



**GLOBAL
HEALTH**
SUPPLY CHAIN SUMMIT



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System Design leads to a more performant and equitable SC: The DRC model



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Le remodelage des systèmes permet une chaîne d'approvisionnement plus équitable et performante ; exemple de la province d'Equateur en RDC.

VILLAGE REACH[®]
Starting at the Last Mile



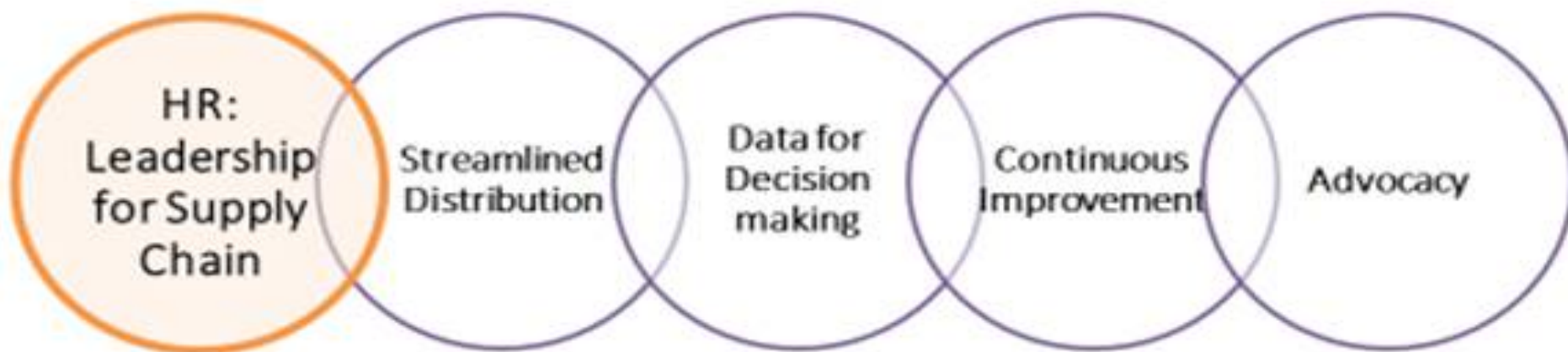
The NGCA Initiative:

(Nouvelle Génération des Chaînes d'Approvisionnement)

Goal:

**To increase availability of medicines,
health commodities & vaccines at
service delivery points**

Activities:






Achieving Supply Chain Excellence through System Design

Supply Chain Excellence



SYSTEM DESIGN



VillageReach system design work is breaking from conventional one-size-fits-all systems and is focusing on integrating the unique logistical needs and constraints of each health structure from the provincial to the health facility level.



Presentation Outline

The Problem

What are we trying to solve?
Health products do not reach the last mile



Our Approach

How do we implement the solution?
Addressing the weakest links



The Bottom Line

What does it mean for us?



Our Solution

Network Design
How are we solving the problem?



Results

What did we find after we did implement the solution ?
System re-design improved supply chain performance and reduced costs



01

The Problem

What are we trying to solve?

Health products do not reach the last mile





We are trying to solve....

