



The Republic of Sudan  
Federal Ministry of Health  
**National Medical Supplies Fund**

**Sudan National Humanitarian Response,  
Reform and Recovery Supply Chain Strategy  
for Pharmaceuticals and Health Products**

**2024-2028**

Supported by:





The Republic of Sudan  
Federal Ministry of Health  
**National Medical Supplies Fund**



**Sudan National Humanitarian Response,  
Reform and Recovery Supply Chain Strategy  
for Pharmaceuticals and Health Products**

**2024-2028**

Supported by:





## Sudan National Medical Supplies Fund Toward Making Medicines Accessible



## Table of Contents

	Table of Contents	II
	List of Abbreviations	IV
	Foreword	V
	Acknowledgement	VII
	Executive Summary	IX
	Structure of the Document	XII
<b>Part 1: Review of the Previous National Supply Chain Strategy (2017-2021)</b>		
1.1	Executive Overview	1
1.1.1	Key Findings from National Health Documents Review	1
1.1.2	Detailed NSCS Document Review	2
1.1.2	Conclusions and Recommendations	4
<b>Part 2: Situational Analysis</b>		
2.1	Country Context	5
2.2	Sudan Health System	6
2.3	Introduction	7
2.4	Scope	8
2.5.	Time Period	8
2.6	Methodology	8
2.7	Findings	9
2.7.1	Health Supply Chain Dynamics during the Conflict	9
2.7.2	FMOH Initiatives to Sustain Availability of Medical Supplies	11
2.7.3	NMSF Strategic Responses	12
2.7.4	War Impact, Challenges, and Government Priorities	20
2.7.5	Support of Partners in Re-establishing the Health Supply Chain	24

2.7.6	Impact of the War on the Private Pharmaceutical Sector in Sudan	28
2.8	Post-War Strategy for Health Sector Recovery	32
2.8.1	Future Initiatives by the FMOH	32
2.8.2	Addressing Financial Challenges	32
2.9	Conclusion	33
2.10	Recommendations	34
<b>Part III: NMSF Mission, Vision and Strategic Objectives</b>		
3.1	Mission Statement	36
3.2	Vision	36
3.3	Goal(s)	36
3.4	Overall Objectives	36
3.5	Strategic Objectives from Situation Analysis	37
3.5.1	Policy & regulations	37
3.5.2	Resource Mobilization	38
3.5.3	Supply chain operations	39
3.5.4	Strengthen Healthcare and Supply Chain Capacity:	40
3.5.5	Information Technology	41
3.5.6	Partnership and Coordination	42
3.5.7	Public Relations	43
3.5.8	Security in Distribution Logistics	43
3.6	Implementation Framework	44
3.7	Implementation Matrix	45
3.8	Key Health Sector Stakeholders	46
3.9	Monitoring & Evaluation Framework	47
3.10.	Conclusion	48

## List of Abbreviations

COVID-19	Corona Virus Disease 2019
eLMIS	electronic Logistics Management Information System
ERP	Enterprise Resource Planning
FMOH	Federal Ministry of Health
GAVI	The Global Alliance for Vaccines and Immunizations
GDOP	General Directorate of Pharmacy
GF	Global Fund
GS1	Global Standards
ICRC	The International Committee of the Red Cross
ICT	Information and Communication Technology
IDPs	Internally Displaced Persons
JAR	The Joint Annual Review
JIT	Just-in-Time
LMIS	Logistics Management Information System
MOF	Ministry of Finance
NGOs	Non-Governmental Organizations
NHIF	National Health Insurance Fund
NMPB	National Medicines and Poisons Board
NMSF	National Medical Supplies Fund
NSCS	National Supply Chain Strategy
PPP	Public Private Partnership
PSA	Pamela Steele Associates
RDF	Revolving Drug Fund
RSF	Rapid Support Forces
SCPS	Sudanese Consumers Protection Society
SRH	Sexual and Reproductive Health
SWOT	Strengths, Weaknesses, Opportunities and Threats Analysis
TB	Tuberculosis
UN	United Nations
UNDP	United Nations development Program
UNFPA	United Nations Population Fund
USA	United State of America

## Foreword

*Dear Colleagues and Partners,*

It is with a profound sense of duty and optimism that I present the Sudan National Humanitarian Response, Reform, and Recovery Supply Chain Strategy for Pharmaceuticals and Health Products (2024-2028). This pivotal strategy emerges from a period marked by significant challenges to our health supply chain, deeply affected by ongoing conflicts. I wish to express my deepest gratitude to our dedicated partners, whose unwavering support has been crucial in our emergency response efforts, contributing to the saving of countless lives in times of crisis.

However, the journey ahead is daunting. Our nation faces the enormous task of not just rebuilding but fundamentally reforming our health system. This strategy represents a clarion call for collective action, urging us all to come together in the pursuit of a robust and resilient health system. Our focus is clear: to ensure the uninterrupted availability of essential medicines and health products at all service points across the nation.

The task of reconstruction is undoubtedly massive, yet it is within our reach. By harnessing our shared commitment and pooling our resources and expertise, we can pave the way towards a healthier, more sustainable future for Sudan. Our goal is not just to rebuild what was lost, but to create a stronger, more resilient health infrastructure that can withstand future challenges and serve the needs of our people more effectively.

In this endeavor, each contribution, no matter how small, is invaluable. From grassroots community involvement to international partnerships, every effort brings us a step closer to our vision of a health system that is accessible, efficient, and responsive to the needs of our people. As we embark on this journey, let us be guided by a spirit of collaboration, innovation, and unwavering dedication to the health and well-being of every citizen in Sudan.

Together, we can turn the challenges of today into the foundations for a healthier tomorrow.

Sincerely,

Dr. Haitham Awadallah,

Acting Federal Minister of Health, Sudan





*Greetings,*

Echoing the inspiring words of our esteemed Minister of Health, my commitment to spearheading the Sudan National Humanitarian Response, Reform, and Recovery Supply Chain Strategy (2024-2028) is unwavering. In these challenging times, characterized by conflict and the consequent strain on our health supply chain, our collective mission to rebuild and strengthen our healthcare system is more crucial than ever. My role as the Director General of the National Medical Supplies Fund is pivotal in ensuring the quality, safety, and affordability of medicines, and their availability at health facilities for all patients, regardless of the situation. This journey to revitalize our supply chains, enhance pharmacovigilance, and ensure the equitable distribution of medical supplies is a testament to the strength of our united efforts. The road ahead is undoubtedly demanding, but together, with steadfast dedication and collaboration, we possess the capability to rebuild a resilient health system and supply chain. This undertaking is not merely a task; it is our solemn promise to our nation to secure a healthier future for every man, woman, and child, ensuring that no one succumbs due to a lack of essential medicine.

Sincerely

Dr. Badr Eldin Mohamed Ahmed Elgozoli,  
Director General, National Medical Supplies Fund

*Badr Eldin Mohamed Ahmed Elgozoli*  
*0 Jan 2024*

## Acknowledgement

The Review Team, under the guidance of Pamela Steele Associates (PSA) and the National Medical Supplies Fund (NMSF), wishes to express deep gratitude to all stakeholders for their invaluable contributions during our situation analysis. The diverse insights and steadfast commitment of these stakeholders have been essential in enriching the quality and relevance of our assessment.

We acknowledge with appreciation the significant roles played by government directorates, including the Federal Ministry of Finance and National Economy (FMOF), Revolving Drug Fund in Khartoum State, National Medicine and Poisoning Board (NMPB), Military Medical Services, Police Medical Services, Khartoum Faculty of Pharmacy, and National Health Insurance Fund (NHIF). Their input was pivotal in reviewing the previous strategy and in the development of the current one.

We extend special thanks to the Federal Minister of Health (FMOH), particularly to Dr. Haitham Awadalla, the Acting Minister, Dr. Badr Eldin Elgozoli, the Director General of National Medical Supplies Fund, Dr. Ali Babikir, the General Secretary of National Medicines and Poisons Board and Dr. Gamal Khalafalla, the Technical Director of Supply Chain.

Our gratitude also goes to His Excellency Dr. Gabriel Ibrahim, Minister of the Federal Ministry of Finance and Economic Planning, for his dedicated commitments and valuable insights. We appreciate the efforts of Dr. Nagnm Eldin Magzop, Director of the General Directorate of Pharmacy; Dr. Abida Hakim, Dr. Dalya Altayeb from the FMOH's Planning Department and PHC department; DCD-PMU section, and Dr. Yasir Mirghani, chairman of Sudanese Consumers Protection Society (SCPS), and member of the council of Consumers International. The NMSF team, especially Dr. Shiekheldin Abdelbaqi, Dr. Ayat Makkawi, Eng. Osman Awad (Biomedical Engineer at NMSF), and the managers of NMSF State Branches, have provided crucial insights.

We extend our appreciation to the Ministry of Social Security (MOSS), particularly Dr. Basheer Mohamed Almahi, Dr. Farouq Nour Aldaiem, and Dr. Alsidig Wahaballa from the National Health Insurance Fund, for their instrumental expertise. The contributions of service providers like Marawe Specialized Hospital and the National Cardiac Center, Khartoum, through Dr. Khatir Yousof and Dr. Shereen Abdulraheem Suliman, have been essential in addressing healthcare provision challenges.

Our indebtedness extends to our donors from UN Agencies such as The WHO, which funded this strategy development. Their teams, including Dr. Nahid Idris, UNDP, UNFPA, and UNICEF representatives like Dr. Mousab Elhag, Sufian, Dr. Khalid Fadlalla, and Tedla Mdate, have enriched our understanding with their global perspectives.

The NGO sector, including the Red Crescent and figures like Abdulrahman Bileied, has been pivotal in reflecting community needs. Our thanks also go to the private pharmaceutical sector, represented by importers like Tabasheer Company and local manufacturers such as Pharmaland Pharmaceutical, whose industry insights were conveyed by Dr. Abdulrahman Ahmed Ali, Dr. Ahmed Abdelatif Gasim, and Dr. Mohamed Abdulrahman Mohamed.

We are grateful to the local communities in Merawi and Wad-Madani, represented by Mohamed Salih Ali and Muhalab Abdulrahman, whose experiences have been central to our analysis. Acknowledgement is also due to logistics and transportation providers like Mohamed Ziyada, who play a crucial role in maintaining supply chain efficiency.

Special recognition is given to Gazira State's key figures: Dr. Osama Abdelrahman, Habib Allah Alnour, Dr. Tarig Abbass, and Omer Yousif Altay, for their valuable regional insights.

The collaborative spirit and willingness of all stakeholders to engage in constructive dialogue have laid a solid foundation for developing strategies to enhance the pharmaceutical supply chain system in Sudan. Their unwavering commitment to addressing the health sector's challenges, needs, and strategies in the region is highly commendable.

The PSA and NMSF Assessment Team

December 2023

### Introduction

In March 2023, under the auspices of the World Health Organization (WHO), Pamela Steele Associates (PSA) partnered with the National Medical Supplies Fund (NMSF) to conduct an exhaustive evaluation of Sudan's National Supply Chain Strategy (NSCS) for Pharmaceutical and Health Products, covering the period from 2017 to 2021. This initiative, funded by the World Health Organization (WHO) Sudan, was pivotal in shaping the direction for the next five-year strategy, covering 2023-2027. However, the emergence of conflict in April 2023 presented substantial obstacles to these strategic planning activities. The conflict severely affected the population and disrupted key infrastructural elements, particularly impacting public health supply chains. As the central entity overseeing these supply chains, the NMSF encountered significant challenges in maintaining the provision of essential medical supplies.

In response to these difficulties, with the support of WHO, NMSF resumed its strategy development efforts in October 2023, focusing on aligning the NSCS to the prevailing conditions. The PSA team supported the NMSF in this revised initiative and executed a detailed situation analysis assessment. This assessment aimed to comprehensively understand the impact of the conflict on healthcare provision and community needs, offering guidance on mobilizing technical, human, financial, infrastructural, and material resources to address the emerging needs due to the conflict effectively.

### Methodology

The methodology employed for the situation analysis assessment involved gathering insights from a diverse range of stakeholders. This included health officials, the National Medical Supplies Fund (NMSF), the National Health Insurance Fund (NHIF), medicines regulatory authorities, policymakers at the state level, healthcare providers, the private sector, UN agencies, donors, non-governmental organizations, and community representatives. Customised questionnaires, explicitly designed for each stakeholder group, were developed, reviewed, and approved by representatives from Pamela Steele Associates (PSA) and the NMSF. Owing to restrictions imposed by the ongoing conflict, the approach to data collection was adapted, besides in-person interactions, to include digital methods, predominantly utilizing email and WhatsApp for communication and information gathering.

## Findings

The National Medical Supplies Fund (NMSF) has experienced a total loss of its inventories at the central warehouses in Khartoum and Darfur states, exceeding five hundred million US Dollars. This situation underscores the pivotal role of the NMSF in sustaining healthcare services and the effective, cost-effective delivery of medical supplies.

The assessment comprehensively addresses the many challenges due to the conflict. It methodically details a range of short-term and long-term policies, strategies, and actions that the government has initiated to counteract the adverse effects of the conflict on the health supply chain.

