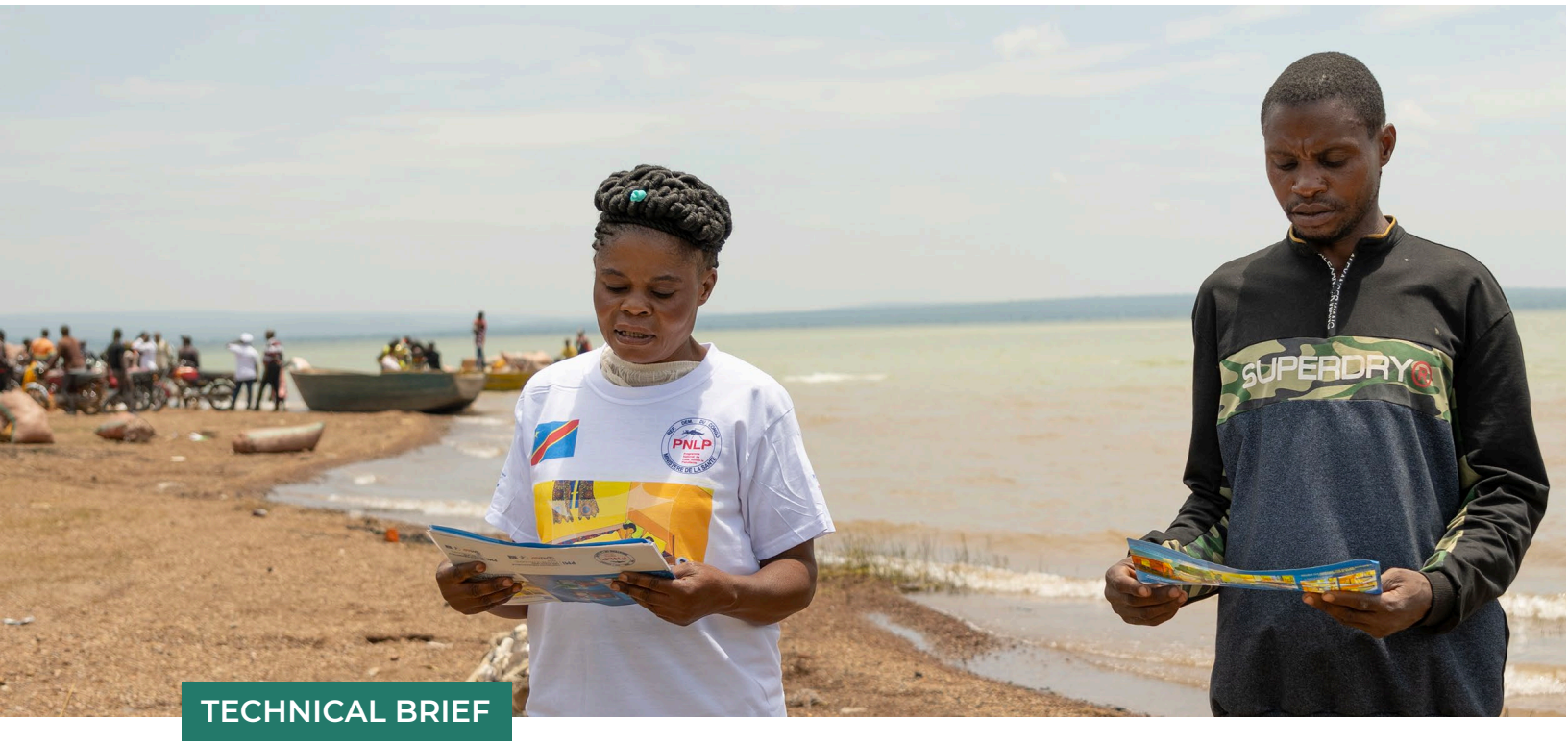

TECHNICAL BRIEF

Approach for Operationalizing and Sustaining Systems Thinking for Health

NOVEMBER 2024 | Chemonics Health Practice & SYSTAC Africa Hub

Operationalizing systems thinking can drive and sustain positive health system changes while building greater resilience.

Promising evidence demonstrates that systems thinking can achieve positive, holistic health system change and improve health outcomes. However, the uptake and continued application of systems thinking for health (ST4H) by system actors has been nominal. Its potential remains untapped. Drawing on our experiences supporting health system actors such as national policymakers, subnational planners and managers, researchers, health workers, local organizations, and civil society, this technical brief presents an approach for applying systems thinking that considers real-world barriers and opportunities.