Last Mile Accessibility

Time



Quantity

100%

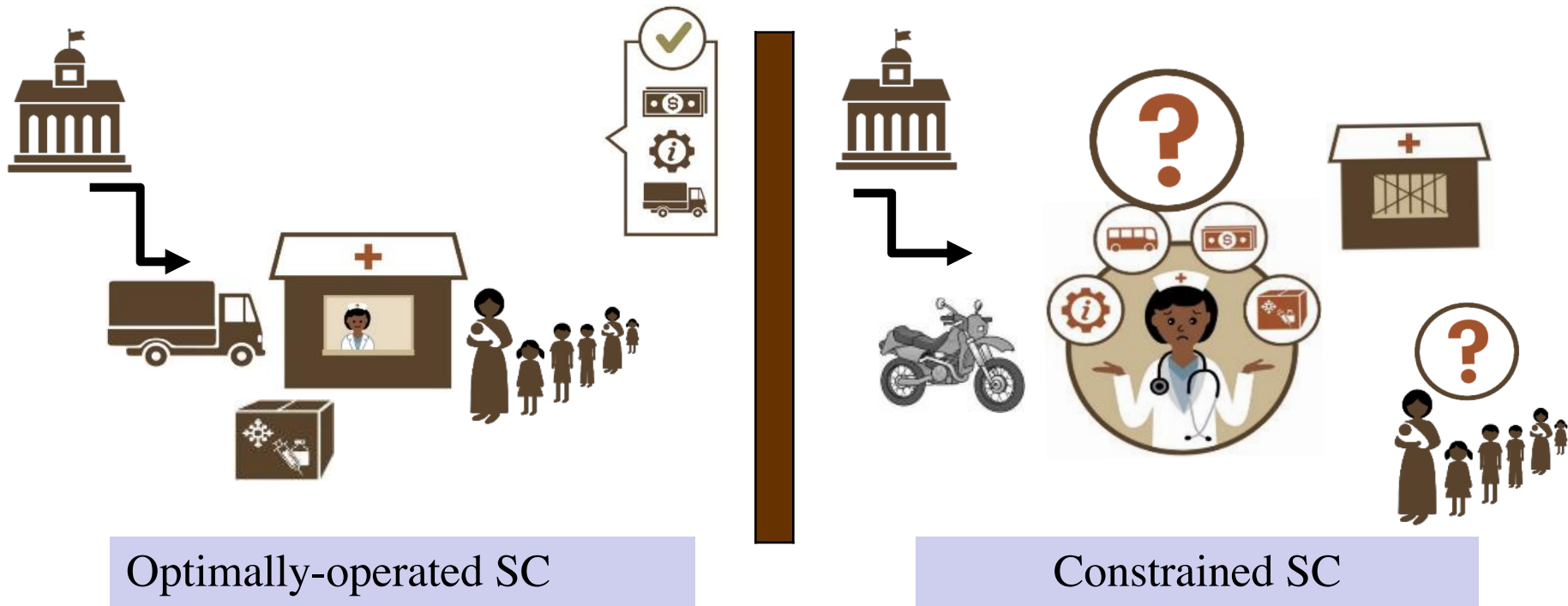
Quality



Health facilities/workers do not receive timely and sufficient quality health products to reach the children

We are trying to solve...

Supply chain issues directly affect service delivery and ultimately harm progress towards achieving SDG 3





The weak supply chain link can limit the effectiveness and efficiency of the entire supply chain.

“A supply chain is no stronger than its **weakest link**”





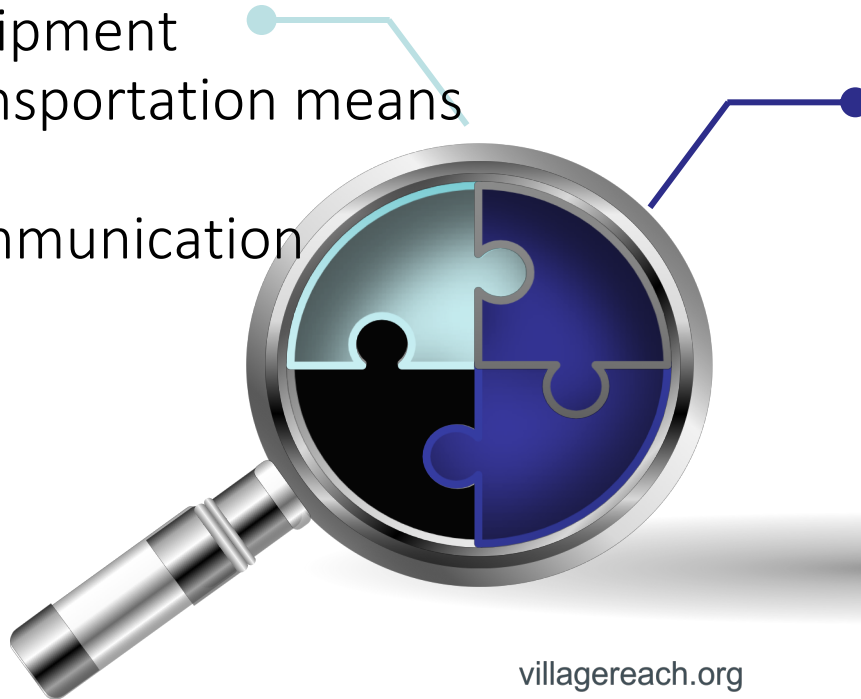
SC Constraints identification impacting delivery

Resource Constraints

- CCE
- Human resource utilization
- Equipment
- Transportation means
- Fuel
- Communication