Before the conflict, the issue of medicine availability was a significant concern, exacerbated by outstanding debts to suppliers amounting to over US\$ 80 million. Further complicating matters is the accumulation of debts by the NMSF, which exceed US\$ 190 million and involve the Ministry of Finance (MOF), the Federal Ministry of Health (FMOH), and various government clients, including the National Health Insurance Fund (NHIF). These debts have hindered the NMSF's effective national health supply chain management. The onset of the war exacerbated these issues due to the initial cessation of financial contributions from the MOF to the NMSF. As a result, the supply distribution down to the state cut-off clearly reflected a severe shortage of life-saving and essential service supplies, which significantly affected patients' access to service. Despite the country's financial challenges, the MOF has recommenced payments to the NMSF, albeit in reduced amounts, facilitating the procurement of essential medicines and supplies, thereby enabling the NMSF to maintain its operations partially.

The assessment findings reveal the conflict's profound impact on public and private health supply chains. The report outlines the challenges faced and the policies, strategies, and measures being implemented to mitigate these impacts. It also underscores the vital importance of international support, including contributions from United Nations agencies and other donors, in the reconstruction and rehabilitation of the health supply chain.

## Recommendations

The report outlines a thorough set of recommendations that not only aim to improve the efficiency and robustness of Sudan's health supply chain post-conflict but also emphasize the need for strategic objectives focusing on the governance, structure, roles, and policies of the National Medical Supplies Fund (NMSF) at all levels, in response to the critical supply disruptions

that have placed patients' lives at high risk. Key recommendations include:

- 1. Reconstruction and Strengthening of Warehousing and Distribution:** In the recovery phase post-conflict, it is crucial to rebuild the affected infrastructure of warehouses at both central and regional levels. This will improve the logistics framework, ensuring the adequate storage and timely distribution of medical supplies to meet urgent health needs.
- 2. Resolving NMSF's Debts:** Addressing longstanding financial obligations of the National Medical Supplies Fund (NMSF) to the Ministry of Finance (MOF) and government clients, stabilizing financial operations.
- 3. Reforming the National Health Insurance Fund (NHIF):** Undertaking critical reforms in the NHIF to improve its financing mechanisms, functionality, effectiveness, and service delivery.
- 4. Health Financing Policy Review and Implementation:** Thoroughly review and effectively implement the Health Financing Policy 2016 to optimize healthcare funding mechanisms.
- 5. Post-Conflict Health System Reconstruction:** Developing strategies for rebuilding the health system after the conflict, focusing on infrastructure and service delivery restoration.
- 6. Leveraging International Support:** Seeking the support of international donors and United Nations agencies to enhance the infrastructure of the NMSF. Their goal is not limited to infrastructure improvements alone; but also assistance in the form of grants, as well as donations of essential health commodities
- 7. Fostering Public-Private Partnerships:** Encouraging collaborations between public and private sectors to bring innovation and improve the efficiency of national health supply chains.
- 8. Enhancing the National Medicines and Poisons Board:** Bolstering the capabilities and resources of the board to ensure regulatory compliance, maintain quality control, and safeguard the safety of medicines.

Implementing these recommendations is crucial for the NMSF, the Federal Ministry of Health (FMOH), and other supporting agencies to significantly elevate the resilience and effectiveness of Sudan's health supply chain. This improvement is essential for ensuring superior healthcare outcomes for the population, particularly in addressing ongoing and future challenges.

## Structure of the Document

The remaining sections of this document are divided into three distinct parts. The initial section provides an analysis of Sudan's National Supply Chain Strategy (NSCS) for Pharmaceutical and Health Products covering the period from 2017 to 2021. This review was carried out by Pamela Steele Associates and financially supported by the World Health Organization - Sudan Country Office, in March 2023.

The second section encompasses the national health supply chain situational analysis conducted amidst the ongoing conflict. This analysis comprehensively details the conflict's repercussions on the supply chain, evaluates the current state of medical supplies, examines the condition of the existing infrastructure, and assesses the requirements of healthcare providers and local communities.

The final section of the document delineates the NMSF's mission, vision, and overarching goals. Additionally, it outlines a series of strategic objectives designed to be attained following the successful implementation of the proposed recommendations.

# Part I: Review of the Previous National Supply Chain Strategy (2017-2021)

## 1.1 Executive Overview

In March 2023, under the auspices of the World Health Organization (WHO), Pamela Steele Associates (PSA) partnered with the National Medical Supplies Fund (NMSF) to conduct an exhaustive evaluation of Sudan's National Supply Chain Strategy (NSCS) for Pharmaceutical and Health Products, covering the period from 2017 to 2021. The review aimed to inform the development of the next five-year strategy (2023-2027) and included an assessment of the previous strategy, focusing on its alignment with broader healthcare system goals and objectives. The review process involved analysing various national health documents and engaging with key stakeholders.

### 1.1.1 Key Findings from National Health Documents Review

The NSCS (2017) was aligned with the Sudan National Health Sector Recovery Reform Policy (2021–2024) and the National Medicine Policy (2014 – 2019), which emphasised sustainable financing, improving human resources, and building an Effective logistics system. However, there were identified gaps and overlaps in strategies that hindered the Effective improvement of the overall supply chain system.

#### 1.1.1.1 Comparative Analysis with Other Countries

The NSCS (2017) was compared with strategies from six African countries (Botswana, Ethiopia, Kenya, Rwanda, Sudan, and Zambia) and USA, given its focus on resilience to the COVID-19 pandemic. While there were similarities in objectives and strategic pillars, each country's unique context and challenges influenced its specific strategies. The comparison underscored the need for Sudan's NSCS to prioritise staff development and training, implement clear action plans, and improve monitoring and evaluation frameworks.

#### 1.1.1.2 Impact Measurement and Stakeholder Engagement

The NSCS (2017) outlined 13 strategic pillars, but the review suggested more quantifiable targets and precision in monitoring and evaluation terms. Stakeholder feedback revealed a lack of involvement in developing and implementing the 2017 strategy, indicating significant changes in the health system, and emphasising the need for improved collaboration, capacity development, and emergency preparedness in future strategies.



### **1.1.1.3 Joint Annual Review Report Findings**

The Joint Annual Review (JAR) for 2016 and 2017 highlighted governance, service delivery, and health information systems achievements. However, challenges such as weak policy implementation, inadequate health technology management, and insufficient human resources were noted. The JAR recommended institutionalising the review process and developing clear strategies for health sector reforms.

### **1.1.2 Detailed NSCS Document Review**

The NSCS document review revealed progress in various thematic areas but highlighted challenges such as high staff turnover, security issues, political and financial challenges, and the COVID-19 pandemic. The strategy faced issues with last-mile visibility, integration, and enforcement of guidelines for governance. The review recommended updating the NSCS to address gaps and align with national health policies.

#### **1.1.2.1 Stakeholder Feedback on Development and Implementation**

Stakeholders emphasised the need for strategic alignment, capacity development, emergency preparedness, addressing supply chain fragmentation, last-mile delivery challenges, and enhancing cold chain capacity. They also noted political and economic challenges impacting strategy implementation, suggesting solutions such as developing contingency plans, enhancing supplier evaluation, and integrating needs assessment into the procurement process.

#### **1.1.2.2 Achievements and Challenges of NSCS 2017**

Despite many achievements, including transformation, governance improvements, public medical supply system integration, and procurement efficiencies, the NSCS (2017) faced significant challenges. These included external factors like high staff turnover (e.g. since April 2019, three different DGs have been in charge of NMSF, of which only one served longer than 1 years), security and political challenges, and infrastructure issues, which escalated in 2020. The strategy also encountered difficulties in last-mile visibility, parallel supply chain systems, and weak enforcement of governance guidelines.

**Photo1: Reviewing and Developing National Health Supply Chain Strategy in March 2023**



His Excellency Dr. Gibril Ibrahim receive in his office Pamela Steele (WHO Consultant), WHO team and NMSF



Federal Minister of health meets Pamela Steele (WHO Consultant) and NMSF team



Pamela Steele, WHO team and NMSF team, discuss the implementation of PHC oriented Model of Care in selected state



Work group discussion of NMSF's governmental stakeholders in developing NSCS workshop

## 1.2 Conclusions and Recommendations

The review concluded that while the NSCS (2017) made significant strides, it faced numerous external challenges. Recommendations for the new strategy include updating the NSCS to address current gaps, developing a clear implementation plan, leveraging the role of NMSF, and exploring strategic options for universal health coverage. Addressing these issues is crucial for improving health services and ensuring the new strategy's success.

## Part 2: Situational Analysis

### 2.1 Country Context

Sudan, a northeast African country known for its diverse landscapes ranging from the hot, dry desert in the north to the lush, sub-tropical regions in the south, is now facing renewed challenges due to the ongoing conflict that erupted in April 2023. This nation, with its extensive Red Sea coastline and borders with seven countries, is grappling with the ramifications of instability and violence. The conflict has severely impacted the social structure, economy, and, notably, the healthcare system of the country.

The current turmoil follows years of civil unrest, including the significant event of South Sudan's secession in 2011. Despite a rich agricultural sector that supports the majority of the Sudanese population, the prolonged conflict has disrupted livelihoods and exacerbated the vulnerability of the already underfunded social sectors, including health.

With a population of approximately 43 million and an area of 1.9 million square kilometers, Sudan's demographic and geographic diversity presents unique challenges in the face of conflict. The vast majority of the population is settled, with a significant proportion in urban areas and a smaller percentage leading nomadic lifestyle. The country's varied climate further complicates the movement of people and goods, especially critical healthcare supplies.

Since 1994, Sudan's decentralized federal governance structure, divided into 18 states and further into 196 localities, has aimed to provide localized administration. However, the ongoing conflict has strained this system, severely impacting infrastructure and governance, leading to disruptions in essential services.

#### The current conflict has led to:

- 1. Disruption of Supply Lines:** Vital transport routes for medical and other supplies have been destroyed or blocked, severely affecting the delivery to those most in need.
- 2. Surging Demand and Shortages:** Conflict-related injuries and diseases have dramatically increased the demand for medical care, leading to shortages in essential health products.
- 3. Damage to Healthcare Infrastructure:** Attacks have caused significant damage to healthcare facilities and supply stores, hampering the capacity for medical storage, distribution, and provision.

4. **Economic Challenges:** The conflict has led to economic instability, with inflation, currency devaluation, and diminished national income impacting the government's ability to finance healthcare.
5. **Security Risks:** Healthcare workers and supply deliveries face increased aggression, making the distribution of medical aid a dangerous endeavor.
6. **Logistical and Operational Challenges:** The hazardous and unpredictable conditions in conflict zones present significant obstacles for healthcare logistics and operations.

Addressing these challenges requires a strategic, collaborative approach involving the government, international agencies, NGOs, and other stakeholders. Efforts to mitigate the impact on Sudan's health supply chain should focus on establishing alternative supply routes, increasing funding for medical supplies, enhancing the security of healthcare operations, and seeking negotiations for peace or safe passage for aid. Understanding and addressing these complex challenges are crucial for developing effective policies and strategies to strengthen healthcare infrastructure and improve healthcare accessibility and outcomes for the Sudanese population amid ongoing conflict.

## 2.2 Sudan Health System

In Sudan, the healthcare system is overseen predominantly by the federal Ministry of Health (FMOH) and State Ministries of Health (SMOH), with primary health care (PHC) as the fundamental aspect of the government's health for all strategy. This approach is reflected in the comprehensive 25-year strategic plan (2002–2027) aimed at health development, advocating for increased public health spending to alleviate the burden of direct out-of-pocket expenses for users. The healthcare structure in Sudan is tiered into primary, secondary, and tertiary levels:

1. **Primary Level:** At the grassroots, the PHC services are delivered through units, dressing stations, dispensaries, and health centers, managed by localities. Health centers, which serve as the first referral point, are typically staffed by medical doctors, assistants, and nurses. In addition, specific health programs, such as those for malaria, tuberculosis, and immunization, are delivered through these primary facilities, occasionally establishing independent posts in remote areas.
2. **Secondary and Tertiary Levels:** These levels of care are provided by the state governments through general and specialized referral hospitals. Secondary care includes broader services offered by general hospitals,

which also might provide some primary care services. Tertiary care is more specialized, delivered through national centers such as the renal transplantation center and the national center for radiotherapy, all overseen by the FMOH.

Additionally, the FMOH supervises several national health organizations, including the National Medical Supplies Fund (NMSF), the National Medicines and Poisons Board (NMPB), the Sudan National Medical Specialization Board (SNMSB), and the National Medical Commission. Beyond the FMOH and SMOH, other ministries such as Security and Social Development, National Defence, and the Interior, along with universities and the private sector (both for-profit and not-for-profit), contribute to the health service provision. Due to concerted efforts towards equitable access to health facilities, the past decade has seen improvements in health infrastructure across the country. This multi-level and multi-stakeholder approach aims to provide comprehensive health coverage and address the diverse health needs of the Sudanese population.