Key Takeaways

- ST4H uses iterative cycles to continuously examine, co-create, and adapt interventions to improve areas of low performance in the health system. These cycles help reveal underlying challenges, leverage contributions across more diverse system actors and elements, and promote more dynamic responses, leading to more efficient and sustainable positive health system changes.
- Based on desk research and collective implementation experience, we developed three guiding principles to help practitioners operationalize systems thinking. They are: nurture local champions, diversify collaboration, and monitor progress toward greater health system resilience.
- Case studies from Chemonics and SYSTAC Africa demonstrate our ST4H principles in action and include discussion and recommendations for implementation.

Purpose and Overview of Systems Thinking for Health

Historical efforts to strengthen health systems have often been narrowly focused on a sole component (e.g., "building blocks" or functions), a single level of the health system, or a siloed, disease-focused program. Such piecemeal approaches fuel inefficiencies, fragment efforts, and neglect deep-seated, systemic issues — whether in health or another sector. By operationalizing ST4H, practitioners can develop more effective interventions that address root causes of insufficient health system performance. Systems-informed interventions can achieve and sustain more impactful health system improvements, thus ameliorating population health outcomes and contributing to greater health system resilience.

> A **system** is a collection of parts and components that interact to produce a specific outcome.
>
> *A* **health system** is a local system made up of all people, institutions, resources, and activities whose primary purpose is to promote, restore, and maintain health (WHO).
>
> The health system is considered a **complex adaptive system** because many heterogenous parts interact in nonlinear ways to produce unpredictable emergent behavior.

Systems thinking for health is a holistic, innovative, analytical process that addresses challenges and low performance as part of a wider dynamic system.[1] It recognizes and prioritizes actors' understandings of linkages, relationships, interactions, and interdependencies among system components that give rise to the system's observed behavior. While systems thinking may be a philosophical frame, it is also a methodical approach with its own tools.[2]

Systems thinking for health is most effective when it is operationalized locally and continual applications are sustained over time. Several frameworks have been developed to outline

[1] Don de Savigny, Taghreed Adam (eds), "Systems thinking for health systems strengthening," *WHO Alliance for Health Policy and Systems Research* (2009)
[2] "Systems thinking," Alliance for Health Policy and Systems Research, WHO.INT, accessed November 2024

how to apply systems thinking, notably WHO's seminal Systems Thinking for Health Systems Strengthening[3], the USAID Local Health System Sustainability Project's Strategy for Sustainable Health System Strengthening[4], and the Swiss Tropical and Public Health Institute's Systems Thinking for Health Actions Framework[5]. Each of these frameworks outlines a stepwise cycle with common phases. We can distill these existing system thinking frameworks into a four-step cycle (see also Exhibit 1):

1. **Examine**. Apply systems thinking concepts, models, and tools to strategically analyze systemic challenges that affect sustainable health system improvements. These analyses serve to:

    a) describe health system components and understand their relationships, interactions, and behaviors;

    b) identify leverage points with potential to catalyze desired change;

    c) understand drivers and root causes of low performance to be addressed.

2. **Co-create**. With communities and other system actors, co-develop interventions informed by findings from Step 1 (Examine). This may result in a list of system changes targeting structural (building blocks) and functional (process-focused) health system components and relationships. Practitioners should anticipate potential adverse or unwanted effects of system changes during co-creation.

3. **Implement and adapt**. Carry out and measure interventions in short iterations, then evaluate their feasibility and sustainability, assessing positive and negative system changes. Based on these observations, return to Step 1 (or revisit co-creation) and adapt interventions based on this deeper or updated understanding of health system dynamics.

4. **Adopt and scale**. Carry forward interventions that are feasible and sustainable.

Based on our experience and collaborative reflection, applying and institutionalizing systems thinking within dynamic, often volatile contexts and sustaining it beyond research initiatives and global health development project cycles is challenging. (See box on next page.) We acknowledge the consistent barriers to operationalizing systems thinking. First, applying ST4H is often perceived as too costly, academic, or complex, with many potential tools (see Annex 1). In addition, there are few incentives to collaborate across sectors and health areas, which is further reinforced by siloed programs and funding streams. Finally, evidence demonstrating health system benefits to applying systems thinking is generally inaccessible to health system leaders, with limited linkages to broader health system goals.