Policy Constraints

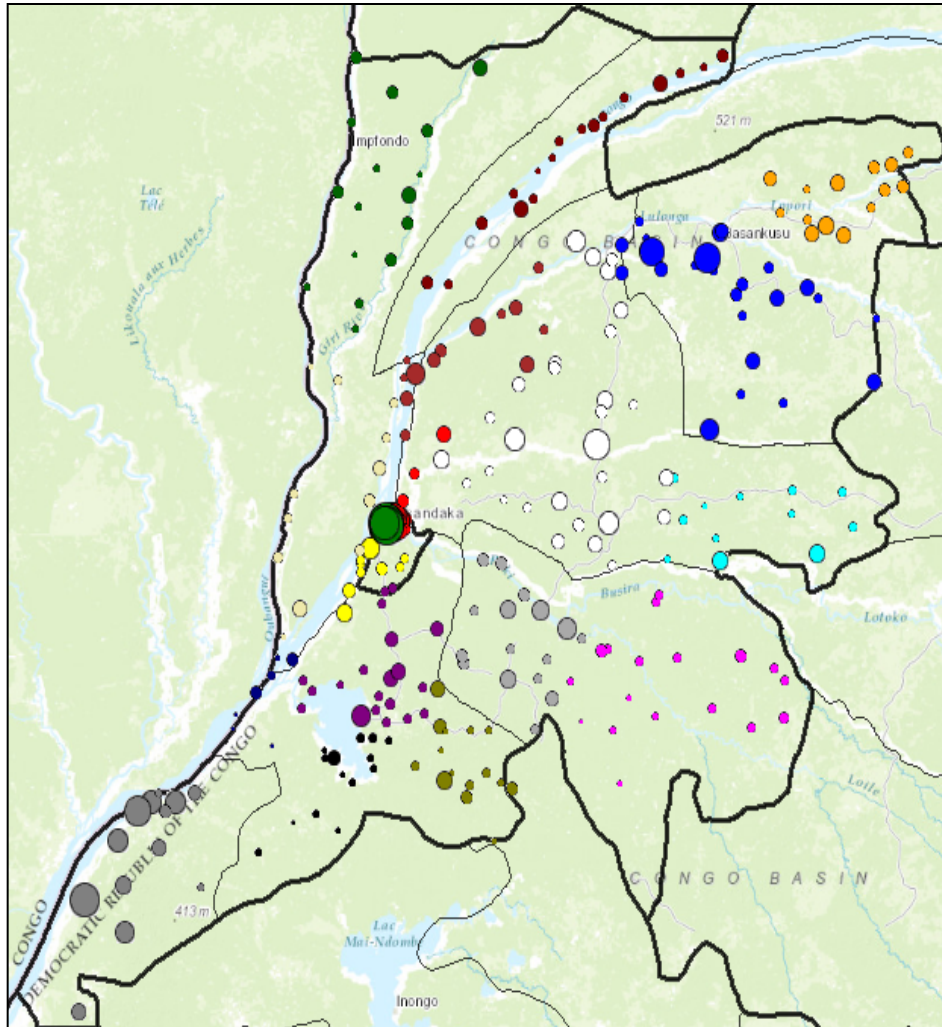
- Fixed frequency
- Administrative boundaries
- Fixed buffer stocks
- Resupply policy