## 2.3 Introduction

The primary objective of the situation analysis was to enhance the previously reviewed strategy document in light of the conflict's impact on the supply chain, the status of medical supplies, the condition of infrastructure, and the needs of healthcare providers and local communities. This required identifying challenges and opportunities arising from the conflict, evaluating the availability, accessibility, and quality of medicines<sup>1</sup> and health products<sup>2</sup>, assessing the state of transportation and storage facilities, and understanding the needs and hurdles faced by healthcare providers and local communities to inform the strategy. The completion of the strategy aimed to facilitate donor contributions to re-establish the health supply chain, prioritising support for the affected regions.

1. In this report, the terms 'pharmaceuticals', 'pharmaceutical products', 'medicines' and 'drugs' are used interchangeably. Nevertheless, the term 'medicines' is used as much as possible to avoid confusion with narcotics.
2. Throughout the report the terms 'medical supplies', 'health products', and 'health technologies' are used interchangeably. These products range from simple bandages or blood sugar monitors to implanted hip joints, heart valves and the most sophisticated diagnostic equipment used in hospitals.

## 2.4 Scope

The analysis covered Sudan's diverse regions, acknowledging the varying impact levels of the conflict. This included:

- 1. States Severely Affected by the Conflict:** An in-depth assessment focused on areas where the conflict significantly damaged the supply chain and healthcare services.
- 2. Regions Hosting Internally Displaced People:** Specific examination was conducted through leaders based in areas hosting numerous internally displaced people, evaluating the challenges and requirements of both the displaced population and host communities.
- 3. Assessment of NMSF Health Supply Chain Operations in Temporary Locations:** A rapid evaluation of the NMSF's current operations in Port-Sudan and Wad-Madani was undertaken to determine the success of providing health supplies from these temporary offices. This assessment developed a contingency plan for resuming supply chain services in locations other than the headquarters.

## 2.5 Time Period

The situation analysis covered from the onset of the conflict (April 2023) to the present (November 2023), ensuring a comprehensive understanding of the evolving situation and its impact on the health supply chain and medical services.

## 2.6 Methodology

The situation analysis assessment methodology solicited insights from various stakeholders, including health officials, the NMSF, National Health Insurance Fund (NHIF), medicines regulatory authority, State Ministry of Health, healthcare providers, private sectors, donors, UN agencies, Non-Governmental Organizations (NGOs), and communities. Questionnaires tailored to each group were compiled, evaluated, and authorised by PSA / WHO and NMSF representatives. Due to conflict-related constraints, data collection pivoted from face-to-face to digital mediums, primarily through email and WhatsApp. Responses were collected in Arabic and English, transcribed verbatim, and analysed using thematic coding in Microsoft Excel. This approach enabled a comprehensive understanding of the diverse perspectives and experiences within Sudan's health supply chain.

## 2.7 Findings

The section discusses the assessment outcomes, providing a detailed analysis of the ongoing conflicts' effects on public and private health supply chains. It systematically explores the myriad challenges stemming from the war. It outlines the array of short- and long-term policies, strategies, and actions implemented by the government to mitigate the adverse impacts of the conflict on the health supply chain. This comprehensive approach offers a clear understanding of the current landscape and the strategic initiatives undertaken to sustain and improve the health supply chain under challenging circumstances.

### 2.7.1 Health Supply Chain Dynamics during the Conflict

During the ongoing conflict, the Rapid Support Forces (RSF) took control of the central warehouses of the National Medical Supplies Fund (NMSF) in Khartoum, leading to the inaccessibility of vital medical inventories. This occupation has resulted in the loss or damage of critical supplies and has significantly compromised the safety and efficacy of essential medications due to suboptimal storage conditions.

The essential drug supply, vital for managing life-threatening conditions such as tuberculosis, renal dialysis, and oncology treatments, along with narcotics and cold chain items like insulin and vaccines, has encountered significant disruptions. Despite collaborative efforts by the National Medical Supplies Fund (NMSF), the government, the International Committee of the Red Cross (ICRC), and various international NGOs, securing an annual stock of these critical medications has faced substantial challenges.

The NMSF's inventory, which includes a broad range of medical supplies from heavy machinery to cold chain medications, has similarly been impacted. Due to uncertainties about the status of these supplies, seized by the Rapid Support Forces (RSF), the Federal Ministry of Health (FMOH) has been compelled to exclude these crucial life-saving inventories from its resource calculations, a situation reflected across four states in the Darfur region.

The conflict has precipitated the fragmentation of the NMSF system, once regarded as a model in Sub-Saharan Africa, developed over years with the support of successive governments and NMSF directors. This deterioration has eroded the confidence of United Nations (UN) agencies, international NGOs, and donors like GAVI and the Global Fund (GF) in the NMSF, raising the likelihood of them seeking alternative distribution partners for medicines and health supplies in Sudan.



The onset of the conflict has led to a critical shortage in service provision, exacerbated by the disruption of supply chains from the central NMSF to the states. The demand for services and supplies has surged due to the displacement of millions from Khartoum and Darfur States to other regions, particularly affecting Gazira, River Nile, White Nile, and Northern states. This has directly impacted healthcare system performance, hindering access to life-saving services like renal dialysis and emergency care, including trauma management and surgical operations. The burden on hospitals due to non-communicable diseases (NCDs) and the influx of referred cases from Khartoum to Gazira and River Nile States have further strained resources. The security situation in conflict-affected states complicates the delivery of supplies, while connectivity issues hinder access to information. Additionally, outbreaks of diseases like dengue fever and cholera have added to the healthcare system's load.

The World Health Organization (WHO) has played a crucial role in providing emergency care supplies, including trauma care, surgery, basic emergency medicines, blood transfusion supplies, and disease outbreak materials. UN agencies have organized escorted transportation to some areas in Darfur and North Kordofan, although access to all conflict-affected areas, such as West Darfur, remains unfeasible. These supplies, while addressing immediate needs in the initial months of the conflict, are insufficient to cover the full range of required supplies and are not sustainable for meeting all needs.

The private sector faces additional challenges, with the disruption of supplies from Khartoum leading to an expansion of the black market. This situation is unprecedented, with some state Ministries of Health resorting to procuring essential supplies like anaesthetics and X-ray materials from the black market, leading to high prices and concerns over supply quality. Medicine prices have also soared due to inflation and significant devaluation of the national currency by over 100%.

Patients have been directly impacted by the insufficient supplies from both governmental and external donations, leading to reduced access to previously free services and high out-of-pocket expenditures. The collapse of health insurance and the closure of its facilities before the war have further burdened patients, diminishing their ability to access healthcare services, including affordable medications. Internally Displaced Persons (IDPs) lack sufficient financial support for service access.

The responsibility for availability, distribution, and storage capacity has shifted to the state Ministries of Health, highlighting the impact on the

NMSF's ability to fulfil its responsibilities fully. Moreover, the reliance on donations, predominantly aimed at emergency needs, falls short for chronic disease medications, such as those for cancer and renal dialysis. The limited scope and volume of donations are insufficient for the extensive needs of Sudan's population, which exceeds 40 million. This situation emphasizes the urgent need to prioritize health and medical supplies, a stance advocated by the Ministry of Finance (MOF).

Most international suppliers have halted deferred payment arrangements with the NMSF due to outstanding debts, prompting the MOF to commit to a monthly instalment payment plan, starting with US\$ 2.4 million. With the challenges of regional and global donor fatigue, the MOF's pledge to gradually its contribution is expected to alleviate the situation, especially post-conflict.

### **2.7.2 FMOH Initiatives to Sustain Availability of Medical Supplies**

As detailed previously, the FMOH and its operational arm, the NMSF, have implemented a series of strategic policies and measures in response to the significant disruption of the health supply chain. These initiatives aim to maintain a foundational level of health services throughout the nation, including the states affected by the conflict. The strategies are as follows:

Immediately following the onset of conflict on April 15, 2023, the FMOH convened high-level meetings led by the Federal Minister of Health (the Minister). These meetings were instrumental in defining four critical priorities to sustain the health system's functionality. The foremost priority was ensuring the availability of life-saving medications and health products, including essential trauma kits. The second priority focused on maintaining the operational capacity of essential hospitals and primary healthcare services—and the third priority aimed at retaining the system's ability to detect epidemic outbreaks promptly. Lastly, the fourth priority was continuing mother and child health programs.

Collaborating with state-level health ministers and partners, including UN agencies, the FMOH developed a response plan for the remainder of 2023. This plan prioritised the provision of essential medicines, acknowledging the pre-existing challenge of medicine availability being below 50% and the NMSF's significant debt to suppliers exceeding US\$ 80 million. The FMOH compiled a concise list of essential medicines and supplies to be consistently available through government provision or donor support, recognising the near collapse of government systems, including the financial infrastructure, in the initial three months of the war. The FMOH,

aided by UN agencies and Arab League nations, managed to sustain key health services such as, trauma care, blood transfusion and other emergency care services across the states. The FMOH actively engaged with potential donors to align their contributions with the identified list of essential health products. It achieved a high compliance rate where 60% to 70% of received donations met the FMOH's specified needs. Notably, the NMSF maintained well-equipped branches in all states except Khartoum, with most states receiving their three-month supply quota just before the war. Regular virtual meetings between NMSF branch managers and state health ministers were pivotal in navigating the challenges posed by the conflict. Critical personnel, including the health supply chain, were appointed to oversee the FMOH's operations. The Minister established several virtual and physical committees to manage various aspects of the health supply chain. These included a donations committee to assess needs and coordinate with partners, a supply and logistics committee based in Port-Sudan responsible for receiving donations and procuring medical supplies internationally, and a market-shaping committee to identify available medicines in Sudan, including the private sector's contributions. These committees, founded on existing laws and regulations governing the NMSF, played a vital role in the FMOH's management strategies during this period. Subsequently, the FMOH began transitioning back to normal operations, institutionalising these functions through its directorates rather than relying solely on committees.

To fortify the NMSF's capabilities at the state level, particularly during the war when most medicines and supplies were sourced through donations, the FMOH established committees in each state. These committees, led by the acting state health General Director, included representatives from the departments of curative medicine, emergency services, the NHIF at the state level, and the local NMSF branch manager. Their role was crucial in creating an effective system for managing and redistributing available medical supplies among the states.

### **2.7.3 NMSF Strategic Responses**

To counteract the extensive damage inflicted upon both its physical infrastructure and software systems and to rejuvenate the public health supply chain, the NMSF, in collaboration with the FMOH, has implemented a comprehensive array of policies, strategies, and measures. These initiatives are designed to secure the continuous flow of medical supplies in the immediate and extended future. The below section elaborates on these specific strategies and policies and examines the outcomes achieved amidst the ongoing conflict.

**Photo 2: WHO Representative, his team and members of supply and logistics committee receive humanitarian aid shipment in Port- Sudan**



### **2.7.3.1 Procurement Strategies and Challenges at NMSF**

The NMSF has been facing acute shortages in critical medical supplies, further aggravated by the ongoing conflict. The loss of the central inventory, including life-saving medical products for national health programs (such as kidney and renal dialysis, oncology, blood bank, and cardiac products), has been a significant setback.

Compounded by substantial, longstanding debts (more than US\$ 190 million) to the MOF (US\$ 100.54 million), the FMOH (US\$ 52.00 million), and government clients, primarily the NHIF (US\$ 34.17 million), the NMSF has struggled to maintain financial credibility with suppliers. The inability to guarantee timely payments has pushed the NMSF towards potential insolvency. Additional challenges include difficulties in banking transactions and accessing foreign currency for importing medicines. The cumulated debts of over US\$80 million owed to suppliers have resulted in a loss of trust and the forfeiture of deferred payment options, forcing the NMSF to adopt cash-on-delivery or advance payment terms at unfavourable exchange rates.

During the initial three months of the conflict, the NMSF relied heavily on donations from UN agencies and Arab League countries, such as Egypt and the Gulf States. Currently, the NMSF procures medicines and health products through local agents of international manufacturers, with transactions conducted in Sudanese Pounds. The destruction of local

manufacturing facilities in Khartoum and surrounding areas has led to a complete reliance on imported products.

To continue procuring generic, off-patent medicines through competitive public tenders while ensuring transparency and accountability, the NMSF established a tender committee at its temporary headquarter in Wad-Madani. This committee oversees call for quotations because the e-purchasing software, a practice adopted in 2015, was lost. Such practice of direct purchases is legal, the NMSF is permitted in emergencies.

Ensuring a consistent supply of medicines and health technologies hinges on sustainable financing. Long-term solutions require substantial investment to replenish lost Revolving Drug Fund (RDF) capital, repair or replace damaged hard and soft assets, and settle outstanding debts. The NMSF is critical if suppliers demand immediate debt settlement or cash against delivery for future consignments. Without significant financial injections to restore lost resources and clear debts, the NMSF risks insolvency and the loss of its self-sufficiency, which has been maintained for over three decades.

Future procurement strategies include strengthening procurement systems with specialised staff, diversifying funding sources (government grants, bilateral agreements, loans, third-party financing), developing regional policies for pooled procurement or joint purchasing, and implementing capacity-building programs for forecasting and quantification.

