added a proper reference to this sentence in particular that of Murungi, C. and M.P. van Dijk 2014.

**Point 32**: Line 159, add reference of SaniPath protocol.

**Response 32**: We have added the reference of SaniPath protocol.
**Point 33:** Lines 164-165, for "that as much reliable information as possible is gathered from each cluster", do you mean: "that the behavior and environmental contamination information were collected from the same geographic areas."

**Response 33:** We appreciate the reviewer’s insightful suggestion, we mean: "that the behavior and environmental contamination information were collected from the same geographic areas." So, we have taken this into account in the manuscript.

**Point 34:** Line 173, E. coli is not necessarily a pathogen.

**Response 34:** We replaced pathogen by fecal indicator.

**Point 35:** Lines 176-177, why not using membrane filtration method for other types of samples?

**Response 35:** According to the AFNOR standard, the membrane filtration method is used for the detection of E. coli in drinking water and the plating method for other samples (mainly wastewater).

**Point 36:** Line 142, replace "behavior and frequency of contact" with "contact behavior"

**Response 36:** We thank the reviewer for pointing this out. We have replaced "behavior and frequency of contact" with "contact behavior".

**Point 37:** Line 202, "risk of exposure" instead of "risk of exposition". Please check the entire paper for the incorrect term "exposition".

**Response 37:** We thank the reviewer for pointing this out. We have used risk of exposure in the entire paper.

**Point 38:** Line 203-204, replacing "the result into a logarithm." to "the number to log scale."

**Response 38:** We replaced "the result into a logarithm." to "the number to log scale" in the sentence.

**Point 39:** Line 210, "exposure to fecal contamination".

**Response 39:** we have used "exposure to fecal contamination" instead of "exposure".

**Point 40:** Lines 210-223, those two parts are redundant, please rewrite it and make it concise.

**Response 40:** we thank the reviewer for this comment, we have improved the paragraph to make it clearer and more concise.

**Point 41:** Line 227, for ethical approvals, are those IRB approvals?
Response 41: We thank the reviewer for pointing this out. Just the one from the Felix Houphouet Boigny University is an ethical approval. So, we have modified the sentence.

Point 42: Line 242, use past tense for results section and add results for behavioral surveys.
Response 42: We appreciate the reviewer’s insightful suggestion; we have used past tense in results section. Furthermore, we have added the results of the behavioral surveys for the dominant exposure pathways.

Point 43: Line 247, for "significant", do you mean "low"? When you write "significant", usually it means you conducted hypothesis testing.
Response 43: we thank the reviewer for this comment. So, we have replaced "significant" with "relevant".

Point 44: Table 2, For cluster II SDW results in Table 2, consider not to use scientific notation to be consistent with cluster I SDW results. And 0 does not need scientific notation.
Response 44: We have changed the notation of the results to be consistent in the table 2.

Point 45: Line 254, what do you mean by "global"?
Response 45: We wanted to point out that these are all the results of the risk of exposure of the different pathways in the municipality.

Point 46: Line 256, replace "this subject" to "soil".
Response 46: we thank the reviewer for this. We have replaced "this subject" to "soil" in the sentence.

Point 47: Line 256, for reference 22, this seems to be an incorrect reference number.
Response 47: We thank the reviewer for pointing this out. We have changed the reference for this sentence. So, we added the reference of SaniPath Protocol.

Point 48: Line 257, replace "risk" with "risk of exposure" and please do this for the entire paper.
Response 48: We have replaced "risk" with "risk of exposure" in the entire paper.

Point 49: Line 265, What's the unit for E.
Response 49: We thank the reviewer for comment. However, the risk of exposure ($E$) has not unit.
**Point 50:** Table 3. modify the term "global", "exposition", and "risk". Remove the row for soil.

**Response 50:** We have considered the comments from reviewer. So, we have deleted global then we have replaced "exposition", and "risk" by "exposure", and "risk of exposure" respectively. Also, we have removed the row for soil.

**Point 51:** Line 297, replace "number" with "average dose".

**Response 51:** We have considered the comments from reviewer and replaced "number" with "average dose".

**Point 52:** Line 300, After this paragraph, the authors should consider to report the difference in exposure between cluster I and cluster II by pathway.

**Response 52:** We appreciate the reviewer’s insightful suggestion. We have included a paragraph that provides a comparison of the exposure between the populations of clusters to the pathways.

**Point 53:** For Figure 5, Could you present all the risk profiles people plot for all the pathways in the supplemental materials?

**Response 53:** we thank the reviewer for this comment, we have added all the risk profiles people plot for all the pathways in the supplemental materials.