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The Equateur Province

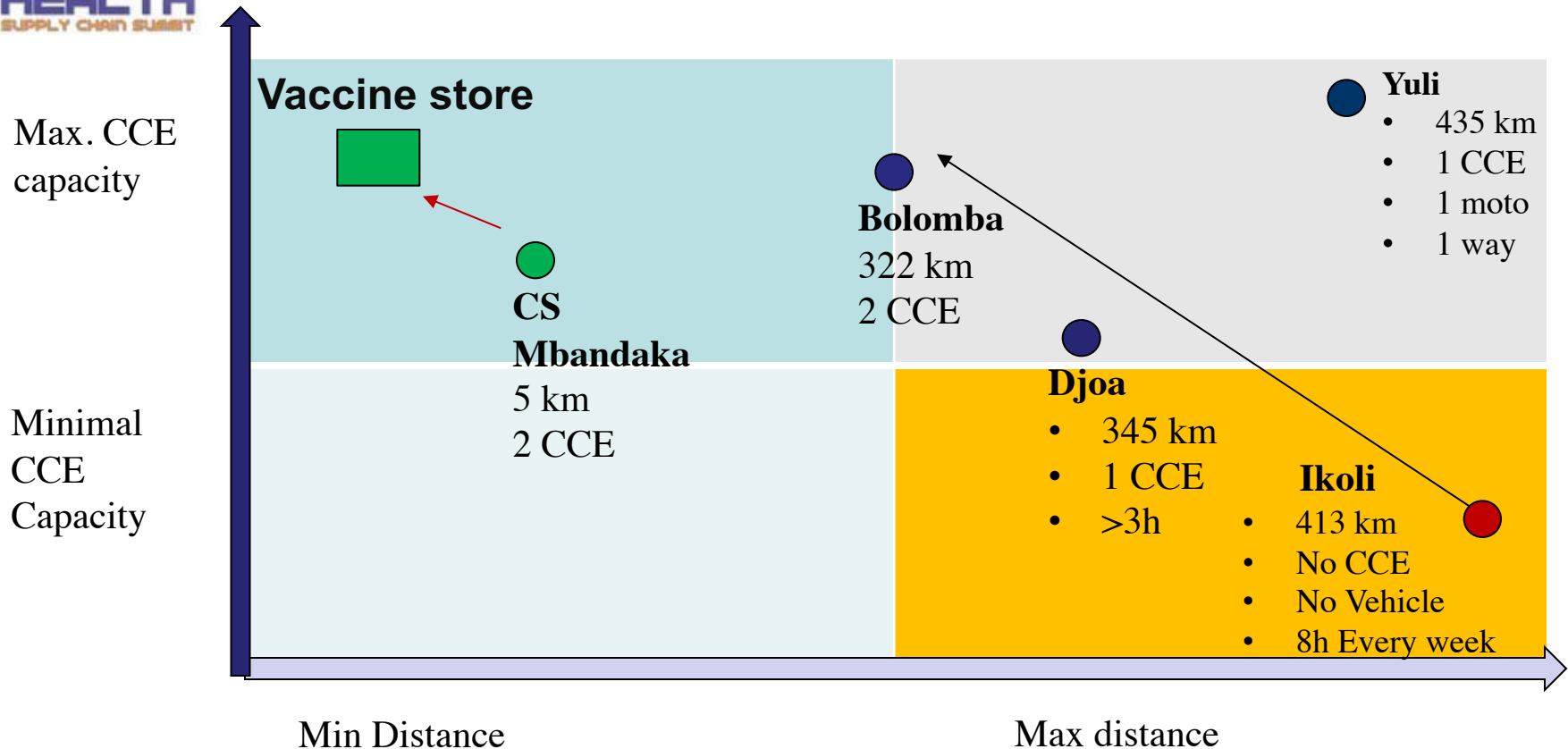


Zone	Légende	# Sites de Vaccination	Population % (DPS)
Basankusu		27	11%
Bikoro		21	6%
Bolenge		11	4%
Bolomba		29	12%
Bomongo		16	5%
Djombo		14	5%
Iboko		15	4%
Ingende		18	6%
Irebu		7	1%
Lilanga Bobangi		12	3%
Lolanga Mampoko		13	5%
Lotumbe		18	4%
Lukolela		14	7%
Mankanza		17	5%
Mbandaka		15	8%
Monieka		12	3%
Ntondo		14	3%
Wangata		11	7%



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Discussing the Impact of policy constraint at health facility level



Bolomba Health Zone



Problem solving Rationale

- 1 Constraints determine the performance of a system. Constraints generate additional burden to health workers.
- 2 By targeting the constraints and weakest links, it is possible to remove limitations and increase overall system performance.
- 3 Our system design analysis **addresses resource constraints and policy constraints**

02

Our Solution

How are we solving the problem?

System Design



SD Intervention Overview



Implementers

MoH +VillageReach

Geography

DRC, Subnational, Equateur Province

Scope of Analysis:

Network + Inventory (CCE) optimization

Intervention areas

Distribution + Inventory Control +
Transportation + Organizational Capacity

SC Tiers

Province, Health Zones, Health facility

Problem solving
approach

Baseline Analysis, Modeling, Segmentation,
Theory of Constraints (TOC)

Phases

Design + Small Scale Implementation +
Evaluation

Results

Performance, Costs, Stocks Outs, Equity *,



Supply chain design analysis helped to answer these questions in DRC

Strategic Supply Chain Optimization

How do we design the supply chain network to deliver the right demand at the lowest possible cost?

Distribution Strategy Optimization

What is the optimal distribution strategy given Equator province specific needs and constraints (75% of health facilities are accessible by water)?

