

**REPUBLIQUE DU CAMEROUN**  
Paix-Travail-Patrie  
**Ministère de la Santé Publique**

**REPUBLIC OF CAMEROON**  
Peace-Work-Fatherland  
**Ministry of Public Health**

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## **DHIS<sub>2</sub> OPERATIONAL PLAN 2022 - 2024**

April 2022

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The detailed list of attendants to the key workshops for assessment and planning are attached in appendix.

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## ABBREVIATIONS AND ACRONYMS

<b>Abbreviation</b>	<b>Definition</b>
<b>AFP</b>	: Acute Flaccid Paralysis
<b>ART</b>	: Anti-Retroviral Therapy
<b>CHIS</b>	: Community Health Information System
<b>DHIS2</b>	: District Health Information Software, 2 <sup>nd</sup> version
<b>EPI</b>	: Expanded Program on Immunization
<b>GDP</b>	: Gross Domestic Product
<b>HISP WCA</b>	: Health Information Systems Program in West and Central Africa
<b>HIU/CIS</b>	: Health Information Unit/ Cellule des Informations Sanitaires
<b>ITU/CI</b>	: Information Technology Unit/ Cellule des Technologies de l'Information
<b>MOH</b>	: Ministry of Health/ Ministry of Public Health
<b>NCD</b>	: Non-Communicable Diseases
<b>NHCC</b>	: National HIV Control Council
<b>NHDP</b>	: National Health Development Plan
<b>NMCP</b>	: National Malaria Control Program
<b>NTCP</b>	: National TB Control Program
<b>NTD</b>	: Neglected Tropical Diseases
<b>PBF</b>	: Performance Based Financing
<b>RMNCH</b>	: Reproductive, Maternal, Neonatal and Children Health
<b>TB</b>	: Tuberculosis
<b>UiO</b>	: University of Oslo
<b>UNFPA</b>	: United Nations Population Fund
<b>USD</b>	: US Dollar
<b>WHO</b>	: World Health Organization

## **INTRODUCTION**

### **1.1 General background**

The World Health Organization (WHO) defines the health system as the set of all institutions, organizations, persons and resources whose primary intention is to promote, restore or maintain health. The health system includes the six building blocks: (i) governance, (ii) human resources, (iii) health infrastructures, equipment, medicines, health technologies and supplies, (iv) health financing, (v) care delivery, (vi) health information. Health information is a key component as it seats at the beginning of each situation analysis process, then informs the planning and finally allow the monitoring and the control of performance.

#### **1.1.1 The HMIS**

The HMIS can be defined as a structured combination of resources and processes that enables health organizations and health to collect, store, manage, analyze, and optimize data in order to assess and promote performance both in patient and community health. grams. histories and other key data. According to the HMN harmonized framework, the HMIS has six (6) components: (i) resources, (ii) indicators, (iii) data sources, (iv) data management, (v) information products and, (vi) diffusion and usage. Digitalization is playing a more and mor critical role to support each and all of the 6 components.

#### **1.1.2 The DHIS2**

The District Health Information System, 2nd version (DHIS2) is the world's largest health information management system – developed through global collaboration led by UiO. DHIS2 began in post-Apartheid South Africa and is now a global open-source project coordinated by the HISP Centre at the University of Oslo (UiO). More than 73 countries worldwide use DHIS2 for collecting and analyzing health data. 2.4 billion people (30% of the world's population) live in countries where DHIS2 is used. DHIS2 is offered free of charge as a global public good.

As the national health data repository, DHIS2 is the backbone of the HMIS in Cameroon.

### **1.2 Country background**

#### **1.2.1 National situation**

Limited by Nigeria to the west, Chad to the northeast, the Central African Republic to the east, Congo, Gabon and Equatorial Guinea to the south, and the Atlantic Ocean to the southwest, Cameroon is a Central African country that covers a surface area of 475,440 square km. It is a bilingual (French/English) country with Yaoundé as political capital and Douala the economic one. The country is divided into 10 Administrative Regions, 58 Divisions, 360 Sub-Divisions and 374 Regional and Local Authorities (councils and urban communities).

The total population count is 27,9 inhabitants in 2022 according to the UNFPA. The country has a wealthy mining asset including bauxite, cobalt, iron, gold and uranium. Socioeconomic data shows that Cameroon has a GDP per habitant of 1537 USD in 2020, with 37.5 % of the population living under the poverty line (2014 data) according to the World bank.

### **1.2.2 Health overview**

The health system in chaired in Cameroon by the Ministry of Public Health (MOH) and the health pyramid comprises 3 levels:

- The central level with the ministry and his cabinet, national directions and sub-directions, priority health programs' coordination teams. The core role here is to design policy and regulation, provide strategy and oversight.
- The regional level with 10 health delegation which are tasked for supporting and controlling districts, and ensure national guidance are properly implemented.
- The operational level with 197 health districts which function is to supervise health facilities and advance primary health care across the country which officially counts 6200 health facilities.

At the central level, key directions in charge for the HMIS is the Health Information Unit (HIU) from the data side, and the Information Technology Unit (ITU) from the infrastructure side.

Key health indicators for the country are as presented in **Table I**.

***Table I: Key health indicators in Cameroon***

<b>Indicator's name</b>	<b>Value</b>	<b>Source</b>
Life expectancy at birth (in years)	60	World bank, 2020
Under five mortality rate (probability of dying between birth and the age of 5 years per 1000 live births)	72,21	WHO (GHO) , 2021
Antenatal care coverage (percentage of at least 4 visits)	64,9	WHO (GHO) , 2021
Measles-containing vaccine second dose (MCV2) immunization coverage by the nationally recommended age (percentage)	28	WHO (GHO) , 2021
Estimated antiretroviral coverage among people leaving with HIV (percentage)	74	WHO (GHO) , 2021
TB effective treatment coverage (percentage)	28	WHO (GHO) , 2021

The process consisted in four (4) phases:

- DHIS2 maturity level assessment;
- Implementation review of the expired DHIS2 operational plan;
- Inventory of data needs from keys health programs;
- Development of the new operational plan.

### **2.1.1 DHIS2 maturity level assessment**

The assessment was jointly done over 2 days in a workshop organized under the leadership of the national HMIS team and attended by 10 participants coming from key programs: Malaria, HIV, TB, Surveillance and EPI. The workshop was supported by a team of 3 consultants. Calls and work session before and after the workshop allowed to properly organize the gathering and to later finalize the work.

The assessment was done using the tool developed by the University of Oslo in lign with the DHIS2 maturity framework model. The tool allows to examine 03 domains: (i) foundational, (ii) aggregate data and (iii) individual level data. For planning purposes, we divided the Foundational elements into two categories: organizational foundations and technical foundations. In total 17 subdomains including 117 indicators where assessed. For each indicator, four levels grading was used: 1=early progress; 2=not yet achieved; 3=adequate; 4=mature. For each subdomain, then domain, a total was calculated using a weighted average approach. Then, for each domain and subdomain, proportion comparing achieved total with the required one. A total was estimated for the whole country. For each proportion calculated, an appreciation was made using the same qualifications as the indicators' grading with the following ranges: [0; 30%]=early progress; [30%; 60%]=not yet achieved; [60%; 90%]=adequate; [90%; 100%]=mature.

### **2.1.2 Implementation review of the expired DHIS2 operational plan**

The expired plan's activities were examined to appreciate the level of implementation of each one using a three options set: not-started, ongoing, completed. Description allowed to analyze whether the activity should be continued or not and to examine eventual opportunities and challenges.

### **2.1.3 Inventory of data needs from keys health programs**

All programs and directions/sub-directions were asked to express their data needs and information challenges, including envisioned solutions. Discussions were made to better understand the needs and contemplate common ground options for HMIS and performance improvement.

### **2.1.4 Development of the new operational plan**

The new plan is the result of the process described above. Priorities were determined from (i) the non-achieved activities of the previous plan, (ii) the gaps to be addressed

according to the maturity model assessment, and (iii) critical data needs expressed by MoH components.