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[3] Don de Savigny, Taghreed Adam (eds), "Systems thinking for health systems strengthening," *WHO Alliance for Health Policy and Systems Research* (2009)
[4] The Local Health System Sustainability Project under the USAID Integrated Health Systems IDIQ. February 2023. Strategy for Sustainable Health Systems Strengthening. Rockville, MD: Abt Associates
[5] Thelen J, Sant Fruchtman C, Bilal M, et al. "Development of the Systems Thinking for Health Actions framework: a literature review and a case study," *BMJ Global Health* (March 2023)

LEARNINGS FROM LOCAL HEALTH SYSTEM ACTORS & SYSTEMS THINKING PRACTITIONERS

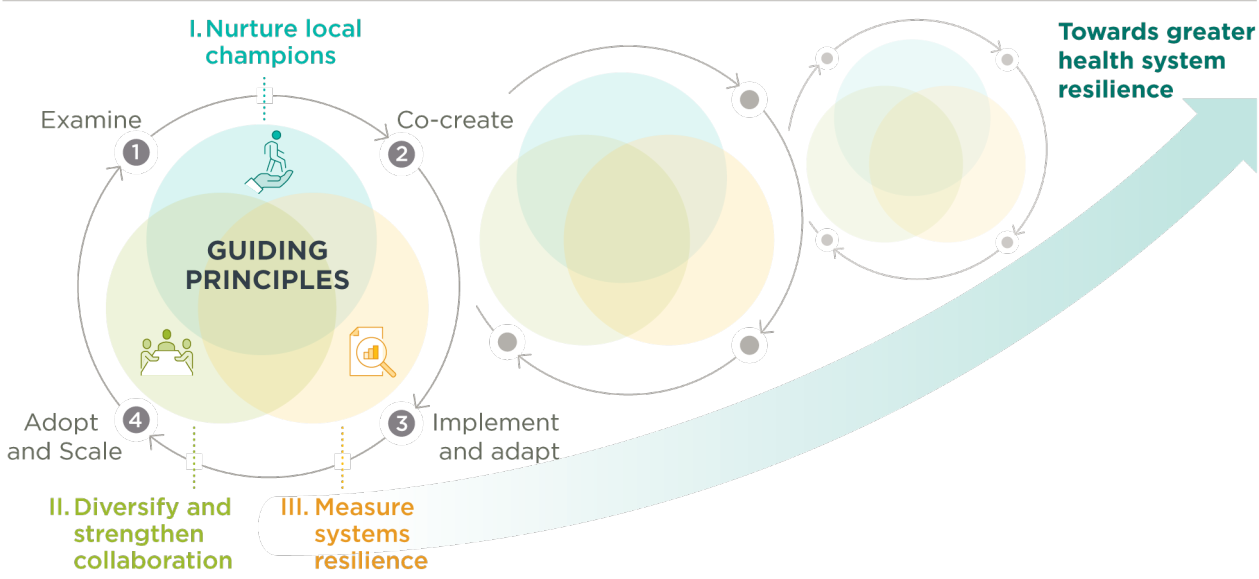
Chemonics undertook three qualitative exercises in 2023 to understand practitioners' barriers and facilitators to applying systems thinking. We conducted 11 key informant interviews with project leaders across our global health and supply chain portfolio. In addition, Chemonics hosted a special event at our Local Partners Summit in Washington, D.C., where leaders from 40 local health and development organizations shared their experiences, reflections, and perceived needs for institutionalizing system thinking. In Lusaka, Zambia, Chemonics and SYSTAC Africa Hub co-sponsored a widely attended, hybrid expert convening at the Conference of Public Health in Africa to discuss key systems-thinking approaches and critical topics for application, as well as to explore how to develop ST4H leadership and institutional competencies.

Through these diverse engagements, we conclude that most health system actors are engaged in systems thinking approaches informally. Systems thinking tools are most often applied at project startup or when recalibrating strategies during political cycles (e.g., elections). Tools include stakeholder mapping, SWOT analysis, private sector landscape analyses, and political economy analyses to map the stakeholder landscape and understand priorities. Health system leaders and local partners seek more guidance on how to operationalize systems thinking processes consistently within their institutions, such as integrating learnings from assessments into existing planning, implementation, monitoring, and evaluation processes. Expert practitioners agree that effective application requires a nuanced understanding of local contexts, aligned government structures, and stakeholder collaboration, and that ongoing capacity building and local partners are key to supporting systems thinking.