Transportation Strategy Optimization

Given a logistics network and a defined distribution strategy, how can we best use my available transportation resources? Where are the needs and gap?

Inventory Optimization

Given demand variability and service level requirements, what is the optimal inventory replenishment plan and control to meet the needs? Where are the needs and gap?

03

Our Approach

How do we implement the solution?

Addressing the weakest links





**STRATEGY
DEFINITION**



SCOPING

EVALUATION

**ANALYSIS
Modeling
(Llamasoft)**



**DISTRIBUTION
MONITORING**



**SYSTEM
DESIGN
PROCESS**

**ANALYSIS
Segmentation
Province selection
Commodities Selection**

**FINAL DESIGN
OP. PLANNING
SC CAPABILITY
IMPLEMENT. PLAN**



**SITE VISIT
Baseline in the
3 implementing
health zones**

04

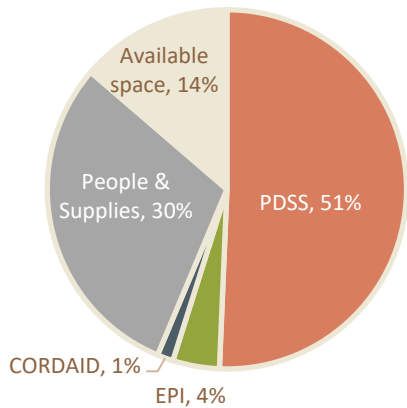
Results

What did we get after implementing the solution?

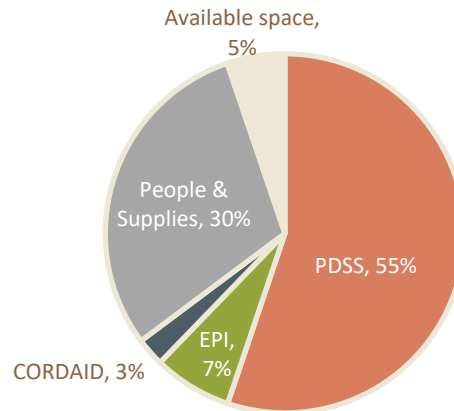


Result 1: Vaccines, PDSS commodities & HIV commodities could be transported together in some zones

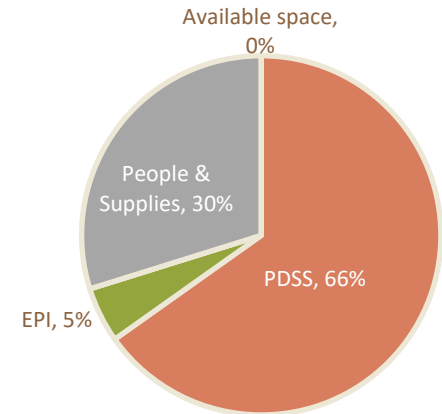
Lolanga Mampoko (m3)



Mankanza* (m3)



Bolomba (m3)



In Lolanga Mampoko and Mankanza, some SANRU (malaria) commodities could also be transported:

Lolanga-Mampoko:
+89% of SANRU
volumes

Mankanza:
+28% of SANRU
volumes

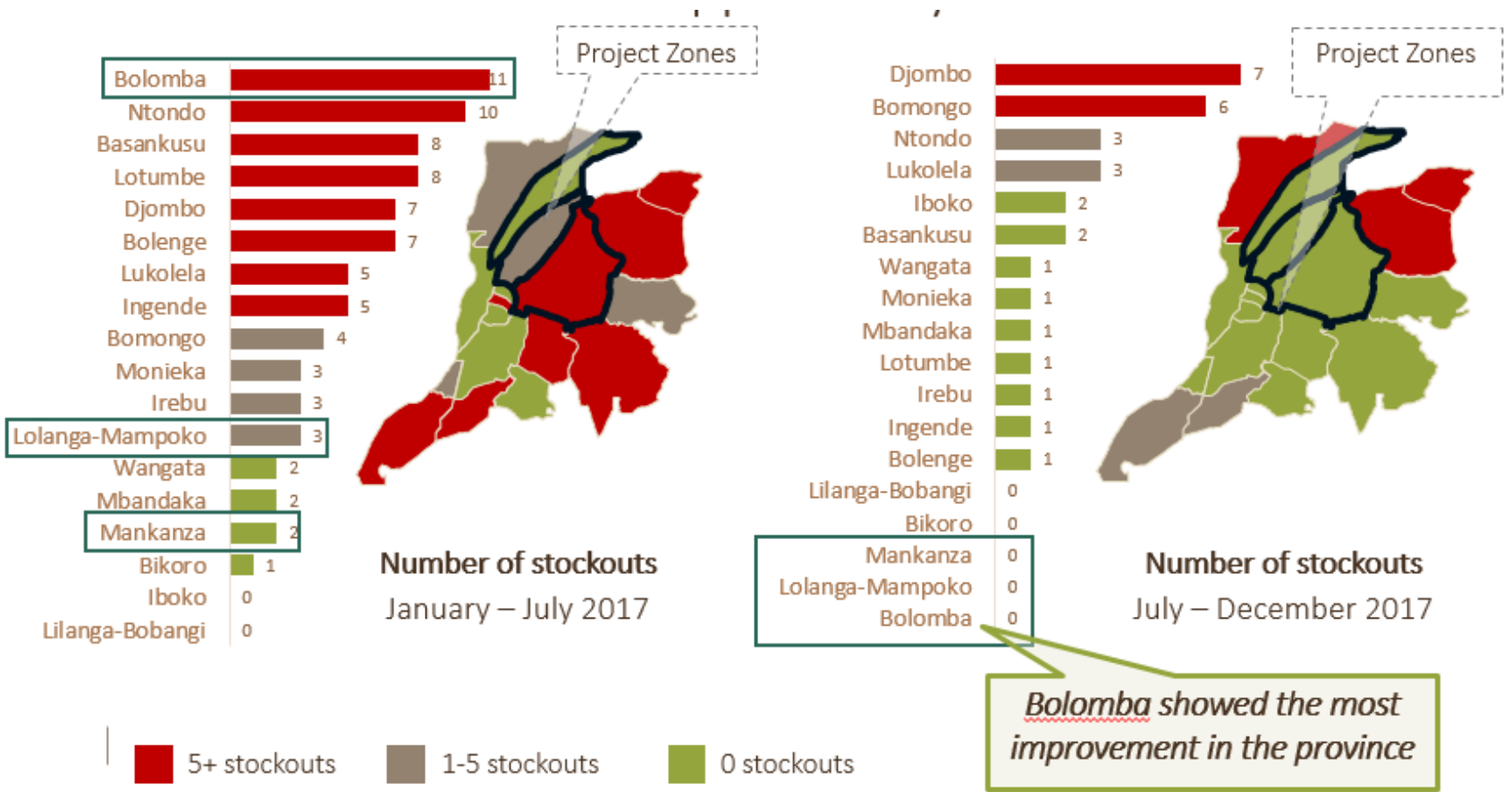
In Bolomba, additional boats would be required to transport other commodities



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Result 2: Improved availability of stocks at zonal warehouses