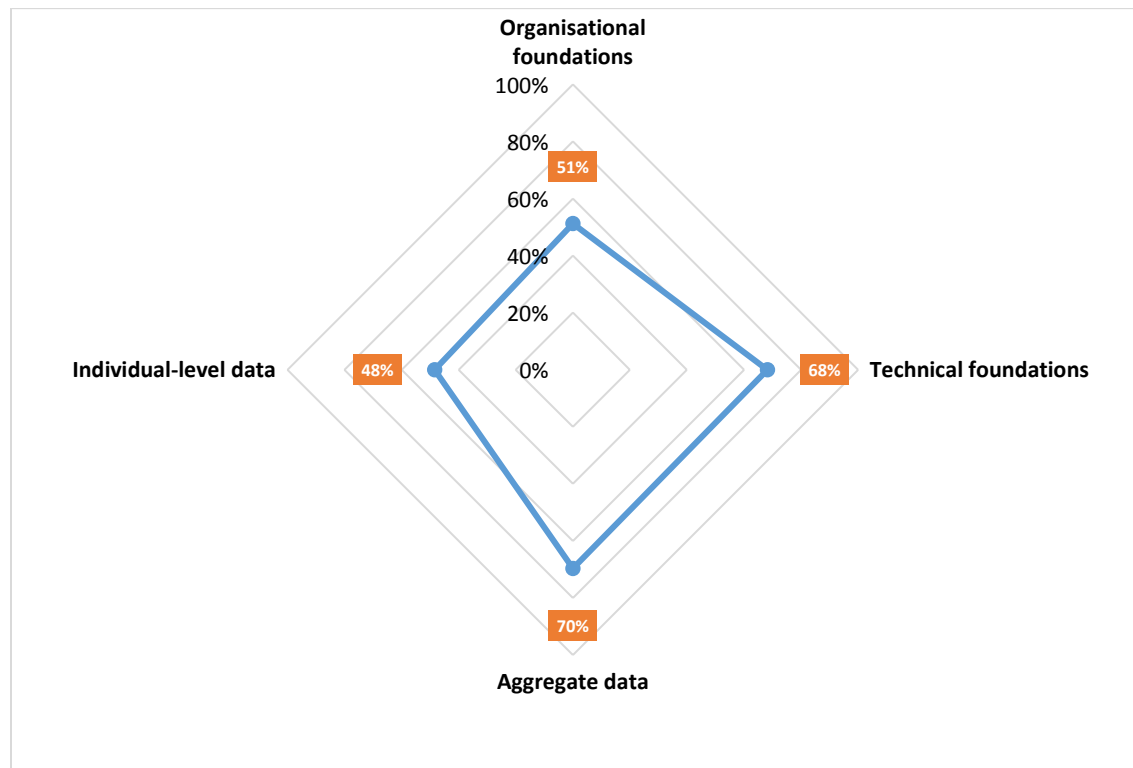
### 3 DHIS2 SITUATION ANALYSIS

Findings on the DHIS2 analysis as the main component of HMIS are described below.

#### 3.1.1 Cameroon DHIS2 maturity profile

With an overall weighted proportion of 61%, Cameroon’s DHIS2 profile reached an appreciation of “Adequate”.

In terms of domains, Cameroon’s DHIS2 strengths are in technical foundations and in aggregate data while efforts are mostly needed to enhance Organizational foundation and individual level data (**Figure 1**).



**Figure 1 : maturity levels reached by the four domains assessed**

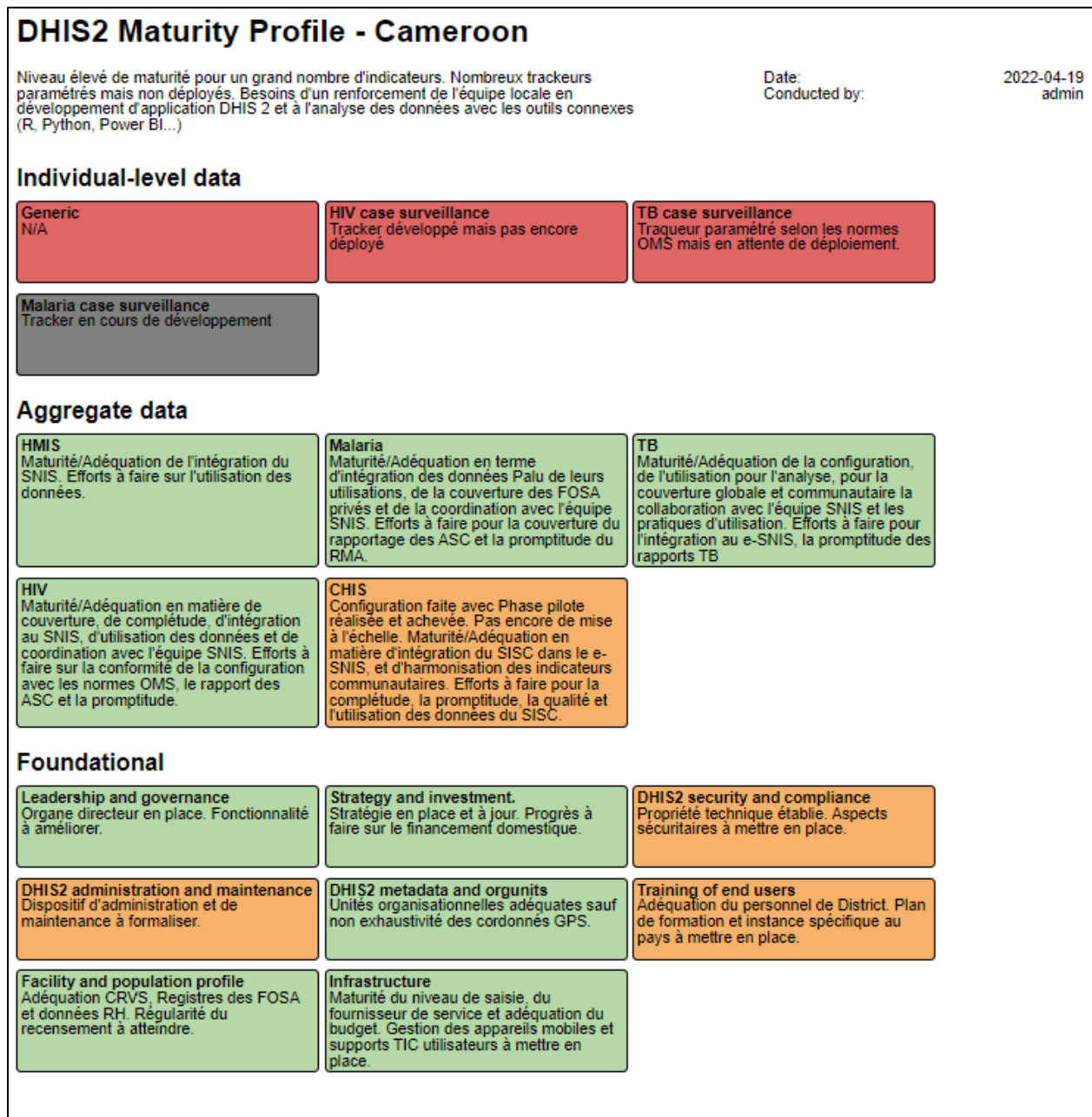
Among the 17 subdomains assessed, 9 appeared to be mature or adequate (**Figure 2**). While aggregate DHIS2 programs were quite mature, most of the work remains in the Foundational elements and in the trackers.

In the foundational domain, attention should be given to improve security and maintenance arrangements as well as facility geodata and a training plan and tools.

Regarding aggregate data, a nationwide generic HMIS is in place with data entry at the facility level. Malaria, TB and HIV data are well captured, despite HIV configuration needs to be updated in order to better comply with WHO recommended indicators. Efforts remain to bolster data completeness, timeliness and use. Specifically for CHIS,

the aggregate program was designed and piloted. Investment is needed for the scale up after needed adjustments.

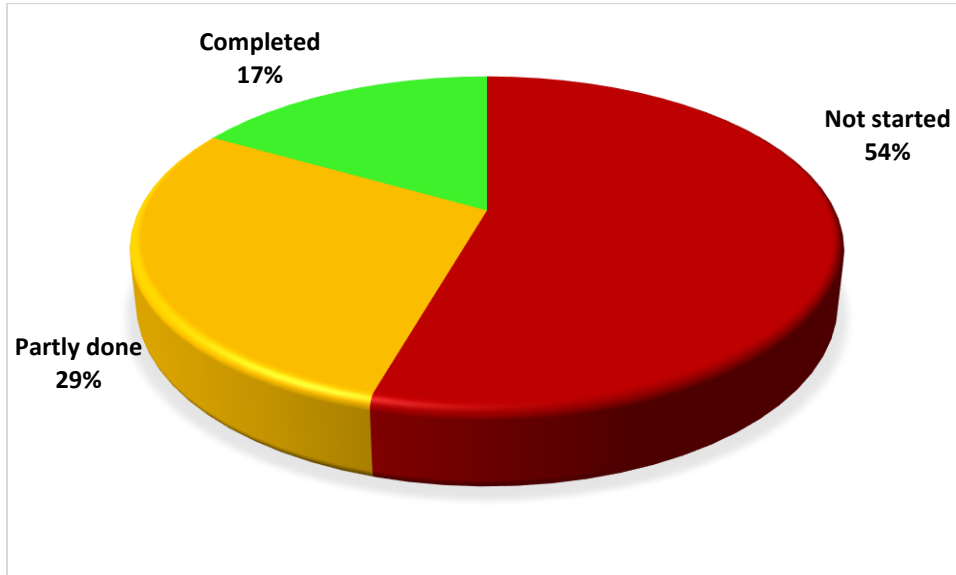
By the individual data side, while configuration work has been done for HIV and TB case management, none of those are finalized and ready to use. Resources are available for TB trackers but not for HIV. Malaria case management tracker is under development and may be the starting point to move to a broader patient health record. As trackers are moving on, a better attention is to be paid to data privacy and confidentiality.



**Figure 2 : maturity assessment standard report**

### **3.1.2 Implementation level of the expired DHIS2 operational plan**

Among the 90 activities planned under the previous DHIS2 operational plan, 17% have been totally completed while 54% has not been started (**Figure 3**). Taking into account the activities that have been started but are not yet completed, the estimated execution rate was 31%.



