CAMEROON PUBLIC HEALTH DATA ANALYSIS CAPACITY BUILDING PROJECT

FINAL REPORT

October 2022 – February 2023

Inception workshop/Training of Trainers, with 3iS Staff, GIZ representatives and representatives from 5 regions at Hotel Franco Yaoundé, Cameroon

Acronyms

3iS: 3iSolution

GIZ: German Agency for International Cooperation (Deutsche Gesellschaft fur Internationale)

SRH: Sexual and Reproductive Health

FP: Family Planning

DSA: Daily Subsistence Allowance

DHIS 2: District Health Information software

HIMS: Health Management Information System

MoH: Ministry of Health

Agreement Number	81288705	**Donor**	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
Start Date	30th September 2022	**End Date**	28th February 2023
Location	Cameroon		
Partners	GIZ, MoH of Cameroon		
Total Budget	USD		

1. Project background and project performance overview

Cameroon has seen significant improvements in human health and development over recent decades. Since 1990, life expectancy at birth has increased by 5.9 years and its Human Development Index (HDI) score has increased by 25.7% from 04.48 to 0.563, placing Cameroon in the lower end of the 'Medium Development Category'. Officially, as of May 24, 2022, Cameroon registered just under 120,000 cases and 1,927 deaths of COVID-19, however this is almost certainly an underestimation given the low testing rate, and the high positivity rate and case fatality ratio. The COVID-19 pandemic caused a significant deterioration in economic activity and consumption. It is estimated that the crisis increased the extreme poverty rate from 24.5 % in 2019 to 25.3 % in 2021. Public services, including health services, were also severely affected. Whilst Cameroon was amongst the first countries in Africa to receive vaccines in April 2021, Cameroon has one of the worst COVID-19 vaccination coverage rates in Africa (ranking 43rd of 46th). Only 4.4% of the population have been fully vaccinated and an additional 1.3% of the population have received at least one dose of the vaccine, well below the regional average of 17.25 and 5.3%.

The pandemic has undone some of the progress achieved in recent years. In terms of Reproductive, Maternal, Neonatal and Child Health (RMNCH) and Family Planning (FP), the situation had been steadily improving. Between 2000 and 2017/2018: the percentage of births rose from 56% to 66.9%; the maternal mortality rate dropped from 886 to 529; and the under 5 years mortality rates halved from 143.9 to 72.2. Throughout the pandemic, the use of family planning and prenatal care services fell by 37 % and 18 %, respectively. This compounded the existing challenges in RMNCH/FP.

The Cameroon Ministry of Public Health began utilizing District Health Information Software (DHIS2) as its integrated health management information system (HMIS) in 2014. This system, also recommended by The World Health Organization (WHO), can function as a data warehouse to facilitate collection of good-quality data and support analyses of trends. Several issues that limit the full functionality and potential of DHIS2 in Cameroon have already been flagged. The BID Learning Network highlighted in 2017 that data completeness and consistency are an issue, that capacities for data analysis are low, and quality of data are variable[1]. The 2020-2024 National Digital Health Strategic Plan' highlights multiple challenges and threats, such as poor coordination of the various actors producing health data. The plan concludes that "it is clear that the implementation of digital health in Cameroon at all levels of the health pyramid is facing a qualitative and quantitative shortage of competent and available human resources". In response to the above shortcomings, GIZ launched the ProPASSaR (Projet de Planification Familiale et Appui au Système de Santé pour la Résilience au Cameroun) Project.

[1] https://bidinitiative.org/wp-content/uploads/1513122669DigitizationoftheHISinCameroun.pdf