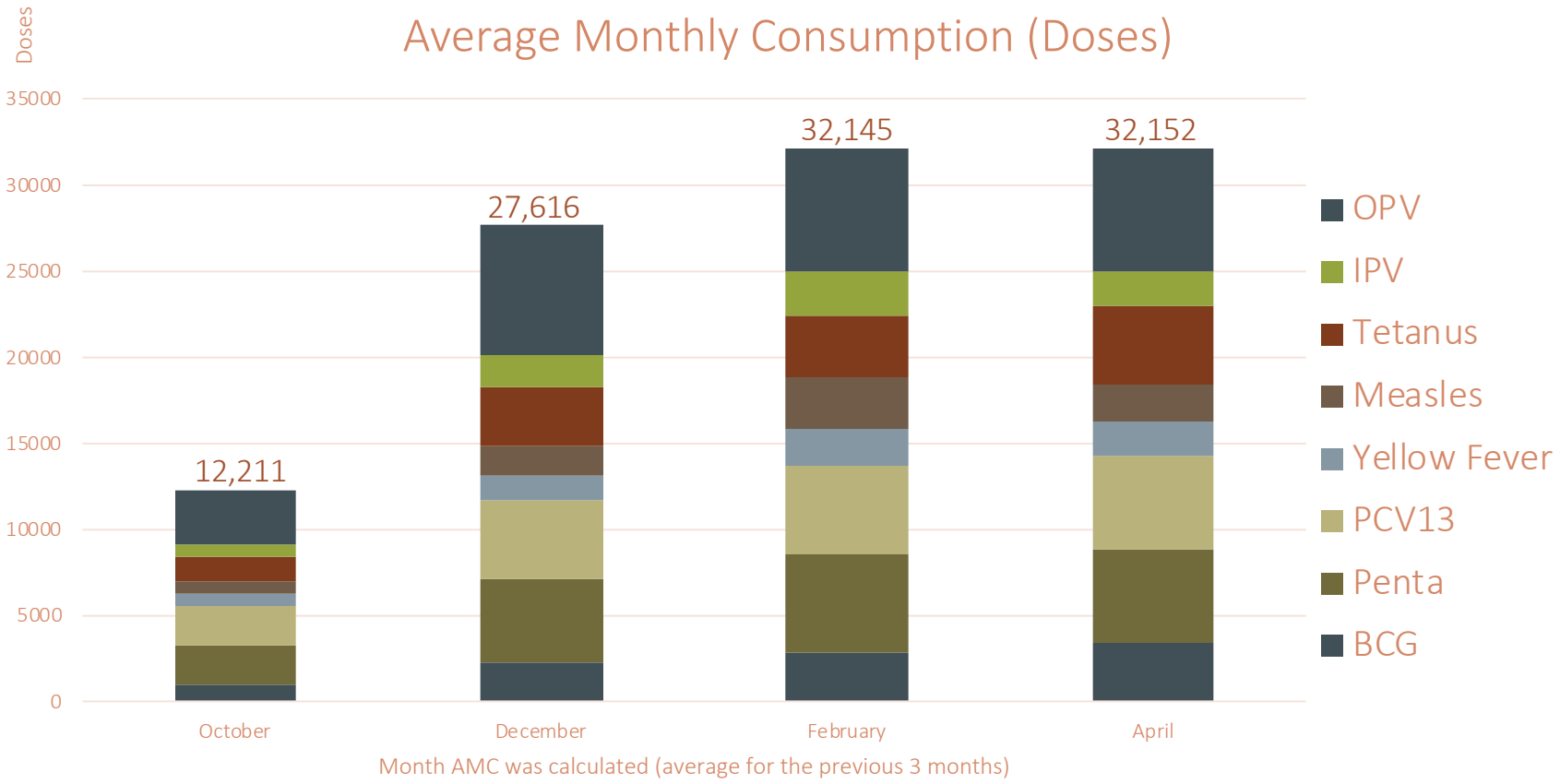
An independent study by Acasus showed zero stockouts in the 3 zonal warehouses supported by the NGCA Initiative