**Figure 3 : Completion status of activities planned under the expired plan**

Key achievements under the expired plan include the data analysis needs assessment, the revision of integrated data collection tools, the WHO dashboards and indicator package configuration for malaria, HIV, TB and immunization, the configuration of Performance Based financing (PBF) data forms, indicators and dashboards and the configuration and piloting of DHIS2 based CHIS2. Some trackers' configuration are advanced including TB and HIV trackers. However, there is a need for a review of the configuration and its completion in particular predictors, WHO recommended indicators and dashboards.

The main challenges that hindered accomplishments under the expired plan included (i) the lack of inclusiveness in its designing process, (ii) insufficiency in its diffusion and (iii) misalignment between planned activities and funding opportunities that were available to the country.

## 4 HIGH-LEVEL OBJECTIVES: THE 3 YEAR VISION FOR DHIS2 IN CAMEROON

Stemming from the maturity model framework for DHIS2, objectives for the 2022 – 2024 operational plan are as follow:

- i. Consolidate the organizational framework for managing DHIS2;
- ii. Improve the technical infrastructure to support DHIS2 deployment;
- iii. Review and expand DHIS2 Aggregate configuration and interoperability;
- iv. Advance DHIS2 individual data collection, quality and use.

To achieve each objective, a series of activities is planned. Below is described some key activities for each objective.

To strengthen **DHIS2 organization foundations**, the ministerial decree setting up the HMIS coordination group and technical team will be revised while a wide diffusion of the new plan will be subject to attention. A set of SOPs will be developed to guide and inform the whole DHIS2 processes and the data entry incentive will be upgraded. A DHIS2 based register for professional trainings will be setup in the DHIS2. A set of monitoring and evaluation products such annual progress updates and final evaluation of the plan will be made available.

To improve the **technical infrastructure supporting DHIS2 deployment**, a metadata directory will be designed and maintenance support system will be setup using a ticketing system including a stepwise delegation of certain basic maintenance functions to the regional level. Regional delegations' program officers will be encouraged to complete the DHIS2 fundamentals online courses and data analysis training curriculums will be developed with some of them setup in DHIS2. Denominator challenge will be addressed by organizing a yearly denominators' (population, facilities, HR...) validation meeting following preparatory work between the HIU and health districts. Finally, to allow data analysis taking into account data coming from health-related sectors that are under the MOH, the country will establish a supra-DHIS2 data warehouse to aggregate health-related cross-sectoral data.

In the field of aggregate data, immediate attention is reserved to improve CHIS from pilot experiment made and to scale it country wide- using a stepwise approach depending on funding availability. Existing aggregate programs will be reviewed to update indicators and dashboards to better meet current data needs of programs. Additional aggregate data configuration works are envisioned such as for the National Health Development Plan (NHDP), Non communicable Diseases (NCD), and Traditional medicine practice. Data quality will benefit from (i) quarterly regional data validation and monitoring meetings including the review and validation of districts' quarterly reports, (ii) annual data validation and cleaning meetings for all health programs at national level with regional officers, (iii) data quality supervision and audit including data triangulation to sample of

health facilities. Data use will be enhanced in particular through (i) the setup of an automated quarterly (DHIS2 standard report) joint bulletin for Malaria, TB and HIV; (ii) advanced data analysis training for DHIS2 core team (R, Power BI, Python, Interoperability with DHIS2...); (iii) EPI score card and Bottle Neck analysis apps; and (iv) automated sit-rep for outbreaks of national interest based on DHIS2 standard report. Several interoperability works are planned including for AEFI, eLMIS, malaria ALMA card and GeneXpert integrated TB and HIV lab results. Finally, a stepwise approach will be used to design and pilot over time a integrated DHIS2 solution for pharmacies to collect data on Malaria and on Covid case testing and management and ART drugs.

Regarding individual-level data, advancing configuration works on TB tracker and HIV tracker will be completed for field testing and piloting ahead of deployment. Similar move will be done to adjust and complete the configuration of Reproductive, maternal, neonatal, and children health (RMNCH) and EPI trackers to achieved full compliance with WHO requirements. Talking about Surveillance, building on the existing case line listing with GPS location for AFP and for Cholera, a high priority attention will be paid to advancing in hotspots configuration completion and visualization of cholera cases. This will lead to the configuration of a full case-based surveillance (CBS) tracker. It is planned to make connections between Surveillance and Immunization trackers in order to allow data triangulation. Other surveillance legacy data are to be imported (measle, yellow fever and TNN). Finally, configuration and testing work is contemplated for countrywide tracker on the case management of patients with chronic cutaneous Neglected Tropical Diseases (NTD).

## 5 KEY ACTIVITIES

Key activities are described in **Table II** below. For each activity, it is indicated whether there is a need for TA or not.

For the new the country has highlighted some priority challenges to be taken regarding HMIS/DHIS2:

- i. Revision of the monthly reporting booklet (Clinical and CHIS) and roll out of CHIS data into DHIS2;
- ii. Epidemic bulletin digitization
- iii. Supra DHIS2 data warehouse to bring together multisectoral data related to health
- iv. Pharmacies integration with Covid testing, malaria and management and ART dispensation
- v. Full and countrywide functionality of key trackers: TB, Surveillance, EPI.

**Table II: Activities and timeline**

SN	Activities	Responsible entity	Contributing entities	Schedule			TA	Comments
				2022	2023	2024	Needed?	
<b>Objective 1: Consolidate the organizational framework for managing DHIS2</b>								
1.1	Revise "DHIS2 governance body" decree updating members list and roles (ToR).	CIS	DAJC	x	0	0	No	Update the existing ministerial decree setting up the High level DHIS2 TWG. Insure a clear designation of a DHIS2 security officer is included
1.2	Print and disseminate the operation DHIS2 plan	CIS		x	0	0	No	Update the existing ministerial decree setting up the High level DHIS2 TWG. Insure a clear designation of a DHIS2 security officer is included
1.3	Organize <b>biannual</b> DHIS2 governance meeting (1 day) to review progress of the operational plan and to decide on high level improvements to DHIS2 needed.	CIS	SG	x	x	x	No	02 meetings in a year
1.4	Develop SOPs for the HMIS including digital data and DHIS2 key features in particular: (i) security, confidentiality and privacy policy for DHIS2 data; (ii) DHIS2 core team procedures; (iii) guidance for informatic devices management and securing; (iv) regional level support teams; (v) data entry and validation; (vi) data quality supervision and audit including data triangulation	CIS	DAJC, CI	0	x	0	Yes	Hire 1 international expert and 2 local ones (Informatic and Public health) Workshop1: technical review of the first draft (06 days with 50 pax) Workshop2: proofreading and validation workshop (05 days with 30 pax) EPI data quality SOPs developed and shared countrywide can be a starting point here. PDF format will and online orientation can be considered to disseminate ahead of mobilizing funds for in-person training and printing. For DHIS2 core team procedures, explore what DHIS2 basic capacities can be setup at Programs (M&E officers) and Regional levels. Update the composition and the role of the DHIS2 core team and provide its

SN	Activities	Responsible entity	Contributing entities	Schedule			TA	Comments
				2022	2023	2024	Needed?	
								members with job-desc. (iv) a need to decentralize certain maintenance task to the regional HMIS teams has been expressed
1.5	Update a register of all staff trained on DHIS2 and setup a DHIS2 training instance	CIS	DRH, DRSP, Programs	x	0	0	No	Excel file existing to be updated then configured as a DHIS2 tracker
1.6	Configure a tracker to get training data on DHIS2 and across all the programs and entities of the MoH	CIS	DRH, DRSP, Programs	0	x	0	No	Discuss with DRH. Will be the next step after the above activity
1.7	Organize data entry incentives	CIS	Programs, DRSP	0	x	x	No	Existing arrangement from Malaria forms that has been extended to the whole monthly activity report. Consistent resources needed to incentivize on the whole form. 20% of the users will be covered each year in order to reach 100% over 5 years. The year 2022 lasting months will be used to mobilize resources
1.8	Training on DHIS2 server hosting administration and basic maintenance	CIS	CI	x	0	0	Yes	Need local training on server hosting and administration. Raising demand from programs to be granted a certain level of administrative rights to be able to make quick updates to their apps (new users, indicators, dashboards...). Discussion to be completed internally at the MoH management level to guide further steps
1.9	Develop and validate M&E framework for the DHIS2 operational plan	CIS	ST/SSS, CPP	x	0	0	No	The country asked the consultant to provide a summary ME framework ahead of a detailed one that may be made available later
1.10	Produce an annual progress update report on DHIS2 operational plan	CIS	CI	x	x	x	No	Based on a set of around 10 indicators included in the M&E framework