The project aimed at strengthening the capacity of Regional, and District public health decision makers and medical officials to produce, analyze, collate, and make decisions based upon DHIS2 data through targeted, customized trainings on COVID-19 vaccine and SRH/ FP data. This is in line with the vision laid out in the 'National 2020-2024 National Digital Health Strategic Plan', which states that "The vision is to ensure that by 2024, digital health contributes effectively to Universal Health Coverage (UHC), through informed decision-making at all levels of the health pyramid, through reliable, robust, secure, and interoperable systems". The Cameroon Health Information Management System (HIMS) runs from the Central (Strategic) level to the Intermediary or Technical (Regions), and Peripheral or Operational levels (Districts and Health facilities). The implementation of strategies mostly takes place in the regions, districts, and facilities. Reason why strengthening and capacitating the personnel at these levels would have a positive impact on the country's health system. Every District is headed by a District Medical Officer who makes data driven decisions. The Ministry also has Chief of Bureau Heads or Data Managers who ensure data aggregation and analysis. As such, the GIZ-3iS partnership was born in September 2022 to ensure the implementation of this project. 3IS strengthened the capacity of key stakeholders on public health data analysis and data-driven decision making for COVID-19 vaccination and SRHR/ FP through sustainable capacity Building in Littoral, West, Adamawa, North-West and South-West. Personnel in charge of data analysis and decision making were selected from all districts across all 5 regions and all districts were represented. The selection was done by the regional focal points of the Ministry of Health. To attain the project's objectives, the project was split into 6 activities and was implemented over a period of 5 months.

2. 3iS project activities report

In line with Cameroon's health sector strategy and GIZ's commitment in Cameroon to support the fight against infectious diseases such as COVID-19, 3iS has sought to support health information management capacity via a rigorously identified needs-based approach.

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The objectives of the project were divided into 5 activities, and all were achieved as shown in the table below:

ACTIVITY	ACHIEVEMENTS	FINAL OUTCOME
Activity 1 – Conduct an assessment of DHIS2 data flows, decision-making, needs and analytical capacities.	A baseline evaluation (Annex 1) was conducted online via a mixed methods approach (a survey and Key Informant Interviews). The online survey was open for 4 days from the 25th-28th October 2022. It was sent to 5 GIZ regional consultants where they transmitted the link to their colleagues and other relevant stakeholders. The survey included questions on information management, data analysis and data-driven decision making in the domain of COVID-19, Sexual and Reproductive Health, and Family Planning. A total of 60 people from 5 different regions responded to the survey. All	While DHIS2 was introduced in Cameroon between 2014 and 2015 to facilitate the collection, processing and analysis of health data, many districts were not properly trained in its use. It was therefore important to have a clear idea of the level of mastery of this tool, which, in view of the surveys conducted by our teams, proved to be relatively low at the district and regional levels. Given the importance of districts in the health information supply chain, building the capacity of district staff is

	respondents self-identified as decision makers while two-thirds were data managers at the district level. Of the 60 respondents, **98%** reported being familiar with DHIS 2, **90%** were also familiar with MS Excel while just **20%** were familiar with MS Power BI. This could be explained by the fact that **77%** had training on DHIS 2 organised by the Ministry of Health. Additionally, **75%** had personal training in excel while **78%** had never had any form of training on MS Power BI. The overall **self-reported good confidence in the use of all three platforms was 31%**, with Littoral region at the top with 42% and the West region at the bottom with 17% overall average score. Although majority of respondents were familiar with both DHIS 2 and MS Excel, only **42%** and **32%** were confident using them respectively, whilst **38%** were neutral. But as for MS Power BI only **8%** were confident in its use while **85%** were not confident. The above information supported 3iS's needs evaluation and guided the development of tailored (per region) training modules on Public Health Information Tools and Standards (PHIS), Information Management, Data analysis and visualization using DHIS 2, MS Excel, and MS Power BI. Much emphasis will be paid on MS Excel and MS Power BI.	critical to achieving regional and national impact. Thus, the team was able to design training modules adapted to all targeted beneficiaries.
Activity 2- Launch an inception workshop inviting the 05 regions and some district level staff to launch the project, understand needs and ways of working. **Activity 4 - Conduct an expanded Training / Training of Trainers for Regional public health officials on Data Analysis and Evidence-Based Decision Making on COVID-19 vaccine and SRHR FP data.**	This workshop and training, held in Yaoundé from the 14-18 November 2022, aimed at introducing the project, presenting the team, better understanding the regional challenges and specificities to enable a customization of the training. This was also used to identify relevant stakeholders at district level that would benefit from attending the capacity building training. The training was delivered to 27 participants including 5 Public Health Data Specialists (drawn from each regional delegation of public health) and 2 Central level Public Health Data Specialists (drawn from the Center for Health Information of the Directorate for Epidemic & Pandemic Control – DLMEP--as well as the National Program for the Fight	Based on the principles of peer training, the entire project has encouraged a strong involvement of beneficiaries. At the completion of this activity, the team was able to train regional actors (trainers) in the analysis of public health data and to identify relevant stakeholders at the district level. In addition, ensuring the involvement of regional delegation of public health helps maximized the potential impact of the project.