The NMSF plans to continue diversifying procurement sources through open tenders, revising its policy to split contract awards among multiple suppliers for critical items potentially. This approach ensures a reliable supply source and mitigates risk if the primary contractor fails to deliver, especially for sensitive items like intravenous fluids. However, the new policy of splitting quantity among suppliers needs to set measures to safeguard against malpractice and corruption and to keep the interest of the winning bidder to continue participating in the future NMSF tenders.

In its long-term strategy, the NMSF may consider restricted tenders, as recommended by the WHO<sup>3</sup> and donors like the GF. In this approach, suppliers undergo a prequalification process based on past performance, financial stability, and technical capability, ensuring a robust and reliable procurement system.

3 WHO, 1999. Operational Principles for Good Pharmaceutical Procurement. <https://www.who.int/3by5/en/who-edm-par-99-5.pdf>

### 2.7.3.2 Distribution Challenges and Strategies at NMSF

The NMSF faced significant challenges in its distribution network due to the conflict. Critical logistics facilities, including warehouses, cold rooms, and essential equipment at the NMSF headquarters in Khartoum and in Darfur states, were extensively damaged or looted by the RSF. This destruction included vital infrastructure such as cold rooms, refrigerators, Information and Communication Technology (ICT) equipment, and forklifts. Moreover, critical transportation routes, including roads and bridges in Khartoum and the Western region, were compromised, either partially or entirely rendered non-operational.

Confronting a critical shortage of storage capacity for its medical supplies, the NMSF has designated its Port-Sudan warehouse as the primary distribution hub. Port-Sudan, being the capital of the Red Sea state and housing the main functional airport during the conflict, is strategically positioned to serve this role. Additionally, the NMSF has established three subsidiary distribution centres in the capital cities of Al-Jazeera, River Nile, and White Nile states. These hubs are integral to the NMSF's streamlined distribution strategy (refer to Figure 1 below, for locations).

Given the loss of its computer software: Enterprise Resource Planning (ERP) system, the NMSF has reverted to manual operations. While most of the existing warehouse facilities do not adhere to the pre-conflict standards of Good Storage and Distribution Practices (GSDP), the NMSF is committed to maintaining minimum security measures. These measures encompass physical, environmental, and procedural aspects to ensure the integrity of stored products and safeguard inventories from theft, including employing security personnel and controlling access to storage areas.

**Photo3 : Distribution of humanitarian aids shipments from Port-sudan warehouses to hubs**

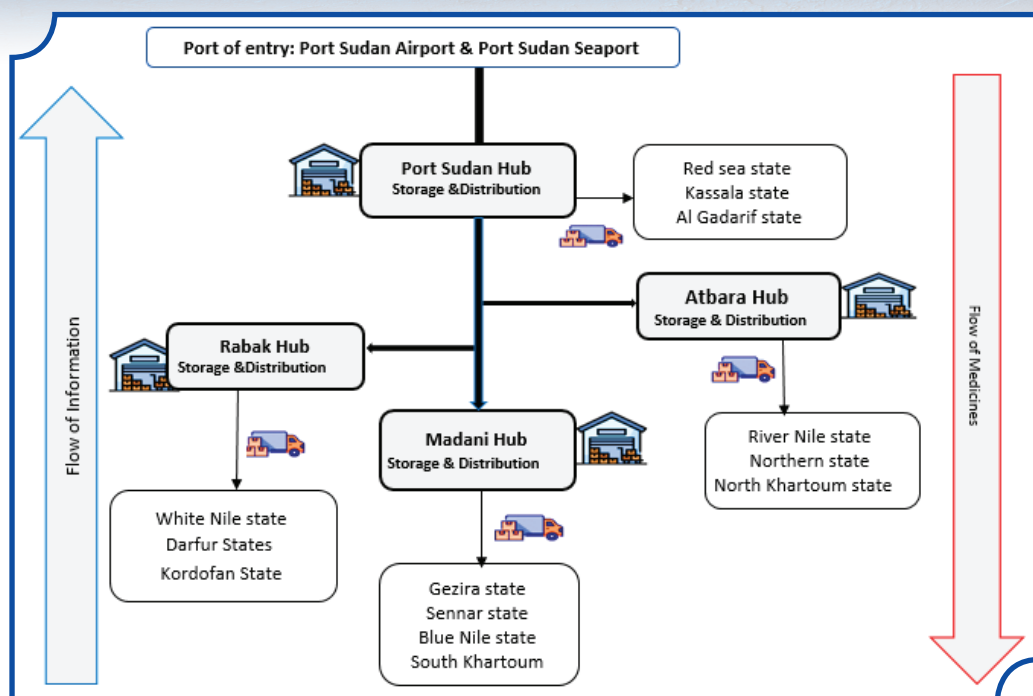


### 2.7.3.3 Logistical Response to Distribution Challenges at NMSF

To navigate the logistical challenges arising from the RSF blockade of the NMSF central warehouses in Khartoum, the NMSF established a dedicated logistics committee at its Port-Sudan office in the Red Sea state. This committee manages the warehousing and distribution of medical supplies received via air and sea freight. Due to the disrupted distribution network, distribution from the NMSF's Port-Sudan warehouses extends to other states, although it is impeded in certain areas, including Khartoum, Darfur, and Kordofan.

The transportation infrastructure has been critically compromised, particularly after the RSF looted over a hundred vehicles, including pick-up cars used for supervision administration and temperature-controlled vehicles essential for transporting medicines. The distribution system faces significant bottlenecks due to security risks, including vehicle theft and the potential endangerment of drivers. Damaged or RSF-occupied highways and bridges further exacerbate these challenges. In response, the NMSF has resorted to renting private trucks and utilising vehicles from UN agencies to ensure the timely delivery of critical medical supplies to affected areas. Mid-term improvement plans to improve the distribution system's efficiency and effectiveness include adopting new distribution models tailored to the specific contexts of different states, consolidating distribution channels, bolstering logistical infrastructure, and implementing scientific management of medical supplies. The NMSF also focuses on overhauling its fleet and developing plans to replace the vehicles lost to the RSF. These plans involve purchasing new vehicles or refurbishing existing ones at the state level, with proposals for financial support to be submitted to the MOF and donors such as UN agencies. Optimising distribution networks involves upgrading the NMSF's tracking system from fleet to shipment tracking, enabling end-to-end visibility of order status. The NMSF is considering adopting the GS1 standards to improve this system further.

**Figure 1: NMSF Hubs during the Ongoing Conflict**



Long-term strategies for distribution are being developed to ensure equitable access to medical supplies, continuing the trend of decentralisation. However, this decentralisation does not strictly adhere to political and administrative state boundaries, reflecting a new vision informed by lessons learned from the war. Despite these plans, there is no intention to establish an NMSF branch in Khartoum state. The NMSF will maintain its policy of outsourcing goods delivery, with services from state branches to health facilities dependent on the post-conflict administrative health systems adopted by the states. A limited number of vehicles will be retained by the NMSF for emergency distribution.

Lessons learned from the ongoing conflict made one of the NMSF senior staff suggest the use of innovative and lower cost methods for distribution, such as drones. In recent years, the use of drones has proliferated due to their ability to traverse difficult terrains, reduce labour, and replace fleets of vehicles that require costly administration. The NMSF could consider the use of the drones as a potential tool of transportation under certain circumstances. However, the evidence of using drones for routine delivery of medical supplies is limited. In addition, the costs of purchasing, maintaining, and operating drones and their supporting infrastructure (e.g. security permission, aviation services) in a country with a political stability



issue like Sudan may be prohibitive. The limited carrying capacity and required flight conditions of drones may also pose significant obstacles. It is therefore difficult at this stage, to determine whether the drones would be a strategic solution to the NMSF transportation of medical supplies, perhaps life-saving supplies such as blood and vaccines. More comprehensive analysis and research are needed to evaluate their potential role in enhancing the efficiency and effectiveness of medical supply distribution in Sudan.

Still, a senior NMSF official involved in supply management during the conflict has proposed a significant shift to a Just-in-Time (JIT) supply chain model. This suggestion follows the loss of all inventories at the central warehouses in Khartoum, valued at over five hundred million US Dollars. However, implementing a JIT model presents its own set of challenges, requiring a flawless system across all relevant government organisations. Also, lessons from the COVID-19 pandemic demonstrated that the JIT inventory management approach may not be optimal in today's highly volatile and interconnected global environment. This realization has led numerous international companies to shift their strategies towards maintaining higher levels of stock to mitigate supply chain disruptions. This conflict represents the first in over a century, underscoring the need for a resilient health supply chain capable of withstanding future crises. To bolster the NMSF's response to unexpected disruptions, re-establishing and enhancing the public health supply chain infrastructure are essential. This initiative necessitates investment in strengthening the supply chain infrastructure nationwide. The NMSF has formulated plans to construct new healthcare and logistics facilities in stable regions, intending to collaborate with the government and potential donors for implementation. The Federal Minister of Health and senior management have urged Sudanese ministers to funding to rebuild the NMSF, enhancing healthcare provision during and after the ongoing conflict.

#### **2.7.3.4 Enhancement of the NMSF's LMIS**

By 2015, the NMSF had achieved significant automation of its functions by implementing an ERP system, substantially improving the transparency and efficiency of its operations. However, the electronic Logistics Management Information System (eLMIS), a crucial component of this ERP, has since become non-operational. The eLMIS enabled real-time tracking and monitoring of medical supplies across state branches. The main data centres for the NMSF, located in Khartoum, are currently inaccessible due to the ongoing conflict. An upgrade of the ERP, including the eLMIS, was

scheduled for May 2023 but has been deferred until access to the main data centre is restored, or an alternative data centre is established.

The NMSF is setting up a new data centre in Port-Sudan in response to these challenges. This facility is intended to function as a backup to the primary data centre in Khartoum once it resumes operation. As part of its technological advancement strategy, the NMSF seeks to implement systems like GS1 for improved tracking and monitoring capabilities. The plan includes extending the eLMIS to provide end-to-end, real-time data visibility, thereby improving decision-making processes.

The NMSF intends to develop robust backup solutions, including Disaster Recovery Servers and cloud-based systems to bolster its electronic information system. This development will necessitate the availability and upgrading of ICT equipment at all operational levels. The NMSF is also considering the installation of an ERP module specifically for forecasting and quantification across the entire supply chain.

As part of its long-term strategy for the eLMIS, the NMSF is considering the integration of a comprehensive product quality monitoring system. This system would span the entire supply chain, from manufacturing through to service delivery points, and would be based on the implementation of GS1 standards. Such a system promises to enhance item management, enable Effective supply tracking across all suppliers, and facilitate the monitoring of daily-use items.

The NMSF is also planning a significant transition from its current manual and data-driven decision-making processes to a more advanced, electronic-based system. A key focus of this transition is the full implementation of the Business Intelligence module within their ERP system. This shift is expected to greatly improve the efficiency and accuracy of their data analysis and decision-making processes.

Additionally, the NMSF aims to digitize paper-based data across various facilities, thereby streamlining the transmission of data from service delivery points through regional branches to the NMSF headquarters. This move towards electronic data management is expected to greatly improve the overall efficiency and responsiveness of the supply chain management system.

### **2.7.3.5 Human Resources Challenges in the Supply Chain**

The NMSF is currently experiencing a critical shortage of adequately trained personnel capable of effectively managing the health supply chain. This shortfall is attributed to several factors: displacement of staff due to the conflict, living in conflict zones, or facing challenges in remote work

(such as poor internet connectivity, lack of computer access, disrupted electricity, and telecommunication interruptions). Presently, the NMSF is operating with a limited number of essential staff located in regional hubs as designated by the FMOH. To safeguard the operational staff, the NMSF has engaged local police forces for security services and provided safety equipment to protect against fire and accidents, ensuring all employees are well-informed about injury prevention and risk management.

Looking ahead, the NMSF does not currently have specific strategies or plans to recruit or train new staff. The conflict-induced internal or international displacement of some NMSF staff raises questions about the feasibility and necessity of maintaining a large workforce (before the war there were 441 in headquarter and 765 in branches, a total of 1,206 staff across the country). For example, an interviewee from the NMSF noted that in the past seven months, only thirty-seven employees out of the 1,206, most working remotely, successfully distributed 10,000 tons of medical supplies. This observation suggests a need to reassess the pre-war staffing model of the NMSF, possibly considering a shift towards remote working and a downsized workforce. However, it should be noted that emergency circumstances differ significantly from stable situations. In emergencies, certain procedures may be expedited or bypassed via waivers, while in stable conditions, these procedures must be strictly followed, the need for segregation of duties which may require more staff. Additionally, due to insecurity, some regions have been inaccessible, hindering the ability to serve the entire country or state as was possible prior to conflict. Consequently, it would be intriguing to evaluate whether the same small team could effectively serve the nation in a stable context. The crucial factor would be ensuring a sufficient number of competent staff proportionate to the business requirements.

In terms of long-term planning, the NMSF intends to update its training strategy to build a skilled and resilient logistics workforce. Despite having extensive experience in leadership development, the NMSF currently lacks a succession plan for its senior staff.