SN	Activities	Responsible entity	Contributing entities	Schedule			TA	Comments
				2022	2023	2024	Needed?	
1.11	Organize a Final evaluation of the implementation of the DHIS2 operational plan	CIS	ST/SSS, CPP, Programs, DRSP	0	0	x	Yes	Epidemic context due to Covid 19 made it difficult to get time and funding for this objective. Hire 2 international experts (Informatic and Public health)
<b>Objective 2: Improve the technical infrastructure to support DHIS2 deployment</b>								
2.1	Assessment of DHIS2 infrastructure at the lower levels	CI	CIS, DEP, DRFP, DRSP, DS	0	x	0	No	Has been done in a few regions (extreme north and Adamawa) supported by PMI and followed by a certain distribution (NEED TO SEE THE REPPORT TO CHECK THE COVERAGE AND THE TYPE OF EQUIPMENT)
2.2	Design a metadata directory	CIS	CI, Directions, programs, DRSP, DS	0	x	0	Yes	
2.3	DHIS2 hosting and server maintenance services.	CIS	CI	x	x	x	No	BAO Systems. Operation plan has been developed to repatriate DHIS2 in Cameroon including a first step of mirroring to backup the whole system at the national level then a second step to later relocate the server nationally
2.4	Set up and host online server environment for development and testing with full access for CIS server admins	CIS	CI	0	0	0	No	BAO Systems. Mirroring plan to backup the whole system at the national level than later relocate the server nationally
2.5	Develop a local DHIS2 training instance with content adapted to the country.	CIS	DRSP, DRH	0	x	0	Yes	BAO Systems is currently in charge for the server. Operation plan has been developed to repatriate DHIS2 in Cameroon including a first step of mirroring to backup the whole system at the national level then a second step to later relocate the server nationally
2.6	Procure computers for district level	CI	CIS, DRFP, Programs	0	x	x	No	Some laptops has been procured and given at different levels by different programs but not in a structured way and totally dedicated to the HMIS. A

SN	Activities	Responsible entity	Contributing entities	Schedule			TA	Comments
				2022	2023	2024	Needed?	
								DHIS2 based tool has been configured to routinely (quarterly) update the equipment status at the lower level but is not systematically used. A discussion occurred during the workshop to decide if desktops shouldn't be directed to every Districts and region first. Need for the CI to have visibility on any laptop donated and to use a informatic devices management system. 20% of the users will be covered each year in order the reach 100% over 5 years. The year 2022 lasting months will be used to mobilize resources
2.7	Procure laptops/tablets for facility level (gradual scale up over 3y)	CI	CIS, DRFP, Programs	0	x	x	No	See above. Plan 3laptops/district; 14/laptops region; At the facility level, plan 1 Chromebook to replace each register: 10k. 20% of the users will be covered each year in order the reach 100% over 5 years. The year 2022 lasting months will be used to mobilize resources
2.8	Procure and configure a Mobile Device Management system	CI	CIS	x	x	x	No	Procure and deploy the system and train CI team on it use
2.9	Provide internet access for DHIS2 users at all levels (modems)	CI	CIS, DRFP, Programs	x	x	x	No	
2.10	Provide internet access for DHIS2 users at all levels (airtime)	CI	CIS, DRFP, Programs	0	x	x	No	
2.11	Setup a user support system with ticketing arrangements	CI	CIS, DRSP	0	x	x	No	2022 will be used to explore the existing solutions, select one and mobile funding. A provisional amount is used that will be updated

SN	Activities	Responsible entity	Contributing entities	Schedule			TA	Comments
				2022	2023	2024	Needed?	
2.12	Insure that at least 2 DRSP officers in each DRSP had successfully completed the DHIS2 fundamentals online training	DRSP	CIS	0	0	0	No	CIS indicates that DHIS2 fundamentals course certificate is a requirement to allow the transfer of some basic DHIS2 skills to the regional level. A requirement that will be captured in the SOPs. A mail from CIS will share the link
2.13	Organize initial training for DHIS2 new users at all levels	CIS	Programs, DRSP	x	x	x	No	While the estimated number is cross program, depending on the needs and on available resources, a program wise approach may be considered: interest already expressed for Malaria, HIV-PMTCM and other RMNCH components
2.14	Organize refresher training for DHIS2 data quality check and validation at all levels	CIS	Programs, DRSP	x	x	x	No	While the estimated number is cross program, depending on the needs and on available resources, a program wise approach may be considered: PLMI and DSF had already voiced their strong interest
2.15	Develop data analysis training curriculum based on the WHO curriculum/guides for data analysis of health facility data, adapted to Cameroon context with input from all health programs.	CIS	programs	0	0	x	Yes	
2.16	Organize annually DHIS2 upgrade workshops with DHIS2 core team	CIS	Programs; CI	0	x	x	No	Annually. The country confirmed that the service is included into BAO contract. No other TA will be needed for it
2.17	DHIS2 core team training workshops on DHIS2 configuration by global and regional DHIS2 experts	CIS	CI, Programs, DRSP	x	x	x	Yes	
2.18	Organize a yearly denominator (population, facilities, HR...) validation meeting	CIS	CI, Programs, DRSP	x	x	x	No	The draft designed by CIS and shared with directions and programs, will be reviewed together and adopted

SN	Activities	Responsible entity	Contributing entities	Schedule			TA	Comments
				2022	2023	2024	Needed?	
2.19	Annually organize a metadata cleanup workshop	CIS	DHIS2 core team	x	x	x	Yes	01 time: version 36.9 in use. Attempt to migrate to 37 failed because of certain bugs that has been outlined to the international DHIS2 community
2.20	Establish a supra-DHIS2 data warehouse to aggregate health-related cross-sectoral data	CIS	DHIS2 core team	0	x	x	No	Hire a consultant and establish a shortlist of opensource data warehouses that will be considered for the final selection based mainly on which one is the most suitable to the country and the most mastered by the consultant that have the most suitable CV.
<b>Objective 3: Review and expand DHIS2 Aggregate configuration and interoperability</b>								
3.1	Revise integrated data collection tools (Paper periodic reporting FORMS: Monthly booklet)	CIS	Programs, DRSP	x	0	0	No	Revise all monthly reporting booklets (MRB) for facilities ahead updating them in DHIS2. Ahead of the workshops, each program/directorate will send to the CIS the desired updates.
3.2	Revise integrated data collection tools (Paper registers)	CIS	Programs, DRSP	x	0	0	No	Revise paper register for facilities following the revision of monthly reporting booklets
3.3	Print and distribute Monthly reporting booklets (MRBs)	CIS	Programs, DRSP	0	x	0	No	The revised ones
3.4	Print and distribute summary forms and registers (for the following year)	CIS	Programs, DRSP	0	x	x	No	The revised ones
3.5	Update the configuration and scale up the community RMA (CHIS configuration review and phase)	CIS	Programs	x	0	0	No	The update will be made from the piloted version. While the configuration revision part may be easier, there is a substantial need for funding to complete the scale up. That's why a stepwise approach is envisioned to cover the whole country over time.

SN	Activities	Responsible entity	Contributing entities	Schedule			TA	Comments
				2022	2023	2024	Needed?	
3.6	Update the configuration and scale up the community RMA (CHIS training phase)	CIS	Programs	0	x	x	No	See above
3.7	Training in data entry and data validation to district and health facility level (country wide refresher based on updated tools)	CIS	Programs, DRSP	0	x	x	No	3 days workshops. New/refresher training because of the updates in the forms, the turnover and the newly created health districts and facilities. An average of 20% (2 regions or 40 districts) will be covered each year for 5 years.
3.8	Configuration workshop to install and configure the WHO Data Quality app	CIS	Programs (TB, PEV, VIH)	x	x	0	No	Update the existing (MALARIA, RMNCH, EPI) and add the new ones (HIV, TB, Surveillance, Drugs)  Specific EPI app (Immunization analysis, BNA; Scorecard app to be harmonized)
3.9	Develop in DHIS2 a data validation and monitoring short training program	CIS	DRH	0	x	0	Yes	CONTINUOUS: guide developed and training done countrywide. Important turnover needing a refresher
3.10	Develop DHIS2 training plan for HMIS strengthening	CIS	DRH	0	x	0	Yes	
3.11	Organize quarterly regional data validation and monitoring meetings including the review and validation of districts quarterly reports	DRSP	CIS	0	x	x	No	Integrated data validation meetings at the regional level not only to consolidate the data validated program-wise but also to look at data that are not linked to a specific program and that have not benefited from a validation process. Those data validation meetings should be chaired by regional HMIS (BIS) officer and Planning officers and jointly attended by all programs' regional M&E officers. Include this practice into the SOPs. 2022 will be used for setting up the system. For this plan, 4 of the 10 regions (2 in 2023 and 2 more in 2024)

SN	Activities	Responsible entity	Contributing entities	Schedule			TA	Comments
				2022	2023	2024	Needed?	
								have been budgeted through 2024. Depending on resources availability, more regions will be embarked
3.12	Organize an annual data validation and cleaning meetings for all health programs at national level with regional officers	CIS	DRSP	x	x	x	No	After some program specific annual data visualization sessions, organize a consolidated one which will allow the production of the Annual Database of the MSPH. Explore starting with existing validated data and move forward. Aim at producing it at least for 2024 from an automated DHIS2 standard report
3.13	Conduct data quality supervision and audit including data triangulation to sample of health facilities	CIS	DRSP, Programs	0	x	x	No	Made by some programs (EPI, HIV, TB, Malaria). CIS to test the DHIS2 based app on a selected program. Include triangulation process. Plan for at least 1 annual audit per region and per district
3.14	Configure/Revise the dashboards and indicators (WHO recommended packages when available) for 12 targeted programs	CIS	Programs	x	x	x	Yes	Those workshops will serve in particular to configure into DHIS2 the updates made on the physical forms from the above activity. Targeted program's officers will attend those workshops. Each year, a round will be done covering 3 programs. The round is made of 1 configuration workshop (30pax), a period of testing by the program, 1 review and finalization workshop (15pax) supported by a TA. For costing purposes, 1 round is planned each year. But if resources are available, the rounds can be done over one year and even add other programs: Y1: setup Nutrition, Drugs and surveillance