	Against Maternal, Infant and Neonatal Mortality-PLMI) and focused solely on empowering those with the ability to analyze their own data to facilitate decision making processes. The participants were also equipped with necessary skills -including communication skills and adult-learning skills- to deliver subsequent trainings in their respective regions targeting mostly district-level personnel based on the cascade model. The Max and Min scores for the pre-test were 18.25 and 11.75 out of 20 respectively while the average score was 15.8 out of 20. This training was very interactive as regional needs were also discussed including topics to pay more attention to (Annex 4). Due to enforcing constraints (delay in reception of the Contract Amendment), the team has been unable to deliver the expanded Training of Trainers that should have been held in Yaoundé at the end of the project.	
Activity 3- Develop tailored training materials for Data Analysis and Evidence-Based Decision Making on COVID-19 vaccine and SRHR FP data.	Based upon data and insights collected through activities 1 & 2, the 3iS team developed a training package in both English and French languages (based on regional preferences) covering data analysis and evidence-based decision making. In line with findings from the baseline evaluation, trainings modules did not differ much per region. However special attention was paid to both DHIS 2 and EXCEL during the training in the West Region as well as MS Excel during the training in Adamawa region. Training contents responded to identified needs including software packages of DHIS2, Excel and Power BI; database development & management; data cleaning; data analysis and evidence-based decision-making (Annex 7).	Evaluations have indeed shown the importance of strengthening the most difficult-to-access persons' capacities to improve the overall performance of health data processing at the district level, and ultimately the ability of decision makers to make evidence-based decisions. By considering regional and linguistic features, training trainers, and involving the participants by encouraging them to clearly define their learning objectives, 3iS ensured that the capacities of all, including the hardest-to-reach staff at the region and district level are strengthened. In doing so, we sought to close the learning gap in the long term.
Activity 5- Conduct trainings in each region for Regional and district-level Health officials on Data Analysis and Evidence-Based Decision Making on COVID-19 vaccine and SRHR FP data.	As evidenced by the attendance lists, a total of **246** participants were trained across the 5 regions covered by the project. Owing to the potential number of district- level staff to be trained, all training (except for Adamawa) was simultaneous with an equal number of participants in each hall. This was to account for the number and varying skill level of participants. The evidence change in mean	Following on from Activity 4 (ToT) which aimed to embed the capacity to deliver trainings at the regional level, Activity 5 sought to make sure that trained regional focal points are involved in facilitating the successful delivery of district-level trainings within their respective regions.

	score for the pre and posttests for each region were as follows: 10%, 14%, 7%, 9% and 8% for Adamawa, Littoral, Northwest, Southwest and West Regions respectively. This implies greater impact was felt in the Littoral Region compared to other regions. The Littoral Region had the least pre-test (baseline knowledge) score of 61% while the Northwest had the highest of 74%. Other interesting data can be found in Annex 4.	Together with the regional co-facilitators, the 3iS team conducted trainings covering all the topics defined in activity 3, considering the insights gathered through activities 1 and 2.
Activity 6 – Document experiences and develop recommendations for priority areas for strengthening of data analysis capacities amongst regional and district-level health officials. In-depth training of trainers	Experiences were documented and recommendations were developed for priority areas with the objective of strengthening data analysis capacities amongst regional and district-level health officials.	The experiences and recommendations were documented in the present report. Please see below under 'Challenges and Lessons'