Our Approach to Systems Thinking for Health

Our ST4H approach is designed to help practitioners more effectively operationalize and sustain systems thinking in various health contexts. Chemonics and SYSTAC Africa Hub developed three guiding principles to incorporate into the existing cycle to address barriers: I) nurture local champions; II) diversify and strengthen collaboration; and III) measure system resilience.

Exhibit 1. Chemonics and SYSTAC Africa Hub ST4H Approach



Principle I: Nurture local champions as systems-thinking practitioners

Meaningful health systems change can only be achieved with effective, empowered leaders. They must be willing and able to navigate uncertainty, interpret system responses, generate and share learnings, and swiftly adapt decisions and strategies, all while fostering inclusive environments for continuous improvement. Because local actors are best positioned to create and sustain locally responsive solutions, investments are needed to build local ST4H champions and strengthen their capacity to sustain improvement cycles and institutionalize ST4H processes for systemic change. Women's leadership in ST4H is especially critical , as most health workers and household caregivers are women. Transformative leadership can be built through exposure to and involvement in systems-thinking processes (e.g., on-the-job practice) and instructional short courses on systems thinking..[6] This creates a virtuous cycle: applying ST4H helps develop strong, capable leaders who, in turn, are needed to undertake ST4H processes. This principle is useful in both stable and dynamic contexts to strengthen the resilience of individuals and health systems.

Principle II: Diversify and strengthen collaboration across systems and sectors

Adapting best practices from other sectors

There are helpful systems-thinking tools in other sectors that can be adapted for use in health. For example, Thinking and Working Politically elevates the understanding of context so that interventions are not only technically sound but also politically feasible.

Similarly, Chemonics' Trauma-Informed Approaches to Development and Holistic Inclusion Approach can help achieve equity and expand access to marginalized communities, including people with disabilities, youth, the elderly, and Indigenous groups.

Effective systems thinking brings diverse health system stakeholders — such as decision-makers, patients, healthcare workers, private sector representatives, and community leaders — to use tools together, examine system challenges holistically, and co-create interventions. During ST4H cycles, stakeholders often learn that the challenges to improving a population's health extend beyond traditional health system actors. Non-health policies, institutions, resources, and development interventions significantly contribute to social, political, economic, cultural, and commercial health determinants, even though they are not primarily centered on health and are not part of the health sector. These determinants include economic stability; education access and quality; neighborhood and built environment, including water, energy, and transport sectors; and the social and community context.[7] Multiple sectors should be invited into ST4H cycles to address these underlying, non-health contributors to health and their interrelationships with the health system. While involving

[6] Examples of short courses include Systems Thinking in Public Health (Coursera and Johns Hopkins University) and Delta (School of System Change).
[7] "Social Determinants of Health," U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion, ODPHP.HEALTH.GOV, accessed November 2024

everyone in a systems-thinking effort is prohibitive, it is important to bring diverse actors to the co-creation table to encourage a multisectoral perspective and multiple viewpoints. This will also allow the group to identify potential negative side effects of well-intentioned changes on other sectors and adapt best practices for the health context (see box on previous page). We recommend strengthing and diversifying collaboration by inviting representatives from the population targeted for impact (e.g., patients and healthcare workers), policymakers or funders (e.g., district managers and national level stakeholders), and an adjacent sector (e.g., education, energy, gender, water).

Principle III: Measure systems thinking in terms of improved resilience

Systems thinking for health is most effective when it is operationalized locally and continual applications are sustained over time. It promises to contribute to making the health system better at performing its essential public health and service delivery functions, as well as making the system more resilient to shocks and stressors. A stronger case can be made for the value of ST4H if resilience is measured and documented. Borrowing from Kruk et al's defined characteristics of a resilient health system[8] and USAID's health system resilience capacities[9, 10], we describe how the experience of applying ST4H can contribute to greater health system resilience:

- Using systems thinking tools, especially in Step 1 (Examine), generates a deeper and broader **awareness** of the health system, its components, and their interrelatedness.
- Forging ST4H multisectoral connections improves the health system's capacity to address a **diverse range** of health challenges, detect shocks and stressors as they arise, and engage more non-health sectors that contribute to health outcomes.
- Local health systems become more **self-regulating** as empowered local leaders leverage local resources to implement solutions. This increased **absorptive capacity** also relates to the existing ability of a health system to take intentional protective action and maintain stability in the face of known shocks and stressors to prevent or limit negative impacts.
- As ST4H is practiced, health system actors glean deeper insights into the health system and can adapt solutions accordingly. Health system **adaptive capacity** is demonstrated through improved ability to make incremental and flexible adjustments to manage a changing environment better while improving overall system performance.
- By its nature, ST4H promotes **integration** and seeks to address common underlying challenges, rather than siloed approaches, for a more lasting impact. Health system **transformative capacity** refers to the ability of the health system to make fundamental functional and structural changes that address underlying challenges

[8] Kruk et al. 2015. "What is a resilient health system? Lessons from Ebola," *The Lancet*, Volume 385, Issue 9980, 1910-1912.
[9] USAID, USAID's Resilience Policy (June 2024), USAID.GOV, accessed November 2024
[10] USAID, USAID Vision for Health System Strengthening 2030, USAID.GOV, accessed November 2024

and contextual dynamics that impact performance and progress toward health outcomes.

Measuring the impact of using ST4H is challenging. Not only is it difficult to directly attribute results to a single intervention, but there are not yet standard indicators for measuring improvements in health systems resilience. Fortunately, there is growing literature and guidance on complexity-aware monitoring approaches[11] conducive to systems thinking approaches. ST4H practitioners can co-develop indicators and measurement approaches alongside interventions to identify both incremental changes and overall system shifts. ST4H practitioners can also benefit from measuring the unintended, unexpected, or unplanned positive and negative impact of a systemic intervention so as to demonstrate the broader value of ST4H for a health system. Finally, practitioners can educate peers and donors about the need to shift mindsets to accept uncertainty and explain that there might not be impact results at the end of five-year program cycles.

ST4H Principles in Action: Case Studies

Case Study: Reducing systemic barriers to private sector engagement improves women's health in India

Millions of women in India want contraception but lack access to options, leading to unintended pregnancies, unsafe abortions, and related health risks. The private sector has had limited impact on meeting these women's needs. Under the USAID Frontier Health Market (FHM) Engage, Chemonics and local partners applied ST4H via a market development approach. This systems thinking tool is designed to improve local health market performance by supporting the private sector to function more effectively, sustainably, and beneficially, ultimately improving consumer access to affordable, quality health products and services.[12] The team examined the barriers young women face in accessing and continuing contraceptive methods; co-created public and private partnerships to address these barriers; formed the Women's Health and Livelihood Alliance (WOHLA); and is iterating to make the alliance more responsive. WOHLA is a health marketplace designed to enhance women's sexual and reproductive health and advance their economic growth by synergizing efforts, mobilizing private sector resources, leveraging existing digital infrastructure and initiatives, improving women's credit accessibility, and implementing innovative interventions.

Principle I: Nurture local champions

The team recognized that an evidence-based best practice links economic and family planning activities to achieve positive outcomes. To adapt this to the Indian context, FHM

[11] USAID, A Guide to Complexity-Aware Monitoring Approaches for MOMENTUM Projects, USAID.GOV, accessed November 2024

[12] USAID, What is the Market Development Approach (MDA) Process for Family Planning, and Maternal, Newborn, and Child Health? (2022), USAID.GOV, accessed November 2024

Engage identified a local partner already doing similar work. Collective Good Foundation (CGF) is a leading local organization with an established livelihood infrastructure and client base that was looking to enter the health space. Chemonics provided technical assistance around family planning products and how to build a network of investors so that the initiative survives long after the project closes. As a result, CGF has new tools to be a leader in this context and ensure the long-term sustainability of the WOHLA platform and other projects. Through FHM Engage's mentorship, CGF helped train 633 local entrepreneurs and women's livelihood NGO champions who promoted digital, financial, and social inclusion, educating over 165,796 women ages 19-29 on family planning and contraceptive options in just six months.

Principle II: Diversify and strengthen collaboration

The project and its partners strategically facilitated diverse, public-private dialogues with manufacturers, marketing agencies, aggregators for distributors, pharmacies and providers, civil society groups, development partners, corporate industry actors, convenors of alliances, and blended finance platforms. Together, they developed a multi-year work plan to improve coordination and address supply and demand constraints, allowing them to leverage existing collective networks. Larger corporations became interested in the initiative and invested in diversifying the support ecosystem.