SN	Activities	Responsible entity	Contributing entities	Schedule			TA	Comments
				2022	2023	2024	Needed?	
								Y2: Revise HIV, TB, Malaria, Y3: setup RMNCH, and eventually 2 additional ones
3.15	Revise the configuration of WHO immunization data analysis app to complete the replacement of parallel DVD-MT tool.	CIS	EPI program, Surveillance program	x	0	0	Yes	Immunization analysis app doesn't match our data visualization needs. Adjust Immunization analysis tool and re-configure the EPI dashboard
3.16	Develop Push analysis reports based on IDSR for the executive level including SDGs needed data	CIS	Programs, SP/SSS	x	0	0	Yes	Include key emergency data needs concerning SDGs and EPD
3.17	Configure/revise data forms and outputs for <b>EPI and for Nutrition mass campaigns</b>	CIS	Programs, SP/SSS	0	x	x	No	Estimates made on the basis of DHIS2 event use for data entry and output generation. Some campaigns may require one or more tracker programs to be added to the EVENT. 2 campaigns have been budget on the current plan
3.18	Configure DHIS2 for Entomologic data surveys data collection	CIS	CI, Malaria, Research entity in the MoH	0	0	x	No	Estimates made on the basis of DHIS2 event use for data entry and output generation. Depended on the data forms and outputs, the work may require one or more tracker programs to be added to the EVENT
3.19	Train DHIS2 core team in configuring DHIS2 standard report	CIS	CI	x	0	0	Yes	This will allow national expert to be part in configuring periodic bulletins into the DHIS2
3.20	Setup an automated quarterly (DHIS2 standard report) bulletin for EPI	CIS	CI, EPI, Surveillance	0	x	0	No	Setup automated quarterly/biannually bulletin for programs: EPI; HIV; TB; Malaria, Surveillance (Year 2 or 3)
3.21	Setup an automated quarterly (DHIS2 standard report) for Surveillance	CIS	CI, EPI, Surveillance	0	x	0	No	Setup automated quarterly/biannually bulletin for programs: EPI; HIV; TB; Malaria, Surveillance (Year 2 or 3)
3.22	Setup an automated quarterly (DHIS2 standard report) joint bulletin for Malaria, TB and HIV	CIS	CI, Malaria, TB, HIV	0	x	0	No	Setup automated quarterly/biannually bulletin for programs: EPI; HIV; TB; Malaria, Surveillance (Year 2 or 3)

SN	Activities	Responsible entity	Contributing entities	Schedule			TA	Comments
				2022	2023	2024	Needed?	
3.23	Run a generic ToT course on data analysis training	CIS	CI, Programs, DRSP	0	x	0	No	
3.24	Data analysis trainings for national, regional, district level learning how to use DHIS2 analysis tools in routine meetings and planning activities.	CIS	Programs, DRSP	0	x	x	No	Nationwide and for all the priority programs at the all level. None can be done in 2022. It is planned that in 2023 and 2024, 2 regions will be covered each year. More can be done depending on resources availability
3.25	Organize advanced data analysis training for DHIS2 core team (R, Power BI, Python, Interoperability with DHIS2...)	CIS	CI, Programs	x	x	x	Yes	An eLearning phase followed by an in-person training for those that had succeeded the eLearning phase. Will be common project based
3.26	Develop data use guidance to be integrated into the DHIS2 SOPs and run ToT	CIS	Programs, DRSP	x	x	0	Yes	To address data use gaps that are being identified under the AEDES support. Provisionally 5 workshops to design the guidelines and configure them into the DHIS2, then 1 ToT workshop at the central level and 210 workshops at the regional and district levels. For this plan, just positioned the design and the ToT
3.27	Configure EPI score card and Bottle Neck analysis apps	CIS	CI, EPI	0	x	0	Yes	Contemplate for later other scorecards apart from EPI to foster data use including to monitoring of targets and thresholds
3.28	ToT for EPI score card and Bottle Neck analysis apps	CIS	CI, EPI	0	x	0	No	
3.29	Configure EPI microplanning app	CIS	CI, EPI	0	x	0	Yes	
3.30	ToT for microplanning app	CIS	CI, EPI	0	x	0	No	
3.31	Automated sit-rep for outbreaks of national interest based on DHIS2 standard report: <b>configuration</b>	CIS	CI, EPI, Surveillance	0	x	0	Yes	
3.32	Automated sit-rep for outbreaks of national interest based on DHIS2 standard report: <b>ToT</b>	CIS	CI, EPI, Surveillance	0	x	0	Yes	



SN	Activities	Responsible entity	Contributing entities	Schedule			TA	Comments
				2022	2023	2024	Needed?	
3.33	Perform EPI targeted interoperability configuration work with DHIS2	CIS	CI, Directions (DPML), Programs	x	0	0	Yes	EPI (AEFI ODK based tool and Activities surveillance ODK tool. Interoperability or full switch to DHIS to be confirmed)  CONTINUOUS:
3.34	Perform MALARIA targeted interoperability configuration work with DHIS2	CIS	CI, Directions (DPML), Programs	0	x	0	Yes	MALARIA (ALMA Card populated from DHIS2)
3.35	Perform GeneXpert targeted interoperability configuration work with DHIS2	CIS	CI, Directions (DPML), Programs	0	x	0	Yes	TB and HIV: GeneXpert lab demands and results considering integration with HIV lab testing in GeneXpert
3.36	Perform eLMIS targeted DHIS2 interoperability configuration work with openLIMS based drug and Supply chain management system	CIS	CI, Directions (DPML), Programs	0	0	x	Yes	A medicines' general management along the supply chain is being setup according to the national SCM strategy. The system includes the use of openLIMS and interoperability work is planned with DHIS2
3.37	Perform OTHER interoperability configuration on an ON-DEMAND and resource availability basis	CIS	CI, Directions, Programs (TB)	x	x	x	No	CONTINUOUS: Targets and modalities are to be precised using an on-demand approach. Some of the aspects are to be envisioned: - Malaria digital tools: DAMA, VINDATA and BAHMNI (EMR), OpenHexa for all sources Malaria data aggregation - ONSP to send to CIS a set of data elements, forms and indicators for a dedicated dashboard to be setup in the DHIS2 then explore and design a roadmap for interoperability if needed - TB: Data to care portal
3.38	Design DHIS2 aggregate data forms/outputs for new TB data needs CETA index, ICF (Intensified Case Finding), Mobile X-ray campaign	CIS	CI, Directions, Programs (TB)	x	x	x	No	Prioritize and check matching interest from partners (supporting resources)

SN	Activities	Responsible entity	Contributing entities	Schedule			TA	Comments
				2022	2023	2024	Needed?	
3.39	Design and pilot a DHIS2 EVENT for pharmacies to collect data on Malaria and on Covid case testing and management and ART drugs.	CIS	CI, Directions (DPML), Programmes (malaria, surveillance, HIV)	x	x	x	Yes	Pharmacies' directory exists in a excel file: update it and digitize in DHIS2 (AGREGATE). Design a roadmap for the whole integrated activity using a stepwise approach from resources availability and data needs priorities. One piece each year for costing purposes
3.40	Develop an harmonized aggregate form for to be configured in DHIS2 for the LABS (outside hospitals).	CIS	CI, Directions (DPML), Programs	x	x	x	No	Will be started for surveillance purposes but can be widen to other lab aspects. LabBook, an open source solution supported by The RESAOLAB project may be an opportunity
3.41	PBF data integration into DHIS2: aggregate data configuration revision workshop + dashboards	CIS	CTN/PBF, DRFP, DOSTS, DAJC	0	x	0	No	PBF initiative DHIS2 Configuration done. 2013 to 2019 data imported but not used routinely. Need to import 2020 and 2021 data and to revise and promote routine use. Depending on the continuation or not of the PBF specific data system, Interoperability (with the curent OpenHIM based data collection tool) or shifting to national DHIS2 will be done.
3.42	configuration workshops for the availability and use of PNDS key data, indicators and dashboards in DHIS	CIS	CI, ST-SSS, Directions, programmes, DRSP	0	x	0	No	A list of over 100 indicators is shared bit ST-SSS. A set of tracer indicators will be selected to be configured in DHIS2 and provide dashboards
3.43	Design a roadmap for NCD's data availability and use in DHIS	CIS	CI, Directions, Programs (NCD)	0	x	0	No	1. Revise Hospital form to improve the capture of NCD data. 2. Series of meetings with CI and CIS to discuss data collection and analysis tools for NCDs: explore different options including EMR use or interoperability with NYSS (community