3. 3iS project results and recommendations

3.1 Project training results

Date	Activity	Results
Nov 14-18, 2022 Yaoundé	Inception + Training of Trainers workshop, **Center** Region	Post test could not be conducted.
Nov 28-Dec 1, 2022 Edea	**Littoral** Regional training	Initial learning gap: **29%** Pre and post-test evaluation results showed a **+ 14%** increase in learning.
Dec 7-10, 2022 Limbe	**South-West** Regional training	Initial learning gap: **22%** Pre and post-test evaluation results showed a **+ 9%** increase in learning.
Jan 9-12, 2023 Mbouda	**West** Regional Training	Initial learning gap: **23%** Pre and post-test evaluation results showed an +**8%** increase in learning.
Jan 16-19, 2023 Mbouda	**North-West** Regional Training	Initial learning gap: **16%** Pre and post-test evaluation results showed a **+7%** increase in learning.
Jan 23-26, 2023 Meiganga	**Adamawa** Regional Training	Initial learning gap: **20%** Pre and post-test evaluation results showed a **+10%** increase in learning.

The pre-post tests were aimed at identifying the learning curve of participants (as outlined in the table above) with a quantitative approach, as well as at evaluating with a qualitative approach the participants' perceptions on the training conducted. Priority themes (sub-headings) were developed by the team, key themes were identified, from the responses of participants and matrices were developed to discern patterns and relationships amongst the evaluation themes and sub-headings. Some results are presented below, where excerpts (extracted words) from the participants are presented:

3.2 Feedback and recommendation from participants:

Technical aspects:

- Data validation without data analysis

There were **data validation** workshops held in the regions, but no data analysis workshops. It would be necessary to focus more on **data analysis**.

- Data analysis regularity

Data analysis is usually done ad-hoc but not regularly. We believe strengthening the **capacity of personnel in the health system pyramid** would ensure regular data analysis at regional, district and facility levels.

- A results-driven approach

It is questionable whether there is a results-driven approach to working in the health sector on regional and especially district level in general. Therefore, follow-up is needed to ensure that trainees have implemented the knowledge and skills they have acquired. For future projects it should be considered to change the focus to results-orientation and data demand and use and not on data quality. This **will lead to better health outcomes** at all 3 levels of the health system.

- Priority areas to be considered for future projects

According to the analysis, the areas that require the most attention include Data analysis, Monitoring and Evaluation, Data Interpretation and Decision Making. This is because conducting the wrong analysis will lead to wrong interpretation, bad decision making hence bad health outcomes. Also, 3 different data analysis software were taught during the condensed training. Little was done concerning M&E, which is also a core aspect of the data management cycle. That is why future projects should focus on these topics which will reduce further the know-do-gap among the health personnel in Cameroon.

- Training design

More practical exercises and assignments should be given, and more effort shall be dedicated to improving the participants' capacities in other tools, such as **MS Power BI**.
On the latter, several participants indicated the need to increase their capacities in the use of this tool. Indeed, 3iS's preliminary assessment showed that this MS Power BI was new to 99% of participants. Yet, the needs are obvious and explicitly stated in participants' feedback:
"*Increase the time spent on practical session of POWER BI.*" "*More sessions on Power BI should be taken.*"

Operational aspects:

- Workshop duration

Workshops could have been a little bit longer, especially in regions where the needs were the most important. All the participants who responded to the survey believed that the **4 days allocated were not enough**. This is backed from comments like: *"More time should be allocated for the trainings and there are many modules that could have been well mastered if there was more time, say a week."*

- Flexibility in planning

It is crucial to have flexibility in planning for unforeseen events. At district level, it is not uncommon for activities to be cancelled for a variety of reasons related to both the context and the availability of venues, participants and/partners.

- Organize similar trainings at Health Area as well as Health Facility level

This is where we have the first contact in the health system between patient and health personnel. Extending this training to the peripheral level will improve the quality of data and ensure accountability.

- Mentoring/coaching on data analysis/monitoring, evaluation, and accountability possibly with the team of 3iS

3iS's staff tried to get the participants involved as much as possible, by inviting them to define their expectations of the training and to set individual learning objectives. As much as participants were involved, there was a real need for regular individual support.

- Continuous follow-up on DHIS2 software

Continuous follow-up is needed on DHIS2 since this is the national tool used by the ministry. To make the best use of the DHIS 2 at the national level, regular monitoring of its use by users should be implemented at local levels. This is because this is the point of first contact between patient and health personnel. Wrong data collected in the wrong format would lead to wrong analysis, interpretation, and decision making. This would lead to either under or over reporting, wrong programmatic decisions thereby weakening the health system further.