#### **2.7.4 War Impact, Challenges, and Government Priorities**

The ongoing war has imposed a sustained strain on the health supply chain, leading to a critical shortage of basic healthcare necessities. The disruption of the supply chain, coupled with d demand for medical supplies due to trauma, casualties, and shifts in the epidemiological landscape caused by population displacement, has resulted in an acute shortage of medical supplies necessary for adequate patient care.

The below section outlines the effects of the conflict on the health supply chain, as reported by representatives from the FMOH, state MOH, NMSF, the NHIF, healthcare providers, and the private pharmaceutical sector. It also addresses the emerging challenges and priorities established by the government to sustain the health supply chain and tackle the healthcare crisis.

#### **2.7.4.1 Impact of the War on the Health Supply Chain**

The ongoing conflict has significantly weakened the health supply chain infrastructure in both the public and private sectors. The RSF has looted inventories and vehicles and destroyed electronic systems, leading to substantial assets, and working capital losses for the NMSF, NHIF and numerous medicine manufacturing and importing companies. Security challenges have hindered the government's ability to ensure the timely delivery of essential medical supplies.

The war has also caused a large-scale displacement of internally displaced persons (IDPs), altered the epidemiological landscape, and complicated the quantification of health needs, such as the demand for specific medicines and health products. Regions like Al-Jazeera and the River Nile, with high IDP populations, are experiencing an escalated need for medical supplies. The FMOH is addressing these challenges by coordinating the exchange of medical stocks between states. Additionally, the open borders with seven countries, combined with a weak regulatory system, have led to the influx of smuggled medicines into Sudan.

#### **2.7.4.2 Government Priorities for Health Supply Chain**

To streamline the health supply chain, the NMSF must refine its list of medicines and health products, focusing on the most critical needs of the health system. This prioritisation should be based on clinical and economic criteria, utilising VEN- (Vital, Essential, Nonessential) and ABC-Analysis. The NMSF's procurement strategy should be distinct from the private pharmaceutical sector, with a defined list of items to be supplied exclusively by the NMSF, leaving the remainder for the private sector. Such strategic arrangement maximizes benefits of limited resources available for supply chain (e.g. foreign currency), removes overlap, and controlling the price of NMSF medicine sold by private pharmacies.

Immediate needs to medical supplies must be met by direct purchases from reputable suppliers in countries with stringent medicines regulatory authorities. During the war, the NMSF should consider adopting a kit system for importing medicines and medical consumables for surgical operations,

chronic diseases, and primary healthcare facilities. The government is urged to expedite financial procedures, importation, and manufacturing processes related to medicines.

Ensuring a consistent supply of medicines to all health facilities, including those in conflict-affected areas, is crucial. Distribution should involve secure convoys protected by armed forces, especially in conflict zones and neighbouring areas. New, safe transportation routes may need to be established for delivering health products to these regions. Additionally, the government should implement measures to safeguard health facilities and ensure the safety of health workers in war-torn areas, necessitating high levels of coordination and collaboration with international organisations such as the UN agencies and the ICRC.

Post-conflict, the government must focus on establishing a resilient and highly responsive public health supply chain to address the needs arising from natural or man-made emergencies. Investment in technology will be key to enhancing the efficiency and effectiveness of the public health supply chain. Engaging local communities and stakeholders in addressing supply chain challenges is also vital.

Collaboration with the private sector to establish Public-Private Partnerships (PPPs) could yield innovative solutions for an Effective health supply chain in both the public and private sectors. An example of this approach is the proposed division of the medical supplies market in Sudan between the NMSF and the private pharmaceutical sector. The NMSF should also seek collaboration with international development donors, UN agencies, development banks, and friendly governments of Sudan for recapitalisation.

To improve the flow of medicines into Sudan, the FMOH has implemented measures such as waiving unnecessary bureaucratic regulatory procedures to accelerate the importation, clearance, and distribution of essential health supplies. However, the government must enforce regulations to protect the public from substandard and falsified medicines.

#### **2.7.4.3 SWOT Analysis**

The detailed findings from the previous sections have been consolidated into a SWOT analysis for the NMSF. This analysis identifies critical areas for improvement and necessary interventions that should be initiated even amidst ongoing conflicts.

**Table 1: NMSF SWOT Analysis**

	Useful in achieving the objectives	Detrimental to achieving the objectives
	Strengths	Weaknesses
INTERNAL	<ol style="list-style-type: none"> <li>1. Established NMSF Law and Regulations provide a strong legal framework.</li> <li>2. Robust infrastructure at both central and state levels.</li> <li>3. Well-equipped branches of NMSF improve operational capacity.</li> <li>4. The MOF commitment to partially settle debts to NMSF.</li> <li>5. A skilled staff roster ensures competent service delivery.</li> <li>6. The NMSF's long-standing organizational experience aids in effective management</li> </ol>	<ol style="list-style-type: none"> <li>1. Loss of inventories for NMSF and its partners in Khartoum and war-affected states disrupts operations.</li> <li>2. The loss of logistic assets, including ERP software, hampers supply chain management.</li> <li>3. Depletion of working capital due to financial constraints.</li> <li>4. Challenges with cash flow management limit financial agility.</li> <li>5. Substantial debts owed by NMSF to suppliers impact financial stability.</li> <li>6. Significant debts owed to NMSF by MOF, FMOH, and NHIF create financial strain.</li> <li>7. Limited availability of essential medicines and supplies affects healthcare provision.</li> <li>8. Eroded trust between NMSF and its suppliers hinders business relationships.</li> <li>9. Displacement of staff disrupts organizational continuity.</li> </ol>
EXTERNAL	<ol style="list-style-type: none"> <li>1. Support from the Minister of Health and Ministry of Finance provides a strategic advantage.</li> <li>2. An established medicines registration system enables effective regulatory oversight.</li> <li>3. Commitment from partners to pooled procurement improves procurement efficiency.</li> <li>4. Potential for market expansion through state branches and the NHIF.</li> <li>5. The international community's commitment to supporting Sudan's health system, including the health supply chain.</li> <li>6. Opportunities in contract manufacturing allow local manufacturers to utilize foreign manufacturing facilities.</li> <li>7. Support from UN agencies and donors contributes to resource mobilization.</li> <li>8. Availability of private financing options facilitates investment and growth.</li> </ol>	<ol style="list-style-type: none"> <li>1. The Ongoing Conflict</li> <li>2. Reduced availability of medicines and supplies impacts healthcare delivery.</li> <li>3. Scarcity of foreign currency poses challenges in international procurement.</li> <li>4. Banking transaction difficulties due to sanctions impede financial operations.</li> <li>5. Expansion of war into new areas creates additional operational challenges.</li> <li>6. Local currency devaluation affects financial planning and purchasing power.</li> <li>7. Changes in the epidemiological map due to population displacement affect health needs assessment.</li> <li>8. Damage to roads and bridges hinders transportation and distribution</li> </ol>

## 2.7.5 Support of Partners in Re-establishing the Health Supply Chain

The below section summarises the commitment of support provided by the FMOH and UN agencies towards re-establishing the health supply chain. While specific technical, logistical, and financial support details are not fully defined at this stage, the FMOH and responding UN agencies have expressed their interest in contributing to the recovery efforts.

### 2.7.5.1 Support from the FMOH

The Federal Minister of Health has actively engaged with the Minister of Finance to address and resolve the substantial debts owed by the NMSF. Before the conflict, the availability of medicines was already a concern, compounded by the suppliers' debt exceeding US\$ 80 million. The accumulation of NMSF's debts within the MOF significantly impacts the NMSF's capacity to manage the national health supply chain effectively. This situation deteriorated further in the initial months of the war due to a lack of financial contributions from the MOF to the NMSF. Resolving these debt issues is critical for the continuation of the NMSF. Despite the challenging financial situation, the MOF has resumed making payments to the NMSF, albeit in smaller amounts, to enable the purchase of medicines and supplies, thereby allowing the NMSF to sustain its operations.

Specific feedback from Gazira State Ministry of Health acknowledged the severe challenges faced by the government in addressing healthcare supply chain issues since the onset of the conflict. They reported that the healthcare infrastructure experienced a significant collapse lasting about 4-5 months, which drastically affected access to critical medical supplies including narcotics, medications for Non-Communicable Diseases (NCDs), cold chain facilities, oncology treatments, blood transfusion services, and immunosuppressants. The influx of internally displaced persons (IDPs) further exacerbated these challenges, leading to a critical strain on already limited resources and necessitating the sharing of medical supplies with other states. A notable impact was the loss of assets and licenses by many importers and suppliers, which disrupted the regular supply chain. Consequently, the State Ministry of Health (SMOH) had to intervene, often procuring supplies from alternative sources, including the black market, to ensure the availability of essential items like dialysis and anaesthesia equipment. They highlighted the collapse of the health insurance system, with over half of the facilities becoming non-operational and facing severe stock shortages. Additionally, financial constraints and resource limitations

at the localities level were significant hurdles in distributing supplies to healthcare facilities.

Regarding the government's regulatory ability, they indicated that in Gazira, effective coordination with other authorities, including the justice system and courts, played a crucial role in mitigating some of these challenges. They conducted 150 supervision visits, which were instrumental in seizing several high-cost medicine consignments, such as oncology medicines and insulin, which were then distributed to healthcare facilities. However, they faced a critical shortage of stocks, especially NCD medications, leading to the circulation of illegal medicines that lacked guaranteed safety and proper storage conditions.

In terms of regulations or policies post-conflict, the Ministry emphasized the role of partnerships, especially with the WHO, in alleviating the stock-out issue. The state supported the stability of the National Medical Supplies Fund (NMSF) by providing essential resources like office space and warehouses. They also reported a change in the supply distribution policy, increasing quantities to key hospitals, particularly those serving IDP populations. The Ministry of Health (MOH) assigned specific pharmacies and outlets to provide medications free of charge, prioritizing 100 PHC facilities based on health mapping and the locations of IDPs.

For the support in restarting the NMSF Redistribution Facility (RDF), they suggested that the state government's contribution to the availability of life-saving supplies was pivotal. They proposed implementing a nominal fee on public services to raise additional funds and emphasized the need for strengthening the decentralized system, which would allow more authority and resources to be delegated to health units at localities. They also recommended reviewing the financing of health insurance mechanisms to rebuild trust and functionality.

The Ministry stressed that their experiences during this period highlighted the urgent need for robust and adaptable healthcare supply chain systems. They expressed confidence that their insights would contribute significantly to developing effective strategies for managing these issues in challenging times.



**Photo 4: Federal Minister of Health receive medical aid from the republic of Indonesia**



#### **2.7.5.2 Support from Donors**

During the initial four weeks of the conflict, various United Nations agencies, including the World Health Organization (WHO), played a pivotal role in providing essential support. The WHO supplied a range of critical medical items, encompassing trauma care and surgical supplies, emergency care equipment, blood transfusion bags, intravenous fluids, and commodities for Non-Communicable Diseases (NCDs). These supplies were crucial in facilitating service provision by the Ministries of Health, International Non-Governmental Organizations (INGOs), and national NGOs across all accessible states and areas.

In addition to this, the same range of supplies was distributed to impacted areas, starting with Khartoum, and subsequently extending to several parts of the Darfur region via United Nations convoys. This distribution was vital in addressing the immediate medical needs in these conflict-affected regions.

The financial collapse of the National Medical Supplies Fund (NMSF) in the initial months of the war posed a significant challenge. In response, the WHO provided financial assistance for the transportation of medical supplies from the Red Sea to various states. As the conflict progressed, the WHO also initiated fundraising efforts to support the procurement of renal dialysis supplies, including additional quantities and dialysis machines,

to meet the growing healthcare demands.

Furthermore, the WHO supplied therapeutic kits for Severe Acute Malnutrition (SAM), aiding in the treatment of malnutrition amidst the crisis. The organization also responded promptly to the outbreak of cholera, which emerged a few months after the onset of the war, by providing necessary supplies to combat the disease.

Overall, the support extended by WHO and other UN agencies was instrumental in mitigating the health impacts of the conflict, ensuring continuous healthcare provision, and addressing emergent public health challenges

UNICEF, provide financial, logistical, and technical support to procure and transport health and nutrition supplies. Those donors have committed to ongoing support, with UNICEF offering technical assistance in supply chain and information management. Post-conflict, UNICEF aims to strengthen the national health supply chain, contingent on its capacity, including continuing the maturity model initiative initiated with the NMSF. UNICEF's support extends to logistics, finance, forecasting, quantification of supplies, and end-user monitoring. Furthermore, UNICEF is actively working with other donors to secure additional resources for rebuilding Sudan's supply chain. Key priorities include institutional and human resource capacity building, agile supply chain development, civil society engagement, and leveraging private sector innovation.