Principle III: Measure systems resilience

As FHM Engage tracks implementation and progress toward set indicators, it is adapting to have a bigger impact on both population health in project states, measured by overall couple-year protection (CYP), and health system resilience. Major changes to CYP and resilience take time to manifest, so the team also tracks indicators across the core market (such as supply and demand) and enabling environment (such as business financing, domestic resource mobilization, and stewardship). These indicators will help the team understand changes in the market, how those changes are happening, and the eventual impact on health outcomes. For example, coordinating efforts across multiple organizations is one challenge of having such diverse stakeholders. Initially, different alliance actors worked in areas aligned with their skills (i.e., technical partners developed messaging for demand creation; pharmacists worked on offering a broader mix of family planning products). However, zip code analysis showed that supply and demand activities were uneven geographically, highlighting the need to coordinate between these actors. Additional pause-and-reflect sessions are scheduled throughout the rest of the project so that stakeholders continue to make these important observations and corresponding shifts.

As the project continues to make incremental changes, the relationships being built are improving the capacity for self-regulation, diversity, and integration of a "mixed" public-private Indian health system. The team is measuring the value of the market development approach by assessing the impact on market intelligence (including the ability of actors to make informed decisions and react to their environments) and financing (such as whether banks offer loans to private providers, if private health facilities apply for the loans, and how they use the money).

Case Study: Building a learning culture for quality improvement in a South African health district

In Cape Town, South Africa, district health systems have rich resources such as lived experiences, tacit knowledge of bottom-up realities, locally-collected data, proximity to the community and a range of relationships. However, leveraging these resources requires leaders who can think systemically and make the necesssary connections across the system to lead change effectively, so as to improve the quality of health services. In response, the Northern Tygerberg District quality management and primary healthcare (PHC) teams, in Cape Town, used systems thinking to shift the focus beyond compliance to an approach that recognizes and leverages existing opportunities for learning and supports the emergence of distributed leadership.

The team examined catalysts and barriers to fostering a culture of learning and why previous efforts had not been successful. Quality management and PHC co-creation teams reviewed the results and prioritized two interventions: leverage the existing 'Ideal Clinic' statutory initiative and integrate continuous quality improvement. The team also instituted quarterly quality improvement learning sessions, called "Reflections on Quality" (RoQ), to create a structured yet flexible space for facility managers and staff to reflect, learn, and collaborate – with the view of supporting leadership development and quality improvement.

Principle I: Nurture local champions

Following a process of trust building in the implementation of the Ideal Clinic in the district, the team decentralized and expanded the Ideal Clinic assessment team, shifting from its initial four members based in the district office to over 40 staff members from both the district office and its 15 PHC facilities. Furthermore, attendance at the RoQ sessions, as compared to the former traditional quality management meetings, was increased to include 15 frontline staff participants in addition to the managers. The practice of inviting a different frontline participant at each session further widened the sessions' reach. These individuals became champions through intensive workshops that explored system dynamics, enabling peer learning and sharing a more comprehensive understanding of healthcare delivery and the realities in their respective health facilities, and reflecting on systems elements beyond their immediate functions and responsibilities. In addition, because the RoQ sessions included junior staff—such as nurses and clerical workers—alongside senior managers, junior staff felt more valued and empowered. Engagement at RoQ sessions fostered local health facility staffs' sense of ownership and commitment to system-wide improvement.

Principle II: Diversify and strengthen collaboration

The interventions brought together a diverse group of stakeholders, including healthcare managers at the district and facility levels, community representatives, administrative, support and clinical frontline healthcare workers from various facilities. By expanding both the Ideal Clinic assessment team and attenandance at RoQ sessions to include a broader range of health system actors encouraged peer learning and contributed to breaking down

silos. The teams collaborated in ways that created a deeper collective understanding of healthcare delivery and system-wide perspectives, which proved vital for effective change. Engaging community representatives in the Ideal Clinic program shed light on blind spots in the implementation of the program while providing avenues for enabling meaningful community participation. The RoQ sessions also emphasized collective sense-making, encouraging collaboration not just among healthcare facility managers but also with frontline healthcare workers in different roles. This approach brought more diverse viewpoints into the co-creation process, ensuring that interventions were well-informed and responsive to local needs.