3.3 Recommendations (Activity 6)

1. For what concerns the percentage of knowledge improvement resulted from the pre-post tests presented above, it would have been higher if training days were longer. This has also been confirmed by the participants who expressed the need to receive refresher training considering a lot of information was condensed in the short available training timeframe. The differences in the learning curve between one region and the other are determined by the level of understanding, language and willingness to learn. It should be noted that some participants were motivated mainly by per diem (DSA), a factor that clearly altered their own personal objectives or expectations from the training and their overall engagement.

Reference to this, it is recommended to extend the timeframe allocated to the training and if a phase two of the project is launched to ensure that participants do receive refreshers on topics already covered. In addition, brainstorming should take place on the criteria for selection of training participants, to ensure commitment to the learning objectives.

2. After analyzing the results from the pre/post-tests and training evaluation reports, the areas that require special attention for future training are: Analysis, Monitoring and Evaluation, Data Interpretation and Decision making. In addition, more specific areas of focus for future training should be:

DHIS software: Analysis using Maps and pivot tables, using the WHO Data Quality Tool for Quality Control and monitoring of important indicators. Continuous follow-up is needed since this is the national tool used by the ministry.

MS Excel: Data analysis using pivot tables, inserting validation rules and conditional formatting. I believe this will improve data quality further.

MS Power BI: Since this was a new tool for 99% of participants, it will be beneficial to redo this module for at least one week and allow participants to create dashboards for SRH/FP and Covid-19 indicators. This will not benefit these mentioned program areas but others as well.

3. Monitoring and Evaluation is a vital step in project management and as data managers and decision makers, we believe that participants should be capacitated on it. This should be a focus for future training programs.
4. To further strengthen the Cameroon health system by building capacity of its staff, we believe modules on leadership, team building, and management should also be introduced. We believe this will boost collaboration among colleagues and ensure a friendly atmosphere and thus timeliness in reporting.

4. Challenges and Lessons learned

Challenges	Strategies used to mitigate the challenges	Lessons Learned
Participants considered the length of each workshop (4 days) not long enough to well assimilate competences.	Pre-workshop baseline assessment enabled facilitators to identify the most crucial knowledge gaps of participants	Need to consider lengthening the duration of future similar workshops to at least 5 days.
Calendar conflicts of the MoH and logistic imperatives forced the team to reschedule some of the training dates and almost hampered the last regional workshop.	Maintained constant communication with regional stakeholders to confirm and reconfirm workshop dates.	To consider inviting all regional delegates/ other decision-makers when launching similar projects in the future. This shall go a long way towards securing their buy-in and ownership of the project. To consider the general unavailability of participants at the end of the year (considering the holiday period).
Some regions responded late to the baseline survey which impacted its evaluation	Separate WhatsApp groups for these regions were created for a better follow-up.	Effective communication is pivotal in project implementation and ensuring engagement of stakeholders.

5. Implementation Partners

The relationship between the donor (GIZ) and 3iS was great as the GIZ focal point for Cameroon and his team also provided some support for the procurement of venues for the inception workshop and the first 2 regional trainings. Additionally, some of the GIZ consultants were present at the trainings which showed their engagement in the success of the project.

Furthermore, the regional partners and stakeholders were welcoming and participated actively in the trainings.

6. Project Staffing

STAFF NAME	POSITION HELD	CONTRACT START DATE	CONTRACT END DATE
Walter Taminang	Program Manager	3rd October 2022	28th February 2023
Joseph Ntamack	Capacity Building Officer	3rd October 2022	28th February 2023
Norbert Fuhngwa	Capacity Building Officer	5th October 2022	28th February 2023

7. Annexes

Annex 1: Link to the baseline survey which supported the needs' evaluation and development of training material and specificities per region: here

Annex 2: Report presenting findings of the survey

Annex 3: Link to the post training evaluation form: here

Annex 4: Pre and post-tests reports highlighting evidence of gain in knowledge and change in Mean Score showing improvement from training.

Annex 5: Modules and presentations used during trainings are available at this link https://we.tl/t-qj9hAqsE5y