The GF, through its Principal Recipient UNDP, is continuing its grant implementation activities. This includes a US\$ 0.93 million grant for ICT equipment procurement for the NMSF, with expected delivery in the first quarter of 2024. Additionally, the GF has contracted RAMCO to support the NMSF's ERP system, including staff training and maintenance services, pending establishing a server room in Port-Sudan. The GF is also upgrading the ERP system to improve commodity tracking throughout the supply chain. Funding from the GF is also allocated to warehousing and storage costs, truck procurement, and operational expenses for the NMSF. UNDP's role extends to supporting the NMSF in human resource capacity building, supply chain monitoring, and coordination at all implementation levels and providing financial, technical, and logistical support.

The United Nations Population Fund (UNFPA) is prepared to offer technical and financial support to ensure a functioning health supply chain, focusing on logistics management, particularly for sexual and reproductive health supplies, including life-saving medicine and family planning. UNFPA emphasises the importance of accurate forecasting

and quantification of supply needs. Learning from the collapse of central storage systems in Khartoum, UNFPA will support regional warehouses and study investments in effective distribution mechanisms. Identifying safe distribution routes and investing in last-mile supply management are high priorities for UNFPA, alongside generating evidence for effective planning and intervention selection.

### **2.7.6 Impact of the War on the Private Pharmaceutical Sector in Sudan**

The ongoing conflict has profoundly impacted the private pharmaceutical sector in Sudan, particularly affecting companies, and community pharmacies in the Khartoum, North Kordofan, and Darfur regions. The sector has incurred significant losses in assets and working capital, estimated in millions of US dollars. This loss is attributed to destroying medicine factories, warehouses, inventories, vehicles, and offices.

In the war-affected areas, particularly in Khartoum, North Kordofan, and Darfur, several factors have compounded the challenges faced by the pharmaceutical sector. The devaluation of the local currency and fluctuations in medicine prices have disrupted the manufacturer-importer relationship, as importers struggle to make timely payments and fulfil their import commitments according to the annual plan. Most drug companies, encompassing manufacturers and importers, are concentrated in Khartoum or its vicinity and lack branches or warehouses in other states, further exacerbating distribution challenges.

A notable absence of a structured medicine registration policy and a defined ceiling for the number of molecular entities and their dosage forms has led to inconsistent and unpredictable registration practices. The decision-making process for medicine registration is heavily reliant on the discretion of the Secretary General of the National Medicines and Poisons Board (NMPB), leading to a lack of prioritisation and sudden, unexplained closure of registrations.

Additionally, the pharmaceutical sector in Sudan lacks essential infrastructure such as calibration centres for laboratory equipment, bioequivalence centres, recognised Contract Research Organizations, and technical consultancy offices. There is also a shortage of technical institutes to train pharmaceutical production personnel. Frequent power outages and high fuel costs escalate the prices of locally manufactured medicines. Pricing challenges are further exacerbated when locally manufactured medicines are priced about imports from countries like India, where mass production and government subsidies support exports.

The sector also faces challenges due to the absence of safe waste disposal systems, a lack of manufacturers for high-quality pharmaceutical packaging materials, and the indirect banking transactions resulting from economic embargoes. These factors collectively the overall cost of medicines and impede the growth and efficiency of the pharmaceutical sector in Sudan.

### **2.7.6.1 Support Required for Local Medicine Production**

In times of war, the government must ease restrictions and implement measures that safeguard public health and ensure the availability of essential medicines and health products. Post-conflict, reinforcing the NMPB becomes vital to ensure the safety, efficacy, quality, and affordability of medicines sold in Sudan. A robust NMPB is essential to support local drug manufacturers in complying with regulations, thereby increasing healthcare professionals' confidence in locally produced medicines.

A significant challenge during the war has been the loss of over 70% of the working capital in the pharmaceutical private sector. To rejuvenate this sector, the government needs to establish financing funds. One approach could be the creation of a specialised Pharma Credit Corporation, offering nominal-cost financing to incentivise investment in local medicine production.

The development of a comprehensive electronic statistical system is crucial. This system would provide detailed information about the origin, types, quantities, value, and prices of all medicines and health products in the Sudanese market, linking to inventories across public, private, and NGO warehouses. This database would be pivotal in informed decision-making regarding priority setting and market shaping. The government should regularly publish reports on market volumes based on this database to guide pharmaceutical companies in developing evidence-based policies and investment plans.

The NMPB should mandate data loggers in vehicles transporting medicines over long distances to ensure medicine quality during transportation. Additionally, the NMPB could require pharmaceutical companies to print GS1 codes on locally manufactured or imported medicines, enhancing traceability, and protecting the public from substandard and falsified medicines.

There is also a need for specialised training for the technical staff of the regulatory authority. The government might consider establishing specialised technical institutions to provide foundational and advanced training in pharmaceutical manufacturing and health technology production in partnership with the private sector.

## 2.7.6.2 SWOT Analysis

Table 2 summarises the strengths, weaknesses, opportunities, and threats identified by private-sector interviewees in the pharmaceutical industry.

**Table 2: Private Pharmaceutical Sector SWOT Analysis**

	Useful in achieving the objectives	Detrimental to achieving the objectives
	Strengths	Weaknesses
<b>INTERNAL</b>	<ol style="list-style-type: none"> <li>1. Implementation of the Medicines and Poisons Act and Regulations: The existence and enforcement of comprehensive legislation, specifically the Medicines and Poisons Act, along with its associated regulations, provide a structured legal framework for the pharmaceutical sector.</li> <li>2. Presence of the NMPB and State Branches: The NMPB, along with its branches spread across various states, plays a pivotal role in regulating and overseeing pharmaceutical practices ensuring compliance with health and safety standards.</li> <li>3. Governmental Support for the Pharmaceutical Sector: There is a strong commitment from the government towards the healthcare sector, particularly in supporting and regulating the pharmaceutical industry to ensure public health and safety.</li> <li>4. Extensive Pharmaceutical Educational Infrastructure: The presence of over 30 pharmacy schools signifies a robust educational infrastructure, contributing to the development of skilled pharmaceutical professionals and supporting the industry's growth.</li> <li>5. Well-Established Private Pharmaceutical Sector: The private sector in the pharmaceutical industry is well-established, indicating a mature market with significant experience and expertise in pharmaceutical manufacturing, distribution, and retail.</li> </ol>	<ol style="list-style-type: none"> <li>1. Significant Debt of NMSF to Suppliers: The NMSF is burdened with substantial debts owed to pharmaceutical suppliers, impacting its financial stability and operational efficiency.</li> <li>2. Limited Availability of Medicines and Supplies: There exists a notable scarcity of essential medicines and medical supplies, which hinders the ability to meet healthcare demands effectively.</li> <li>3. Challenges in Adhering to Good Manufacturing Practices (GMP): The pharmaceutical sector faces difficulties in consistently adhering to GMP, a critical factor for ensuring the quality and safety of medicines.</li> <li>4. Issues with Good Storage and Distribution Practices (GSDP): There are challenges in maintaining GSDP within the pharmaceutical supply chain, affecting the integrity and efficacy of medicines.</li> <li>5. Eroded Trust between Importers and Manufacturers: The ongoing financial and operational challenges have led to a loss of trust between importers and manufacturers, impacting business relationships and collaborations within the pharmaceutical industry.</li> <li>6. Lack of Trained Specialized Technical Staff: There is the prevailing challenge of trained and specialized technical cadres within the sector, which is a crucial asset for maintaining quality and regulatory compliance.</li> <li>7. Absence of a Comprehensive Medicine Registration Policy: The sector lacks a cohesive and well-defined medicine registration policy, leading to inconsistencies and potential gaps in the regulatory oversight of pharmaceutical products.</li> </ol>

## Opportunities

1. **Expansive National and Regional Market Opportunities:** Sudan's pharmaceutical sector benefits from significant market opportunities at both national and regional levels, offering a broad scope for business and trade in the healthcare industry.
2. **Contract Manufacturing Opportunities:** There is potential for local manufacturers to engage in contract manufacturing, which allows them to produce their pharmaceutical products using the facilities of foreign manufacturers, enhancing production capabilities and quality.
3. **Availability of Private Financing:** The sector has access to private financial resources, offering avenues for investment and growth. This includes funding from private investors and financial institutions interested in the pharmaceutical industry.
4. **Well-Developed Transportation Network:** A robust network of paved roads connects Sudan to neighbouring countries, including Egypt, Eritrea, Ethiopia, and South Sudan. This infrastructure facilitates Effective regional transportation and distribution of pharmaceutical products.
5. **Collaboration with the Africa Medicines Agency (AMA):** Opportunities exist for collaboration with the AMA, which can aid in harmonising regulatory standards, improving medicine quality, and ensuring compliance with international best practices.
6. **National Pooled Procurement Initiatives:** The existence of national pooled procurement mechanisms presents an opportunity to streamline the procurement process, achieve economies of scale, and improve the affordability and availability of pharmaceutical products in Sudan.

## Threats

1. **The Ongoing Conflict**
2. **Depletion of Inventory in Conflict Zones:** Significant loss of pharmaceutical inventories and assets in Khartoum and other states affected by the war, impacting supply chain continuity.
3. **Logistical Asset Loss:** The conflict has resulted in the loss of crucial logistical assets, impeding the Effective transportation and distribution of pharmaceutical products.
4. **Erosion of Working Capital:** The pharmaceutical sector has experienced a substantial reduction in working capital, affecting its operational and financial stability.
5. **Foreign Currency Shortage:** A scarcity of foreign currency is hampering the importation of essential medicines and pharmaceutical ingredients.
6. **Banking Transaction Challenges:** Sanctions have led to difficulties in conducting banking transactions, further complicating international trade and payments.
7. **Impact of Local Currency Devaluation:** The devaluation of the local currency has led to decapitalization, affecting the purchasing power and financial planning of pharmaceutical entities.
8. **Conflict Escalation to New Regions:** The expansion of war into additional areas poses risks to supply chain integrity and s operational challenges.
9. **Political Influence in NMPB Appointments:** The appointment of the NMPB Secretary-General is influenced by political considerations, which could impact regulatory effectiveness and impartiality.
10. **Talent Attrition:** The ongoing conflict and challenging working conditions have led to a brain drain, with qualified pharmaceutical professionals leaving the sector or country.
11. **Unregulated Medicine Importation:** Legal loopholes and regulatory gaps allow for the importation of unregistered medicines despite the availability of registered products with the same composition, raising safety and quality concerns.
12. **Prevalence of Pharmaceutical Smuggling:** The sector faces challenges due to the smuggling of pharmaceutical products, which undermines legal trade and poses risks to public health.

## 2.8 Post-War Strategy for Health Sector Recovery

### 2.8.1 Future Initiatives by the FMOH

1. **Warehousing:** The FMOH plans to improve warehousing capacities in various zonal areas beyond the central level.
2. **Logistics:** The NMSF will focus on reconstructing its logistics services, which include the acquisition of vehicles, software systems, and other necessary logistics infrastructure.
3. **Reconstruction:** The NMSF team and technical experts will develop a comprehensive rebuilding plan collaboratively.
4. **Stakeholder engagement:** The NMSF's early recovery plan, encompassing these strategies, will be shared with the government, international donors, UN agencies, and regional development banks to garner support for reinstating the NMSF's operational capabilities.

### 2.8.2 Addressing Financial Challenges

The MOF has struggled in the past few years to timely allocate the budget for the free medicines program and to subsidize the exchange rate for importing medicines into the NMSF account, leading to significant accumulated debts. This longstanding financial issue prompted the FMOH to initiate discussions on the financing modalities of medicines before the onset of the war.

The reform strategy will also encompass the NHIF, which directly services over 250 healthcare facilities and relies on the NMSF for medical supplies. The NMSF is indebted to the NHIF for over US\$ 30 million.

The NHIF's operational model is dependent on both insurance premiums and financial support from the MOF. This interdependency has created a cyclical financial challenge, where the MOF's inability to fulfil its commitments leads to systemic collapses.

The fragmentation of Sudan's health financing mechanisms, including the NHIF, RDF, and MOF-funded free medicine services, necessitates a comprehensive review under the health financing policy established in 2016. This policy aims to address fragmentation, improve efficiency, and promote the growth of self-sufficient NHIF and NMSF, thereby ensuring the provision of sustainable, quality health services.

Currently, the FMOH has formed a committee to address these financial issues and develop strategic recommendations for future implementation.

The goal is to empower the NMSF to build its RDF capital and resume its supply chain services effectively and self-sustainably, reducing dependency on MOF funding.

High-level discussions within the FMOH are focused on developing a clear, visionary policy document, which will be disseminated to various government ministries and state governments. The actualization of these plans will depend on the future socio-political landscape of Sudan.

The FMOH is preparing to spearhead the reconstruction of the health system immediately following the end of the conflict, aligning with the aforementioned strategies and policy initiatives.

## 2.9 Conclusion

The situational analysis conducted for the NMSF under the aegis of the Sudanese government, with assistance from PSA, the WHO, and the Sudan FMOH/NMSF, provides a comprehensive understanding of the health supply chain's current state amidst ongoing conflict. The analysis highlights the critical role of the NMSF in maintaining healthcare services and delivering medical supplies effectively and cost-effectively.