SN	Activities	Responsible entity	Contributing entities	Schedule			TA	Comments
				2022	2023	2024	Needed?	
								based alerts collected by CHW in partnership with the Redcross)
3.44	Design a roadmap for Traditional medicine practice data availability and use in DHIS according to the upcoming law regarding the question	CIS	CI, Directions, Programmes (SD-SSP at DOSTS)	0	x	0	No	<p>1. Traditional health centers directory to be mapped in DHIS2 (gather information from districts and health areas then update from Traditional practitioners licensing application data base which will be set after the upcoming series of laws and policies currently under review at the Parliament) along with primary and secondary data collection tools</p> <p>2. Series of meeting with CI and CIS to discuss data collection and analysis tools, agree on the roadmap and mobilize resources</p>
<b>Objective 4: Advance DHIS2 individual data collection, quality and use</b>								
4.1	Setup a pilot experiment with data clerks positioned at Hospital and huge health centers	DRSP	CIS	0	x	x	No	Data clerks will (i) ensure full date entry in trackers, (ii) coach health providers in data entry, (iii) support providers regarding basic IT concerns in DHIS2. 1/3 of the salary is performance based. Each of the objectives will be achieve year after year.
4.2	Review, finalize and deploy a countrywide <b>TB case based data tracker:</b>	CIS	CI, TB, VIH DRSP, FOSA	x	x	x	Yes	Tracker TB configured but not yet deployed. Needs finalization to get deployed. Adjust and complete for compliance with WHO DHIS2 recommended tracker packages. Predictors, indicators and dashboards to be improved and finalized. Config work in 2022. Pilot in 2023 in one region. Scale up in 2024 to the others
4.3	Review, finalize and deploy a countrywide <b>HIV tracker:</b>	CIS	SD VIH/IST, CNLS, CI, TB,	0	x	x	Yes	Tracker VIH configured but not yet deployed. Needs finalization to get

SN	Activities	Responsible entity	Contributing entities	Schedule			TA	Comments
				2022	2023	2024	Needed?	
			DRSP, DS, FOSA					deployed. Adjust and complete for compliance with WHO DHIS2 recommended tracker packages. Predictors, indicators and dashboards to be improved and finalized. Config work in 2023. Pilot in 2024 in one region.
4.4	Setup and deploy a countrywide <b>RMNCH data tracker:</b>	CIS	CI, PLMI, DSF, SDSR, Programs DRSP, FOSA	0	x	x	Yes	Adjust and complete for compliance with WHO DHIS2 recommended tracker packages. Predictors, indicators and dashboards to be improved and finalized. Config work in 2023. Pilot in 2024 in 5 districts. Plaidoyer en cours avec le programme national de lutte contre la mortalité maternelle et infantile
4.5	Setup and deploy a countrywide <b>Immunization tracker:</b>	CIS	SDV, PEV, CI, Palu, DRSP, DS, FOSA	0	x	x	Yes	Adjust and complete for compliance with WHO DHIS2 recommended tracker packages. Predictors, indicators and dashboards to be improved and finalized. Config work finalized in 2023. Pilot in 2024 in 5 districts. Explore an integration of Surveillance and Immunization trackers
4.6	Setup and deploy a countrywide <b>Disease surveillance tracker:</b>	CIS	SDLEP, SDV, PEV, CI, CERPLE, DRSP, DS, FOSA	0	x	x	Yes	HIGH PRIORITY: Hotspots visualization of cholera cases to be configured. Case line listing exists with GPS location for AFP and for Cholera. Other legacy data to be imported (measle, yellow fever and TNN). Config work finalized in 2023. Pilot in 2024 in 5 districts. Pilot in the PoEs (Points of Entries)
4.7	Setup and deploy a countrywide <b>tracker for the the case management of patients with chronic cutaneous NTDS:</b>	CIS	SD-NTDs, CI, DRSP, DS, FOSA	0	x	x	Yes	Agree on forms and outputs in 2023. Configure and test in 2023

SN	Activities	Responsible entity	Contributing entities	Schedule			TA	Comments
				2022	2023	2024	Needed?	
4.8	Configuration workshops to address future expansions / responding to new requirements	CIS	Directions, Programs	x	x	x	No	CONTINUOUS: specific demands from some targeted projects

## **6 COORDINATION ARRANGEMENTS**

### **6.1 Institutional Framework for Implementation**

Key entities for the implementation of the current plan include the HIU/CIS, the ITU/CI, central directions and sub-directions, national health programs, regional health delegations and health districts. While the Ministry on public health is the host of the present plan, other ministries are to be involved in the implementation in particular the the Ministry of posts and telecommunication.

### **6.2 Coordination Mechanism**

The coordination of the implementation of this operational plan will be carried out by the body mentioned in activity 1.1 of this plan. Depending on the content of the ministerial decree, this coordination will be done by all or part of the aforementioned body. Whatever the arrangement is, it will be ensure that the entity is participatory enough bringing together all actors who are involved in DHIS2 strengthening for HMIS development in the country. The entity tasked with this coordination will be ordinarily meeting biannually.

## **7 MONITORING AND EVALUATION ARRANGEMENTS**

### **7.1 Monitoring system**

Monitoring will be done through DHIS2 routine reporting and annual review workshops. To this end, appropriate tools may be developed and relevant actors will be tasked for their completion.

### **7.2 Evaluation system**

No mid-term evaluation is planned. A final evaluation will be done to assess the level of achievement and to inform the next plan. The evaluation will be jointly done by final actors supported by a TA.

### **7.3 Monitoring and evaluation matrix**

A monitoring and evaluation framework tied up with a performance framework will be developed to support this operational plan implementation.

## 8 BUDGET

### 8.1 Budget details

The total cost of the present operational plan is estimated at **USD 19,412,966** including **USD 18,582,965** in local cost and **USD 830,000** in TA costs (*Table III*).

Estimates use for each budget line are described in the cost elements and quantities are to be related to activity descriptions.

**Table III: Budget details**

SN	Activities	Cost elements	Unit cost (USD)	Quantity			Total Qty 3years	Total Cost 3years (without TA)	TA cost	Total Cost 3years (including TAs)
				2022	2023	2024				
<b>Objective 1: Consolidate the organizational framework for managing DHIS2</b>										
1.1	Revise "DHIS2 governance body" decree updating members list and roles (ToR).	1 ministerial decree	-	1	0	0	1	-	-	-
1.2	Print and disseminate the operation DHIS2 plan	1000 copies	10,000	1	0	0	1	10,000	-	10,000
1.3	Organize <b>biannual</b> DHIS2 governance meeting (1 day) to review progress of the operational plan and to decide on high level improvements to DHIS2 needed.	1 day meeting with 30 pax	5,100	2	2	2	6	30,600	-	30,600
1.4	Develop SOPs for the HMIS including digital data and DHIS2 key features in particular: (i) security, confidentiality and privacy policy for DHIS2 data; (ii) DHIS2 core team procedures; (iii) guidance for informatic devices management and securing; (iv) regional level	2 workshops	73,100	0	1	0	1	73,100	60,000	133,100

SN	Activities	Cost elements	Unit cost (USD)	Quantity			Total Qty 3years	Total Cost 3years (without TA)	TA cost	Total Cost 3years (including TAs)
				2022	2023	2024				
	support teams; (v) data entry and validation; (vi) data quality supervision and audit including data triangulation.									
1.5	Update a register of all staff trained on DHIS2 and setup a DHIS2 training instance	2 rounds of 5 days configuration workshop with 15 pax	25,500	1	0	0	1	25,500	-	25,500
1.6	Configure a tracker to get training data on DHIS2 and across all the programs and entities of the MoH	5 days configuration workshop with 15 pax	10,200	0	1	0	1	10,200	-	10,200
1.7	Organize data entry incentives	12 monthly data incentives for <b>6200</b> health facilities data managers	792,000	0	0.2	0.4	0.6	475,200	-	475,200
1.8	Training on DHIS2 server hosting administration and basic maintenance	02 rounds of 1 week training for 10 persons including mirroring server installation	17,000	1	0	0	1	17,000	20,000	37,000
1.9	Develop and validate M&E framework for the DHIS2 operational plan	3 days validation workshop with 15 pax	7,650	1	0	0	1	7,650	-	7,650
1.10	Produce an annual progress update report on DHIS2 operational plan	2 workshops (i): report elaboration workshop (05 days with 15 pax); (ii)review and validation workshop (02 days with 30 pax)	22,950	1	1	1	3	68,850	-	68,850
1.11	Organize a final evaluation of the implementation of the DHIS2 operational plan	05 days field visit with 6pax + 2 workshops (i): design workshop (05 days with 15 pax);	28,050	0	0	1	1	28,050	60,000	88,050



SN	Activities	Cost elements	Unit cost (USD)	Quantity			Total Qty 3years	Total Cost 3years (without TA)	TA cost	Total Cost 3years (including TAs)
				2022	2023	2024				
		(ii)review and validation workshop (02 days with 30 pax)								
<b>Objective 2: Improve the technical infrastructure to support DHIS2 deployment</b>										
2.1	Assessment of DHIS2 infrastructure at the lower levels	2 Persons per region for the 10 regions, for 1 week + 5 days validation workshop	45,900	0	1	0	1	45,900	-	45,900
2.2	Design a metadata directory	03 rounds of design workshop with 30 pax +1 validation meeting	63,750	0	1	0	1	63,750	30,000	93,750
2.3	DHIS2 hosting and server maintenance services.	Annual cost with BAO	19,200	1	1	1	3	57,600	-	57,600
2.4	Set up and host online server environment for development and testing with full access for CIS server admins	PM		0	0	0	0	-	-	-
2.5	Develop a local DHIS2 training instance with content adapted to the country.	2 Rounds of 5 days workshop + test + 5 days finalization	38,250	0	1	0	1	38,250	20,000	58,250
2.6	Procure computers for district level	1 desktop + 2 laptops per district	157,600	0	0.2	0.2	0.4	63,040	-	63,040
2.7	Procure laptops/tablets for facility level (gradual scale up over 3y)	1 per FOSA	6,200,000	0	0.2	0.2	0.4	2,480,000	-	2,480,000
2.8	Procure and configure a Mobile Device Management system	1 MDM at the central level	137,740	1	1	1	3	413,220	-	413,220
2.9	Provide internet access for DHIS2 users at all levels (modems)	1000 modems each year for 3 years.	15,000	1	1	1	3	45,000	-	45,000
2.10	Provide internet access for DHIS2 users at all levels (airtime)	6USD monthly connexion fees for each of the above modem for 12 months over 3 years	288,000	0	0.2	0.4	0.6	172,800	-	172,800