**Point 54:** Line 307, for "CI", do you mean Cluster I? You need to define CI and CII before you can use them. Or CI also means "Confidence Interval".

**Response 54:** We appreciate the reviewer’s insightful suggestion. CI means Cluster I and CII means Cluster II. We have defined the both in this section.

**Point 55:** Line 308, replace "E. coli contamination" with "risk of exposure".

**Response 55:** We have replaced "E. coli contamination" with "risk of exposure".

**Point 56:** Line 313, Could the authors discuss why cluster II areas with sanitation system had higher exposure through pathways like gullies and open drains.

**Response 56:** We appreciate the reviewer’s insightful suggestion. We have included a paragraph that discusses the higher exposure through gullies and open drains in cluster II.
**Point 57:** Line 319, replace "wich" to "which".

**Response 57:** we thank the reviewer for this comment, we replaced "wich" to "which" in the sentence.

**Point 58:** Lines 331-332, please consider compare your results with other SaniPath deployments. As food was indicated as the universal dominant pathway in Wang et al. 2022.

**Response 58:** We appreciate the reviewer’s insightful suggestion. We have included a paragraph that discusses food as the dominant pathway as described in Wang et al. 2022.

**Point 59:** Line 343, are these numbers log10 scale? If it is not removing the log10 in the unit. And cfu should be CFU.

**Response 59:** We appreciate the reviewer’s insightful suggestion. We have removed the log10 in the unit and transform cfu with CFU.

**Point 60:** Line 353, no behavior data to support this. Please consider to report behavior survey results in the paper or in the supplemental material.

**Response 60:** We appreciate the reviewer’s insightful suggestion. We have included a behavior result in results section and added all behavior results in the supplemental material.

**Point 61:** Line 376, E. coli is not necessarily a pathogen.

**Response 61:** We thank the reviewer for this comment. We have replaced pathogen by fecal indicator in the entire paper.

**Point 62:** Line 386 and 388, using gully instead of storm water/grey water to keep it consistent. You could discuss where the storm water and grey water enter the gully.

**Response 62:** We appreciate the reviewer suggestion. We have included a behavior result in results section and added all behavior results in the supplemental material.

**Point 63:** Line 396, What do you mean by hotspots?

**Response 63:** This would mean the most exposed areas or points. However, I have replaced the word hospots with areas.

**Point 64:** Line 420, The reference format needs to be improved with some many just a pdf file name. For Figures, I would recommend the authors adding captions for all the figures.
Response 64: we thank the reviewer for this comment. We have improved the format of the references and inserted the captions for all figures after the references.

Reviewer: 2#

Point 1: Keywords: FSM is not appropriate, include Ivory Coast.
Response 1: We thank the reviewer for this suggestion, we have deleted FSM and included.

Point 2: L174: add the producer of Chromocult® Coliform agar.
Response 2: We thank the reviewer for this suggestion, we have removed the term Chromocult® Coliform as well as all instances of trademark/copyright symbols as suggested in point number 2 of the journal requirements.

Point 3: L196: provide reference for SaniPath tool.
Response 3: We appreciate the reviewer’s insightful suggestion. We have provided a reference including the link to the Sanipath tool approach.

Point 4: L244: change to “of the samples“.
Response 4: We thank the reviewer for this suggestion, we have replaced “in the samples“ with “of the samples“.

Point 5: L245: were instead are – applies to the rest of text.
Response 5: We appreciate the reviewer’s insightful suggestion. We have used the past tense in the entire result section, using “were“ instead “are“.

Point 6: L246: it would be better to show the concentrations as logCFU/mL, or eg. 6.5x10⁵ CFU/mL, instead of 6.46 E+05 CFU/ml - applies to the rest of text.
Response 6: We appreciate the reviewer’s insightful suggestion. For the rest of text we have used the form 6.5x10⁵ CFU/mL to show the results of the concentrations.

Point 7: Table 2. Show the logCFU/mL, per one mL for all samples, to make the comparison easier.
Response 7: We thank the reviewer for this suggestion. As recommended in the previous point we have presented the results from the table in the following form 6.5x10⁵ CFU/mL.
Point 8: Table 3: change comma to dot for decimal places. Explain “-“ for soil.
Response 8: We took this comment into consideration and are deleting the line contained “soil “. So, “-“means there are no results for the soil pathway.

Point 9: L319: provide reference after “another study”.
Response 9: We took this comment into consideration and added reference after “another study”.

Point 10: L368: provide reference for Ronoh and al.
Response 10: We took this comment into consideration and provided the reference for Ronoh and al.