The conflict, which began in April 2023, has severely impacted Sudan's infrastructure, particularly the health supply chain, limiting access to essential services and supplies. The need for a strategic, multi-faceted approach to rehabilitate Sudan's health supply chain is evident, and the development of the NSCS for humanitarian response is a crucial step in this direction. The strategy aims to address both immediate and long-term needs, assess the availability of medical supplies, evaluate resources, and establish a framework for donor contribution towards rebuilding the health supply chain.

The findings of the assessment demonstrate the profound impact of the conflict on both public and private health supply chains, outlining the challenges, policies, strategies, and measures implemented to mitigate these impacts. The report also highlights the critical role of international support, including that from UN agencies and other donors, in rebuilding the health supply chain.



## 2.10 Recommendations

The following are recommendations which if implemented will enable the NMSF, the FMOH, and supporting agencies to significantly improve the resilience and effectiveness of Sudan's health supply chain, ensuring better healthcare outcomes for its population, particularly in the face of ongoing and future challenges.

- 1. Strengthening Warehousing and Distribution:** Improve warehousing capacities in various zones beyond the central level. The NMSF should rebuild its logistics services, including the procurement of vehicles, software systems, and infrastructure.
- 2. Financial Stability and Debt Management:** Address the challenges of implementing the budget allocated by the MOF for free medicines programs and subsidizing medicine importation. The FMOH should work closely with the MOF to resolve the long-lasting NMSF's debts and ensure sustainable financial support for health services.
- 3. Reform of NHIF:** Reform the NHIF to address its dependency on the MOF for financial support and to pay its debts to the NMSF. This reform should consider the overall efficiency and sustainability of the NHIF and its role in the health supply chain.
- 4. Policy Review and Implementation:** Revisit and implement the health financing policy established in 2016 to address the fragmentation of health financing mechanisms in Sudan. This policy should aim to promote the growth of self-sufficient NHIF and NMSF and ensure the provision of sustainable, quality health services.
- 5. Post-Conflict Health System Reconstruction:** Prepare for the immediate reconstruction of the health system post-conflict. Develop and disseminate a clear, visionary policy document that addresses the challenges and opportunities identified in the analysis. This policy should be shared with various government ministries, state governments, and relevant stakeholders.
- 6. International Support and Collaboration:** Continue to engage with international donors and agencies for financial, technical, and logistical support. Leverage these relationships to strengthen the NMSF's infrastructure and capabilities, particularly in areas severely affected by the conflict.
- 7. Private Sector Engagement and PPPs:** Foster PPPs to innovate and improve the efficiency of the health supply chain in both public and

private sectors. This includes leveraging private sector expertise and resources to develop the pharmaceutical industry in Sudan.

- 8. Regulatory Strengthening:** Improve the capabilities and resources of the NMPB to ensure regulatory compliance, quality control, and safety of medicines. This includes addressing the challenges in the private pharmaceutical sector and ensuring a structured medicine registration policy.

## Part 3: NMSF Mission, Vision and Strategic Objectives

This part of the document presents the NMSF mission, vision, and goals. It also suggests a set of strategic objectives, which could be achieved if the proposed recommendations have been successfully implemented.

### 3.1 Mission Statement

To provide equitable and sustained access to affordable, quality medicines and health technologies to the people and to promote the public health in Sudan.

### 3.2 Vision

A robust, sustainable, and adaptive public health supply chain capable of effectively responding to Sudan's current and future health supply chain challenges.

### 3.3 Goal(s)

Develop a resilient and effective national supply chain in Sudan for medicines and health products, to contribute to enhancing healthcare service quality. The NMSF aims to improve health outcomes through expert human resources management and development, effectively addressing present and future health supply chain challenges in Sudan.

### 3.4 Overall Objectives

1. Achieve continuous availability of superior-quality, affordable health products across service delivery points in Sudan by enhancing the maturity of the supply chain system and fortifying pharmaceutical and logistics management services.
2. Improve the accessibility of high-quality pharmaceutical services and promote the rational utilization of pharmaceutical products, thereby contributing to improved health outcomes for the Sudanese population.
3. . Improve the efficiency and ensuring the long-term sustainability of the health supply chain requires strategic investment and resourcing. This includes optimizing pharmaceutical and logistics services to streamline the supply chain.
4. Build a resilient integrated national health chain capability to respond to potential humanitarian crisis (pandemics and war/conflicts).

## 3.5 Strategic Objectives from Situation Analysis

Based on the comprehensive analysis of the NMSF and the situational context in Sudan, the following strategic priorities and progressive options are proposed for the NMSF to achieve its objectives effectively. They are grouped by thematic areas.

If implemented, the recommendations (in no particular order) can significantly improve the resilience and effectiveness of Sudan's health supply chain, ensuring better healthcare outcomes for the population, especially in the face of ongoing and future challenges.

### 3.5.1 Policy & regulations

1. **A policy for post-conflict reconstruction** – Develop a clear, visionary policy document addressing the identified challenges and opportunities post-conflict and disseminate to various government ministries, state governments, and stakeholders.
2. **Safe, efficacious medicines**
  - a. Strengthen the capabilities and resources of the National Medicines and Poisons Board (NMPB) to enforce regulatory compliance. This includes addressing challenges in the private pharmaceutical sector and ensuring a structured medicine registration policy.
  - b. Strengthen the Pharmacovigilance and Post-Market Surveillance Program to monitor and assess the safety, quality, and efficacy of medicines available at various distribution levels in the market.
  - c. Implement regulatory frameworks to manage the supply of critical medical supplies, including narcotics, NCD medications, and oncology treatments.
  - d. Implement a comprehensive quality assurance framework to ensure compliance with national regulations and adherence to established standards for all health products.

Strengthen the capacity of local production of quality-assured essential medicines at affordable prices

3. **Stable infrastructure in times of crisis** – Publish comprehensive policies to ensure stable functioning healthcare infrastructure, especially in times of crisis.
4. **Effective coordination with other authorities** – Produce guidelines for effective coordination with other authorities, including the justice system and courts, to mitigate supply chain disruptions.

- 5. Reduce bad debts** – Reassess payment policies for public clients, considering innovative client payment modalities with credit limits to manage the risk of bad debts effectively.

### 3.5.2 Resource Mobilization

#### 1. Resolve Debts and Secure Sustainable Funding:

Partner with the Ministry of Finance (MoF) to restructure funding allocations for free medicine programs and subsidies for medicine importation, while exploring revenue-generating strategies like nominal fees for public services.

Revamp the National Health Insurance Fund (NHIF) to enhance its sustainability and reduce dependence on the MoF by reinforcing trust and functionality.

Implement and review the health financing policy of 2016 to unify and streamline Sudan's health financing mechanisms.

#### 2. Strategic Capital Investment in Revolving Drug Fund (RDF):

Collaborate with stakeholders and potential donors to support a robust plan for refreshing inventory, upgrading assets, and refurbishing facilities within the RDF.

#### 3. Mobilize Funding for Supply Chain Interventions:

Secure necessary financial and material resources to support coordinated supply chain interventions, addressing local constraints and enhancing the distribution of healthcare supplies.

#### 4. Enhance NMSF Infrastructure and Capabilities:

Maintain engagement with international donors to gain financial, technical, and logistical support, aimed at bolstering the National Medical Supplies Fund (NMSF) infrastructure and operational capacities, particularly in conflict-affected areas.

#### 5. Establish Flexible Funding Mechanisms:

Create and sustain adaptable funding structures that allow for quick redirection of resources to the most needed areas during emergencies, ensuring a rapid and flexible response.

### 3.5.3 Supply chain operations<sup>4</sup>

1. **Improve Medicine and Health Product Availability:** Achieve a 95% order fill rate for health facilities to significantly reduce shortages and ensure continuous treatment services.
  - a. Improve the selection of health products and technologies by reviewing priority health needs and updating the Essential Medicines List, clinical guidelines, and the formulary process. This also involves developing and validating an essential list of medical devices and equipment to ensure they meet the requirements of the health sector.
  - b. Utilize precise, real-time data for accurate quantification and forecasting of health products.
  - c. Create a unified and effective procurement infrastructure for medicines and health products, aligning with national and international standards.
  - d. Source from diverse markets to ensure continuous availability of essential medical items.
  - e. Train the State Ministry of Health (SMOH) workforce in new procurement strategies and regulatory requirements.
2. **Accurate Advance Demand Forecasting and Planning:** Employ data analytics for accurate demand forecasting and planning, considering disease patterns, population movements, and other relevant factors.
3. **Establish Efficient Distribution Systems:** Implement efficient and equitable distribution systems, with rapid decision-making by a central authority or task force to adapt to changing conditions.
4. **Initiate Strategic Stockpiling and Decentralized Distribution:** Establish and maintain reserves of essential medical supplies in strategic, secure locations to ensure availability, particularly during peak demand or crisis. Decentralize storage to enhance accessibility and ensure a steady supply of crucial medical items in times of need across various regions.
5. **Implement Alternative Transportation Routes:** Identify and utilize alternative transportation routes for medical supplies, including air drops, riverine transport, or pack animals in remote areas to overcome the disruption of supply lines and ensure that the stockpiles and procurement systems lead to actual delivery of medical supplies.

<sup>4</sup> Supply chain operations may include ● Quantification (forecasting and supply planning) ● Procurement (TA, not direct procurement) ● Product Reception/Clearance ● Inventory Management ● Warehouse Operations ● Distribution Management ● Fleet and Transportation management ● Infrastructure Support ● LMIS4 ● Capacity building and Organizational Strengthening ● Performance Monitoring and M&E ● Data Use and Analytics ● Reverse Logistics ● Waste Management ● Governance including d role for private sector ● Financial Management ● Resource Mobilization ● Strategic Planning ● Supportive supervision ● Last mile distribution optimization and expansion

6. **Improve Distribution Beyond the Central Level:** warehousing and distribution capacities, including vehicles and software systems, for effective distribution. Enhance the strategy to ensure the availability of essential medicines in underserved areas. Improve internal logistics with advanced tracking systems, especially in remote areas.
7. **Leverage Public-Private Partnerships for Enhanced Efficiency and Collaboration:** Develop and engage in at least five strategic Public-Private Partnerships (PPPs) aimed at streamlining procurement and supply chain processes, including the outsourcing of warehousing and last-mile delivery services for consistent nationwide distribution. By partnering with private sector logistics and transportation providers, leverage their resources, expertise, and adaptability to bolster response capabilities and improve operational efficiency in challenging environments.
8. **Develop an Agile Supply Chain:** Foster a responsive and flexible supply chain to adapt to evolving needs and circumstances. Manage the strain from internally displaced persons (IDPs) and the sharing of medical supplies across states. Revise supply distribution policies to allocation to key hospitals and prioritize facilities based on health mapping and IDP locations Health Supply Chain Workforce.

### 3.5.4 Strengthen Healthcare and Supply Chain Capacity

1. **Initiate a robust capacity** - building and training initiative for local healthcare providers and supply chain managers.
  - a. Emphasize the development of logistics, emergency response, and system adaptation skills to elevate supply chain efficiency and resilience. Concurrently, expand healthcare systems' capabilities to handle demand by focusing on comprehensive workforce development, infrastructure improvement, and the cultivation of flexible logistic systems.
  - b. Integrate targeted training programs for all staff and volunteers, emphasizing conflict-sensitive supply chain management. Concentrate efforts on improving security measures and cultural competence to increase overall operational efficiency and safety.
2. **Effective local management of healthcare resources** - Develop a workforce strategy aligned with the decentralized system for more effective local management and distribution of healthcare resources.
3. **Reduce labour costs** - value for money by reducing labour costs by adopting an outsourcing policy and automation of operations.

4. **Effective supply chain operations** - Balance workforce well-being with professional skill development by improving staff satisfaction and training quality for a more effective supply chain operation.
5. **A progressive work culture** - Foster an ‘intrapreneurial’ and ‘entrepreneurial’ culture within the NMSF, encouraging innovation and proactive problem-solving, balanced with supportive management practices.

### 3.5.5 Information Technology

1. **Improve Medical Supply Tracking and Distribution:** Employ advanced information technology solutions to enhance the tracking and distribution processes of medical supplies. Focus on streamlining logistics and increasing operational efficiency in supply management.
2. **Enhance Supply Chain Visibility:** Develop and integrate systems that provide real-time insights into the supply chain. This involves tracking the movement of medical supplies from procurement to delivery, thereby improving transparency and accountability.
3. **Advance Resource Allocation Strategies:** Utilize sophisticated data analysis and health mapping technologies. These systems are essential for identifying high-need areas and ensuring that resources are allocated efficiently and effectively based on prioritized health demands.
4. **Integrate Technology for Supply Chain Agility:** Implement advanced technological solutions, such as GPS tracking, to facilitate real-time monitoring and adaptive rerouting of medical supplies. This ensures timely and efficient delivery, adapting to dynamic conditions and demands.
5. **Digitalize Supply Chain Operations:** Support the comprehensive digitalization of supply chain operations. This includes not only distribution and inventory management but also extends to integrating digital solutions in human resources, supplier management, and customer relationship management within the NMSF. Strengthen data management and knowledge management systems to support these digital transitions.
6. **Automate and Digitalize End-to-End Processes:** Emphasize the need for complete automation and digitalization of all processes related to the supply chain. This includes areas beyond distribution and inventory, including human resources, management of NMSF suppliers, and enhancement of customer relationships. The goal is to create a fully integrated, automated, and digitalized supply chain system that enhances efficiency and responsiveness across all functions.