SN	Activities	Cost elements	Unit cost (USD)	Quantity			Total Qty 3years	Total Cost 3years (without TA)	TA cost	Total Cost 3years (including TAs)
				2022	2023	2024				
2.11	Setup a user support system with ticketing arrangements	Annual fees for a ticketing IT based support system+ setup fees including initial training	20,000	0	1	1	2	40,000	-	40,000
2.12	Insure that at least 2 DRSP officers in each DRSP had successfully completed the DHIS2 fundamentals online training	For the record	-	0	0	0	0	-	-	-
2.13	Organize initial training for DHIS2 new users at all levels	5 days workshop for xx persons (3 per district, 5 per region and 2 per program/direction). 5% of the whole each year	28,943	1	1	1	3	86,828	-	86,828
2.14	Organize refresher training for DHIS2 data quality check and validation at all levels	3 days workshop for xx persons (3 per district, 5 per region and 2 per program/direction). 5% of the whole each year	17,366	1	1	1	3	52,097	-	52,097
2.15	Develop data analysis training curriculum based on the WHO curriculum/guides for data analysis of health facility data, adapted to Cameroon context with input from all health programs.	02 rounds of workshop (05 days to develop + 05 days to review and validate)	25,500	0	0	1	1	25,500	30,000	55,500
2.16	Organize annually DHIS2 upgrade workshops with DHIS2 core team	1 workshop (15pax*03)	7,650	0	1	1	2	15,300	-	15,300
2.17	DHIS2 core team training workshops on DHIS2 configuration	1 round of 15 pax each year	12,750	1	1	1	3	38,250	20,000	58,250

SN	Activities	Cost elements	Unit cost (USD)	Quantity			Total Qty 3years	Total Cost 3years (without TA)	TA cost	Total Cost 3years (including TAs)
				2022	2023	2024				
	by global and regional DHIS2 experts									
2.18	Organize a yearly denominator (population, facilities, HR...) validation meeting	1 yearly validation 3 days meeting with 30 pax	15,300	1	1	1	3	45,900	-	45,900
2.19	Annually organize a metadata cleanup workshop	1 round of 15 pax each year	12,750	1	1	1	3	38,250	15,000	53,250
2.20	Establish a supra-DHIS2 data warehouse to aggregate health-related cross-sectoral data	03 workshops (05 days, 20 pax) to configure and one to validate	25,500	0	1	1	2	51,000	-	51,000
<b>Objective 3: Review and expand DHIS2 Aggregate configuration and interoperability</b>										
3.1	Revise integrated data collection tools (Paper periodic reporting FORMS: Monthly booklet)	03 rounds of design workshop with 30 pax +1 validation meeting	119,000	1	0	0	1	119,000	-	119,000
3.2	Revise integrated data collection tools (Paper registers)	1 design workshop with 50 pax +1 finalization workshop with 30 pax	68,000	1	0	0	1	68,000	-	68,000
3.3	Print and distribute Monthly reporting booklets (MRBs)	Distribute to 6200 HF: 1 MRB per month per facility	223,200	0	1	0	1	223,200	-	223,200
3.4	Print and distribute summary forms and registers (for the following year)	Distribute to 6200 HF: average of 2 registers per HF per year	2,232,000	0	1	1	2	4,464,000	-	4,464,000
3.5	Update the configuration and scale up the community RMA (CHIS configuration review and phase)	02 rounds of workshop (05 days to develop + 05 days to review and validate).	34,000	1	0	0	1	34,000	-	34,000
3.6	Update the configuration and scale up the community RMA (CHIS training phase)	Then train over 5000 CHW and supervisors	1,150,000	0	0.2	0.2	0.4	460,000	-	460,000
3.7	Training in data entry and data validation to district and health	2 persons per HF, 3 per district and 5 per	6,676,410	0	0.2	0.2	0.4	2,670,564	-	2,670,564

SN	Activities	Cost elements	Unit cost (USD)	Quantity			Total Qty 3years	Total Cost 3years (without TA)	TA cost	Total Cost 3years (including TAs)
				2022	2023	2024				
	facility level (country wide refresher based on updated tools)	region, 2 per each program and direction at the central level								
3.8	Configuration workshop to install and configure the WHO Data Quality app	02 workshop (05 days to develop + 03 days to review and validate)	33,150	1	1	0	2	66,300	-	66,300
3.9	Develop in DHIS2 a data validation and monitoring short training program	02 workshop (05 days to develop + 03 days to review and validate)	33,150	0	1	0	1	33,150	30,000	63,150
3.10	Develop DHIS2 training plan for HMIS strengthening	02 workshop (05 days to develop + 03 days to review and validate)	33,150	0	1	0	1	33,150	30,000	63,150
3.11	Organize quarterly regional data validation and monitoring meetings including the review and validation of districts' quarterly reports	2 pax per district for the 10 regional sessions of 3 days each	203,490	0	0.2	0.4	0.6	122,094	-	122,094
3.12	Organize an annual data validation and cleaning meetings for all health programs at national level with regional officers	2 pax per region+ central level (20) for a 3 days workshop	15,300	1	1	1	3	45,900	-	45,900
3.13	Conduct data quality supervision and audit including data triangulation to sample of health facilities	1 mission in each region per year with 4 attendants per mission (2NC+1NR+1ND) for 5 days then a 5 days workshop to consolidate the report	51,000	0	1	1	2	102,000	-	102,000

SN	Activities	Cost elements	Unit cost (USD)	Quantity			Total Qty 3years	Total Cost 3years (without TA)	TA cost	Total Cost 3years (including TAs)
				2022	2023	2024				
3.14	Configure/Revise the dashboards and indicators (WHO recommended packages when available) for 12 targeted programs	An average of 5 days workshops each program	40,800	1	1	1	3	122,400	30,000	152,400
3.15	Revise the configuration of WHO immunization data analysis app to complete the replacement of parallel DVD-MT tool.	5 days workshop	12,750	1	0	0	1	12,750	10,000	22,750
3.16	Develop Push analysis reports based on IDSR for the executive level including SDGs needed data	05 days workshop	28,900	1	0	0	1	28,900	-	28,900
3.17	Configure/revise data forms and outputs for <b>EPI</b> and <b>for Nutrition mass campaigns</b>	For each campaign, 02 workshops (5 days) to configure and a 3rd one to review forms and dashboards	51,000	0	1	1	2	102,000	-	102,000
3.18	Configure DHIS2 for Entomologic data surveys data collection	02 workshops (5 days) to configure and a 3rd one to review forms and dashboards	51,000	0	0	1	1	51,000	-	51,000
3.19	Train DHIS2 core team in configuring DHIS2 standard report	10 days workshop	25,500	1	0	0	1	25,500	15,000	40,500
3.20	Setup an automated quarterly (DHIS2 standard report) bulletin for EPI	03 workshops (5 days) to configure and 01 (05 days) workshop to review	63,750	0	1	0	1	63,750	-	63,750
3.21	Setup an automated quarterly (DHIS2 standard report) for Surveillance	03 workshops (5 days) to configure and 01 (05 days) workshop to review	63,750	0	1	0	1	63,750	-	63,750

SN	Activities	Cost elements	Unit cost (USD)	Quantity			Total Qty 3years	Total Cost 3years (without TA)	TA cost	Total Cost 3years (including TAs)
				2022	2023	2024				
3.22	Setup an automated quarterly (DHIS2 standard report) joint bulletin for Malaria, TB and HIV	03 workshops (5 days) to configure and 01 (05 days) workshop to review	63,750	0	1	0	1	63,750	-	63,750
3.23	Run a generic ToT course on data analysis training	5 days workshop for 20 regional officer (SISP, BISI)+ 10 national officers	25,500	0	1	0	1	25,500	-	25,500
3.24	Data analysis trainings for national, regional, district level learning how to use DHIS2 analysis tools in routine meetings and planning activities.	5 days workshop for xx persons (3 per district, 5 per region and 2 per program/direction). One batch each year for 3 years	578,850	0	0.2	0.4	0.6	347,310	-	347,310
3.25	Organize advanced data analysis training for DHIS2 core team (R, Power BI, Python, Interoperability with DHIS2...)	6 days session for 15 person per year	15,300	1	1	1	3	45,900	60,000	105,900
3.26	Develop data use guidance to be integrated into the DHIS2 SOPs and run ToT	5 days workshop with 30 pax	25,500	1	5	0	6	153,000	-	153,000
3.27	Configure EPI score card and Bottle Neck analysis apps	03 workshops (5 days) to configure and review	38,250	0	1	0	1	38,250	-	38,250
3.28	ToT for EPI score card and Bottle Neck analysis apps	05 days workshops for 30 pax	25,500	0	1	0	1	25,500	-	25,500
3.29	Configure EPI microplanning app	03 workshops (5 days) to configure and review	38,250	0	1	0	1	38,250	-	38,250
3.30	ToT for microplanning app	05 days workshops for 30 pax	25,500	0	1	0	1	25,500	-	25,500