Bolomba showed the most improvement in the province



Result 3: Stock availability has allowed for increased consumption

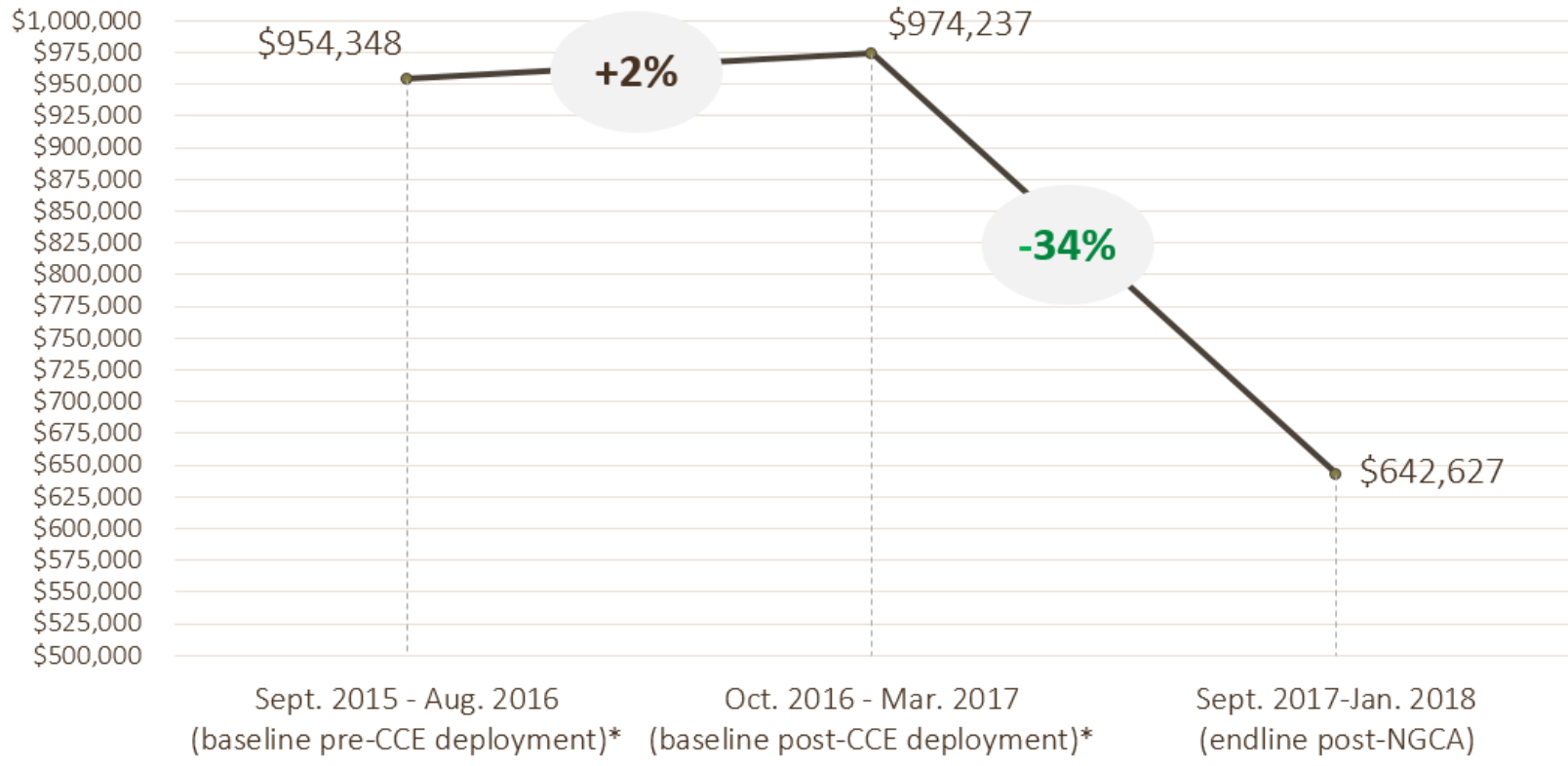


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Lusaka, Zambia



Result 4: System re-design led to reduced costs

Provincial Supply Chain Costs Over Time





Understanding Equity from health workers perspective



- Ineffective health systems rely on individual efforts of health workers, who already bear the most burden, to operate.
- The burden is unequally distributed amongst health workers.
- (In)Equity parameters at health facility level include distance, time, route conditions, electricity, communication network, funding, partners support ,existing policies, seasonality, access)

Equity parameters can be used as **optimization criteria** at design time to ensure Health facilities/workers do receive timely and sufficient quality vaccines to reach the children in their respective areas.

Traditional multi-level supply chain

Optimized supply chain

Demand

Population-based

Consumption-based

Distribution

Pull systems

Informed push

Stock levels

Monthly to zones

Every 2 months to SDPs

Segmentation

Siloed supply chains

Resource sharing

Network

Administrative boundaries

Optimized network

Frequency

One month policy

Resource sharing

Emergency

Provincial stores

Local hubs with min. distance

Scheduling.

Individual plans

Integrated distribution plans

SC Capability

Limited

Reinforced at all levels



Next Steps: Replication| Expansion



Products

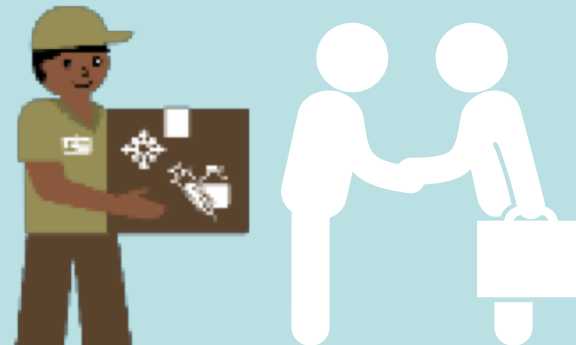


Geography

05 Bottom Line

What does this mean for us?

Importance of the work





SUMMARY

- 1 **Network optimization** can effectively improve last mile accessibility in the most constrained environments
- 2 **System Design** is a core element of supply chain excellence
- 3 The design of a supply chain determines its **capabilities**. Evidence showed an impact on **costs, availability**
- 4 System design is entry point to **holistic supply chain transformation** across data, people, processes.
- 5 Inequities parameters can used as optimization criteria for a fair and equitable SC for health workers



Thank you.



Questions?



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