### 3.5.6 Partnership and Coordination

- 1. Maximize International Support:** Enhance diplomatic engagement to leverage international relationships, negotiating to secure both logistical and financial support. This involves collaborating with a variety of international organizations, governments, and agencies to align support with strategic health supply chain needs, ensuring that partnerships are productive and beneficial for all stakeholders involved.
- 2. Enhance International Aid:** Actively pursue and secure ongoing material and financial assistance from a broad spectrum of international donors, including NGOs, government bodies, and partner countries. Focus on establishing a reliable and continuous flow of medical supplies and funds, adapting to changing needs and ensuring aid is timely and effectively allocated.
- 3. Increase International Advocacy:** Intensify efforts to raise global awareness about specific health needs and campaigns, utilizing targeted advocacy strategies. This includes mobilizing international communities and resources to support humanitarian efforts, and ensuring that the plight and needs of affected populations are known and addressed by a global audience.
- 4. Optimize Donor Coordination:** Develop comprehensive strategies to improve coordination among donors and aid organizations. This entails creating systems and processes to ensure that resources are used efficiently, effectively, and without duplication. The focus should be on harmonizing efforts, sharing information, and aligning goals among all parties to maximize the impact of aid.
- 5. Strengthen Global Partnerships:** Forge lasting and productive partnerships with a variety of stakeholders both locally and internationally. Focus on creating networks that ensure safe and efficient delivery of health supplies, particularly in regions that are hard to reach or conflict-affected. This involves not just logistical coordination but also building trust and mutual understanding among all involved parties.
- 6. Empower Local Communities:** Develop and implement community-based strategies that are responsive to the unique needs of local populations. This means not just delivering aid, but actively engaging with communities to understand their needs, challenges, and capabilities. The goal is to create a more effective, sustainable aid distribution system that empowers communities and builds local resilience.
- 7. Foster Community Engagement:** Proactively involve local communities in the planning and execution of supply chain strategies.

This includes leveraging local knowledge and networks for logistical planning, as well as ensuring that community members have a stake in the security and reliability of supply routes. Encourage ownership and participation to enhance the effectiveness and sustainability of supply chain initiatives.

### 3.5.7 Public Relations

1. **Raised public awareness during conflict** – Create strategies to improve public awareness of the challenges and responses in providing healthcare supplies during periods of conflict.
2. **Positive public perception** - Establish consistent service quality, combat corruption through robust regulations, and engage in transparent communications to improve the public perception, build trust, and engagement.
3. **Improved customer loyalty** - Develop a comprehensive understanding of customer preferences, focusing on more than just competitive pricing, to understand and meet customer preferences.

### 3.5.8 Security in Distribution Logistics

1. **Conduct Comprehensive Security Planning and Risk Assessment:** Identify potential risks and develop security plans for supply convoys, considering the recruitment of security escorts or coordination with peacekeeping forces. This is crucial for ensuring the safety of supplies and personnel, making it a top strategic objective.
2. **Forge Strategic Collaborations:** Partner with international bodies, local authorities, NGOs, and community groups for safe and efficient aid delivery. These collaborations are key to accessing resources, information, and on-the-ground support.
3. **Negotiate Humanitarian Corridors:** Work with conflicting parties and international organizations to establish safe routes for delivering aid to affected areas.
4. **Ensure Targeted Delivery in Conflict-Affected Areas:** Specifically plan for the safe and efficient delivery of supplies to conflict zones by considering both logistical challenges and security risks to ensure aid reaches those most in need.
5. **Implement Continuous Monitoring and Evaluation:** Establish systems for ongoing assessment of supply chain strategies to allow for real-time adjustments and improvements in order maintain the effectiveness and responsiveness of aid delivery operations.

6. **Involve and Empower Communities:** Engage local communities in planning and distribution to enhance safety and efficacy, fostering local ownership and support that is crucial for the sustainability and success of supply chain operations.
7. **Improve Emergency Supply Chain Management:** Develop comprehensive protocols and guidelines that clearly define the roles, tasks, and responsibilities of various entities involved in the health supply chain. These documents should detail how processes and services will continue to function effectively during emergencies.

As we embark on our journey towards improving our supply chain functions and operations, our strategy will encompass a comprehensive implementation plan, robust monitoring and evaluation, and a thorough assessment of potential risks and their mitigation.

## 3.6 Implementation Framework

The following framework outlines the approach for the implementation of the NSCS:

1. **Legal and Regulatory Framework:** The implementation plan aligns with the Sudanese law ensuring fundamental rights including the right to life and health. This framework is bolstered by various acts, rules, and regulations that inform and guide the provision of procurement and supply chain services, all of which are adhered to by the NSMF.
2. **Overall National Health Policy and Legal Frameworks:** The Federal Government of Sudan provides a comprehensive policy and legal environment through various health, procurement, and financial legislations. These laws are integral to the NSCS, addressing specific aspects of the health supply chain. The government commits to continuous evaluation and development of necessary legislation and policies to ensure robust support and enforcement of the health supply chain.
3. **Institutional Framework:** The strategy will be executed within the existing health sector institutional framework, with the FMOH overseeing coordination and successful implementation. The NMSF will lead the execution, working in collaboration with several key sector partners. The plan's implementation and coordination will occur through existing organizational and management structures, which include:
4. **FMOH and Sector Coordinating Framework:** The FMOH will

provide policy leadership, standards setting, enforcement, and overall coordination. It will also formulate and implement successive annual action plans and budgets, presenting the NSCS at relevant sector coordinating forums.

5. **State Ministry of Health Offices (SMOH):** These offices will act as intermediaries at the state level, coordinating and supervising the implementation of the NSCS. They will serve as the FMOH's functional link to localities and lower-level structures.
6. **Localities and Health Facilities:** These entities will enforce the rational use of health commodities, monitor performance, and ensure appropriate tools are used for data collection and reporting on medicine and supply consumption.
7. **Human Resource Capacity Building for Supply Chain:** The NMSF will spearhead training for healthcare staff involved in supply chain services across various levels, from national to local. This includes staff at the NMSF, SMOH, localities, and health facilities. It is expected that the Federal Government will invest in national institutions to produce well-trained health workers who can effectively implement the NSCS.
8. **Health Facilities:** Hospitals, health centers, and community health workers will be responsible for executing supply chain services at their respective operational levels, ensuring effective and efficient delivery of health supplies throughout Sudan.

### 3.7 Implementation Matrix

An illustrative high-level implementation matrix for the strategy may be found in the appendix. It encompasses the following thematic areas:

- Policy and regulations
- Supply chain operations
- Finance
- Health workforce
- Information technology, and
- Public relations

For each thematic area, it lists the high-level tasks, resources needed, and the timeline for implementation. This is followed by the following three sections:

- Monitoring and evaluation which lists the KPIs, reporting schedule and evaluation criteria,

- Risks and mitigations which lists the perceived risks and how they may be avoided or minimised and
- A RACI (Responsible, Accountable, Consulted, Informed) matrix which lists those who are responsible for performing individual tasks, who is accountable for the successful completion of each task, those who should be consulted and anyone who needs to be informed on progress. This includes all key actors affecting or affected by supply chain (NMSF, Donors, Technical Assistance Providers, INGOs/NGOs, UN Agencies, Civil Society, Local Community Representatives etc)

This high-level plan is for illustrative purposes only and provides a starting point for stakeholders into drafting the full implementation plan.

### 3.8 Key Health Sector Stakeholders

The strategy's implementation will be a joint effort (on one platform / RACI Matrix) among public and private stakeholders across all levels of the healthcare system. The following key sector partners are crucial to this strategy's success:

- 1. Federal Government Ministries and Departments:** A range of government ministries and departments will play key roles in influencing the performance of the health sector supply chain. This includes agencies directly involved with health and others that indirectly impact health outcomes. Effective coordination will be emphasized to ensure cohesive action across these governmental bodies.
- 2. Development Partners:** Organizations like the United Nations, Global Fund, and various NGOs, both local and international, are vital in bolstering public health. They will provide significant financial and technical support for health and supply chain initiatives. The strategy includes strengthening these relationships and aligning their contributions for enhanced effectiveness.
- 3. Private Sector:** Industries involved in pharmaceuticals and medical manufacturing are critical for the consistent supply of high-quality health commodities. Their role spans the production, distribution, and innovation of health products. The strategy aims to actively engage with these sectors to utilize their expertise and resources for a stronger and more sustainable supply chain.

## 3.9 Monitoring & Evaluation Framework

The FMOH/NMSF hold the primary responsibility for coordinating the monitoring and evaluation (M&E) of the strategic plan for the NSCS implementation plan. This M&E framework is designed to track progress, ensuring alignment with national objectives.

- 1. Alignment with Health Sector Goals:** The framework is in line with specific targets set in critical policy documents and international commitments, focusing particularly on objectives set by the FMOH to enhance healthcare access. The aim is to reinforce the capacity for M&E within the NSCS, aligning it with the broader health sector's vision. Resources dedicated to this task will be managed by the NMSF, which is tasked with the strategy's implementation.
- 2. Data Collection and Review:** Data will be collected through a blend of routine and ad-hoc methods, using both qualitative and quantitative approaches. Standardized tools and techniques will be employed for consistency and accuracy. Routine data collection will be complemented by surveys conducted at the start, mid-point, and conclusion of the strategy's implementation. The strategy emphasizes the need for harmonized and comprehensive reporting across all health system levels, using tools like Health Information Systems, Logistics Management Information Systems, and others. Quality and effective use of data will be ensured through enhanced supportive supervision.
- 3. Data Analysis, Reporting, and Dissemination:** The FMOH/NMSF, in partnership with local governments and other stakeholders, will use electronic and manual systems to streamline data management from collection to dissemination. Performance will be periodically reviewed through quarterly reports, and data repositories will be employed to improve data quality. Dissemination efforts will focus on forums and platforms that support decision-making and outcome enhancement.
- 4. Capacity Building and Technical Support:** The FMOH/NMSF will spearhead capacity building in M&E for all those involved in reporting, working closely with local governments and partners. Efforts will focus on improving skills in data analytics, interpretation, and presentation, enhancing the ability of healthcare workers to make informed decisions based on robust data.
- 5. Core Indicators:** The strategy's performance will be gauged using a set of core indicators, agreed upon by stakeholders for their relevance.

These indicators will monitor the efficiency and effectiveness of the NSCS, covering key interventions. Each strategic pillar within the NSCS will have outlined key performance indicators. This ensures that every intervention is accounted for and that the strategy's impact can be measured and adjusted as needed.

### 3.10 Conclusion

The imperative for a national supply chain strategy necessitates a comprehensive overhaul of existing procurement and supply chain services within Sudan's public health sector. The current global healthcare environment underscores the criticality of strategically re-evaluating public health supply chains. Investment in medicines, medical supplies, and their supporting systems is a substantial part of healthcare discussions and budgets, competing with other national priorities for funding. The National Supply Chain Strategy (NSCS) serves as a blueprint for stakeholders to rejuvenate and realign their processes, addressing the growing demand for strategic management of medicine and medical supply availability in the public sector. This strategy includes a detailed Implementation Plan outlining costed activities.

The NSCS provides an in-depth analysis of the health supply chain's current status amid the ongoing conflict in Sudan, highlighting the pivotal role of the National Medical Supplies Fund (NMSF) in maintaining healthcare services and efficiently supplying medical necessities. It recognizes the profound impact of the conflict that commenced in April 2023 on Sudan's infrastructure, particularly the health supply chain, and the resultant limitations on access to essential services and supplies. The strategy calls for a strategic, multi-dimensional approach to revitalize Sudan's health supply chain, advocating for the NSCS's development as an integral component of the humanitarian response. This involves a thorough assessment of medical supply availability, resource evaluation, and a framework for donor contributions towards the reconstruction of the health supply chain.

The strategy's findings detail the significant effects of the conflict on both public and private health supply chains, outlining the challenges, policies, strategies, and actions taken to mitigate these impacts. It emphasizes the crucial role of international support, including assistance from UN agencies and other donors, in the restoration of the health supply chain. Recommendations within the strategy propose substantial enhancements to the resilience and efficiency of Sudan's health supply chain to improve

healthcare outcomes amidst ongoing and future adversities. Proposed measures include augmenting warehousing and distribution, improving financial stability and debt management, reforming the National Health Insurance Fund (NHIF), revising and executing health financing policies, preparing for post-conflict health system reconstruction, fostering continued international support and partnerships, engaging with the private sector, and reinforcing regulatory compliance and medicine safety. The strategy concludes with a pledge to an all-encompassing implementation plan, rigorous monitoring and evaluation, and a comprehensive risk assessment and mitigation strategy to bolster Sudan's health supply chain functions and operations.





— Supported by: —



**World Health  
Organization**