SN	Activities	Cost elements	Unit cost (USD)	Quantity			Total Qty 3years	Total Cost 3years (without TA)	TA cost	Total Cost 3years (including TAs)
				2022	2023	2024				
3.31	Automated sit-rep for outbreaks of national interest based on DHIS2 standard report: <b>configuration</b>	03 workshops (5 days) to configure and review	38,250	0	1	0	1	38,250	-	38,250
3.32	Automated sit-rep for outbreaks of national interest based on DHIS2 standard report: <b>ToT</b>	05 days workshops for 30 pax	25,500	0	1	0	1	25,500	15,000	40,500
3.33	Perform EPI targeted interoperability configuration work with DHIS2	5days configuration workshops with 15 attendants + 1review and finalization workshop with 30pax	63,750	1	0	0	1	63,750	30,000	93,750
3.34	Perform MALARIA targeted interoperability configuration work with DHIS2	5days configuration workshops with 15 attendants + 1review and finalization workshop with 30pax	63,750	0	1	0	1	63,750	30,000	93,750
3.35	Perform GeneXpert targeted interoperability configuration work with DHIS2	5days configuration workshops with 15 attendants + 1review and finalization workshop with 30pax	63,750	0	1	0	1	63,750	30,000	93,750
3.36	Perform eLMIS targeted DHIS2 interoperability configuration work with openLMIS based drug and Supply chain management system	5days configuration workshops with 15 attendants + 1review and finalization workshop with 30pax	63,750	0	0	1	1	63,750	30,000	93,750
3.37	Perform OTHER interoperability configuration on an ON-DEMAND and resource availability basis	For each one, 3 rounds of 5days configuration workshops with 15 attendants + 1review and finalization workshop with 30pax	63,750	1	1	1	3	191,250	-	191,250

SN	Activities	Cost elements	Unit cost (USD)	Quantity			Total Qty 3years	Total Cost 3years (without TA)	TA cost	Total Cost 3years (including TAs)
				2022	2023	2024				
3.38	Design DHIS2 aggregate data forms/outputs for new TB data needs CETA index, ICF (Intensified Case Finding), Mobile X-ray campaign	For each one, 3 rounds of 5days configuration workshops with 15 attendants + 1review and finalization workshop with 30pax	63,750	1	1	1	3	191,250	-	191,250
3.39	Design and pilot a DHIS2 EVENT for pharmacies to collect data on Malaria and on Covid case testing and management and ART drugs.	For each one, 3 rounds of 5days configuration workshops with 15 attendants + 1review and finalization workshop with 30pax	63,750	1	1	1	3	191,250	45,000	236,250
3.40	Develop an harmonized aggregate form for to be configured in DHIS2 for the LABS (outside hospitals).	5days configuration workshops with 15 attendants + 1review and finalization workshop with 30pax	38,250	1	1	1	3	114,750	-	114,750
3.41	PBF data integration into DHIS2: aggregate data configuration revision workshop + dashboards	2 rounds of 5days configuration workshop with 15 attendants+1review and finalization workshop with 30pax	51,000	0	1	0	1	51,000	-	51,000
3.42	configuration workshops for the availability and use of PNDS key data, indicators and dashboards in DHIS	2 rounds of 5days configuration workshop with 15 attendants+1review and finalization workshop with 30pax	51,000	0	1	0	1	51,000	-	51,000
3.43	Design a roadmap for NCD's data availability and use in DHIS	3days planning workshops with 30 attendants	15,300	0	1	0	1	15,300	-	15,300



SN	Activities	Cost elements	Unit cost (USD)	Quantity			Total Qty 3years	Total Cost 3years (without TA)	TA cost	Total Cost 3years (including TAs)
				2022	2023	2024				
3.44	Design a roadmap for Traditional medicine practice data availability and use in DHIS according to the upcoming law regarding the question	3days planning workshops with 30 attendants	15,300	0	1	0	1	15,300	-	15,300
<b>Objective 4: Advance DHIS2 individual data collection, quality and use</b>										
4.1	Setup a pilot experiment with data clerks positioned at Hospital and huge health centers	1 data clerk per targeted hospital (32: 15 regional hospitals and similar, 5 general hospitals and 12 central hospitals)	192,000	0	1	1	2	384,000	-	384,000
4.2	Review, finalize and deploy a countrywide <b>TB case based data tracker:</b>	<b>Configuration</b> (3 rounds of 5days configuration workshops with 15 attendants); <b>field test</b> (2 weeks field testing with 5 pax); <b>training of trainers</b> (5days workshop with 30 attendants); User training for all facilities (5 days workshop for xx persons : 2 persons per FOSA, 3 per district, 5 per region).	1,137,300	0.01	0.099	0.4	0.51	578,886	20,000	598,886
4.3	Review, finalize and deploy a countrywide <b>HIV tracker:</b>	<b>Configuration</b> (3 rounds of 5days configuration workshops with 15 attendants); <b>field test</b> (2 weeks field testing	7,417,100	0	0.01	0.1	0.11	808,464	20,000	828,464

SN	Activities	Cost elements	Unit cost (USD)	Quantity			Total Qty 3years	Total Cost 3years (without TA)	TA cost	Total Cost 3years (including TAs)
				2022	2023	2024				
		with 5 pax); <b>training of trainers</b> (5days workshop with 30 attendants); User training for all facilities (5 days workshop for xx persons : 2 persons per FOSA, 3 per district, 5 per region).								
4.4	Setup and deploy a countrywide <b>RMNCH data tracker:</b>	<b>Configuration</b> (3 rounds of 5days configuration workshops with 15 attendants); <b>field test</b> (2 weeks field testing with 5 pax); <b>training of trainers</b> (5days workshop with 30 attendants); User training for all facilities (5 days workshop for xx persons : 2 persons per FOSA, 3 per district, 5 per region).	11,157,100	0	0.01	0.025	0.04	391,914	45,000	436,914
4.5	Setup and deploy a countrywide <b>Immunization tracker:</b>	<b>Configuration</b> (3 rounds of 5days configuration workshops with 15 attendants); <b>field test</b> (2 weeks field testing with 5 pax); <b>training of trainers</b> (5days workshop with 30	11,157,100	0	0.01	0.025	0.04	391,914	45,000	436,914

SN	Activities	Cost elements	Unit cost (USD)	Quantity			Total Qty 3years	Total Cost 3years (without TA)	TA cost	Total Cost 3years (including TAs)
				2022	2023	2024				
		attendants); User training for all facilities (5 days workshop for xx persons : 2 persons per FOSA, 3 per district, 5 per region).								
4.6	Setup and deploy a countrywide <b>Disease surveillance tracker:</b>	<b>Configuration</b> (3 rounds of 5days configuration workshops with 15 attendants); <b>field test</b> (2 weeks field testing with 5 pax); <b>training of trainers</b> (5days workshop with 30 attendants); User training for all facilities (5 days workshop for xx persons : 2 persons per FOSA, 3 per district, 5 per region).	11,157,100	0	0.01	0.025	0.04	391,914	45,000	436,914
4.7	Setup and deploy a countrywide <b>tracker for the the case management of patients with chronic cutaneous NTDS:</b>	<b>Configuration</b> (3 rounds of 5days configuration workshops with 15 attendants); <b>field test</b> (2 weeks field testing with 5 pax); <b>training of trainers</b> (5days workshop with 30 attendants); User training for all facilities (5 days	11,157,100	0	0.00	0.01	0.01	111,571	45,000	156,571

SN	Activities	Cost elements	Unit cost (USD)	Quantity			Total Qty 3years	Total Cost 3years (without TA)	TA cost	Total Cost 3years (including TAs)
				2022	2023	2024				
		workshop for xx persons : 2 persons per FOSA, 3 per district, 5 per region).								
4.8	Configuration workshops to address future expansions / responding to new requirements	5days configuration workshops with 15 attendants + 1review and finalization workshop with 30pax	63,750	1	1	1	3	191,250	-	191,250
								<b>18,582,966</b>	<b>830,000</b>	<b>19,412,966</b>

## **8.2 Financing arrangements**

After its validation, the DHIS2 plan will be shared widely to all stakeholders. All relevant means will be used to promote broad diffusion of the plan in order to foster buy-in.

Stakeholder engagement and resource mobilization efforts will be continued to look for alignment and synergies in investments and interventions across the HMIS with DHIS2 as a core component.

## CONCLUSION

The present DHIS2 operational plan development was quite inclusive and leaned on gaps identified from the DHIS2 maturity profile of the country, the execution status of the expired plan, and a quick inventory of data needs from key health directions and programs. It is expected that this multidimensional approach will favor a better success in implementing the new plan.

A strong stakeholders' engagement including investment and alignment and synergy efforts from donors is highly needed to insure this new plan have better implementation rate to support the journey toward achieving universal health coverage in the country.

## Appendix: Detailed list of contributors

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