Principle III: Measure systems resilience

Through these continous system-informed interventions, that involve cycles of change and reflection, the Northern Tygerberg District continues to nurture adaptive capabilities necessary for responding to both routine and unexpected challenges. For example, the RoQ sessions actively encourage peers to take a "helicopter view" and look sideways to proactively anticipate blind spots, emerging threats, and opportunities. Decentralized teams and the emphasis on reflection and continuous learning across the district has helped system actors improve awareness of issues through more diverse perspectives, and co-create solutions that integrated various system components. Supporting the agency of frontline workers, who are more than just recipients of top-down directives, in actively contributing to system improvements is critical for bolstering local system self-regulation. By institutionalizing systems thinking processes and practices, the district health system in Northern Tygerberg has created momentum for systemic changes that are strengthening the district's capacity to not only deliver high-quality care but also continuously improve and adapt to future challenges.

Lessons learned from ST4H application

When reflecting on lessons learned, each team highlighted the important role played by the facilitator; prioritizing which change to address first rather than trying to do everything at once; and the need for new measurement approaches. First, having a local champion as a facilitator is crucial, especially when conversations between multisectoral stakeholders may not happen naturally. The teams reiterated that facilitation takes patience, stamina, and strong networks. Second, after doing systems analyses, stakeholders can feel overwhelmed when they see the various ways the health system needs to improve. It is helpful to remember that no single project or intervention can address every single barrier. Focus on what is in the locus of control of the project and what will make the biggest impact. Third, measurement is challenging since it is difficult to directly attribute results to a single intervention. This necessitates a mindset shift to accept uncertainty while monitoring both incremental changes and overall system shifts and requires setting different expectations for both stakeholders and donors around timelines and results.

Annex 1. ST4H Tools

Existing health literature on systems thinking provides long, often overwhelming lists of various tools for assessing aspects of the health system. Practitioners may need guidance on which tools to use. Recognizing that a number of different tools can accomplish the same goal, our ST4H approach does not prescribe one tool over another. Practitioners may use common systems thinking models, such as CLA (collaboration, learning, and adapting) or PDSA (plan, do, study, act), or refer to existing systems thinking tool lists.[13]. To guide ST4H practitioners in tool selection, we recommend focusing on the desired output of each systems thinking phase and selecting the tool or tools accordingly. It is also crucial to consider how to measure the influence of ST4H on the identified challenge. This will inform how to adapt for subsequent cycles. The table below recommends best-practice tools intended to help teams start the process.

Phase	Suggested Systems Thinking Tools	Desired Outputs
1. Examine	• Stakeholder Mapping (WHO) • Social network analysis (LSP) • Prioritization matrix (asana) • Causal loop diagrams (LSP) • Stock and flow diagrams (Visual Paradigm) • Participatory Systems Analysis (LSP)	• Engage key actors • Clearly define the problem to solve or improvement to achieve • Recognize and understand interconnections, drivers, and root causes of system performance • Identify leverage points
2. Co-create	• Structured brainstorming (LogRocket) • Human-centered design suite of tools (ideo.org) • Logic model (CDC) or theory of change (USAID)	• Suggest possible problem solutions and systemic changes • Design a monitoring, evaluation, and learning plan
3. Implement and adapt	• Select performance indicators (Measure Evaluation) • Run chart (BMJ Quality and Safety) • Feedback loops (Interaction Design Foundation) • Pause and reflect sessions (USAID) • Complexity-aware monitoring (USAID)	• Identify barriers and facilitators to implementation • Identify and understand feedback
4. Adopt and scale	• Scale-up plan (MSH)	• Institutionalize changes through policies • Develop and implement a scale-up strategy

[13] "Catalogue of Systems Thinking Tools," Swiss Tropical and Public Health Institute, SWISSTPH.CH, accessed November 2024

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About the Cover Photo:
Community members lead a malaria campaign in Katapula, DRC, in November of 2023 (DRC End Malaria). Photo Credit: Arlette Bashizi | Chemonics

CONTACT

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SYSTAC (Systems Thinking Accelerator) is a platform to advance systems thinking science and practice globally. Across Africa, SYSTAC Africa brings together health practitioners, policymakers, advocates, students, and researchers with diverse interests and experiences in advancing systems thinking science. It provides a robust network and dedicated spaces for communities of practice, mutual learning, and advocacy, where like-minded individuals co-create, make sense of complex issues, and develop local solutions through systems thinking. Learn more about SYSTAC at their public homepage and contact systac.africa@gmail.com for more information on the SYSTAC Africa Hub.

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