

The financial sustainability of reaching zero dose children: A framework & analysis of Gavi proposals

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Background



Financial sustainability: What and why?

- Sustainable immunization financing:
 - Financing for immunization services that is predictable and adequate year by year
- Ensuring improvements in immunization coverage are sustained once project funding ends
 - Are the interventions affordable? (i.e. can they be funded with domestic resources?)
 - Do investments have long-term impact?

Access to immunization is hindered by multiple barriers

Rural remote

Urban poor

Conflict-affected

Availability

- No facilities located close to households
- Lack infrastructure, staff, & commodities at facilities
- Complexity of managing supply chains to last mile
- Bottlenecks to financing peripheral facilities
- Difficulties recruiting and retaining workers
- Outreach challenging due to staffing issues, geographic barriers, and incomplete civil registration

- Unequal distribution of health facilities
- Planning difficult due to lack of accurate data on population size due to rapid growth, seasonal migration, and insecure status in urban settlements
- Limited outreach in urban areas
- Sections of urban areas excluded from service plans due to lack of political will combined with overlapping and unclear jurisdictions
- Siloed delivery of care leading to MOV

- Disruption to all components of health systems, including supply chains
- Damage to facilities and other critical infrastructure
- Displacement of healthcare workers
- Difficulty planning outreach due to inaccuracy of administrative data, safety concerns, and complex negotiations with many actors

Affordability

- High prevalence of poverty
- Vulnerability of rural incomes to commodity price fluctuations, weather shocks, seasonality
- High direct and opportunity (time) costs of travelling to facilities
- Time poverty due to burden of reproductive work to maintain households

- Poor households severely constrained in time and income
- Long wait times at urban facilities
- Inconvenient clinic hours for caregivers working outside of the home

- Economic crises exacerbate financial hardships
- Travel more expensive due to increased direct and indirect costs due to fuel shortages, limited public transportation options, and rerouting due to security
- Increases in the number of female-headed households increasing the burdens facing women and the opportunity costs of time
- Dislocation of traditional support systems

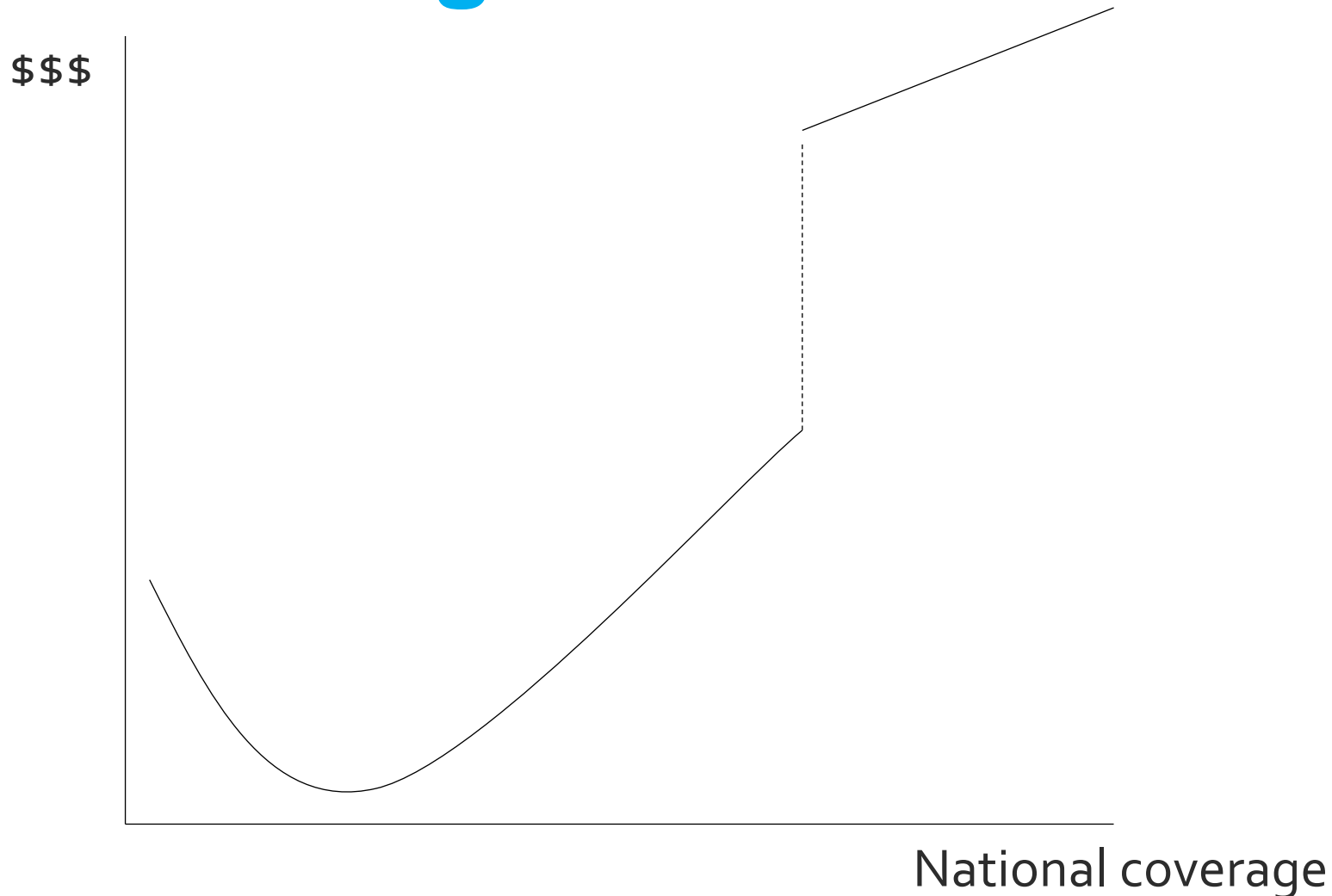
Acceptability

- Lack accountability due to power imbalances between community members, healthcare workers and decision-makers
- Marginalised groups in remote areas excluded from service due to negative perceptions or linguistic differences
- Low maternal education
- Lack of maternal control over decision-making and household resources

- Recent migrants have fewer ties to institutions and lost social networks
- Unaware of where to access services
- Fear of authorities in informal settlements
- Cultural differences, language barriers, and experiences of discrimination can lead to mistrust
- Rumors about vaccines can spread rapidly in urban environments

- Safety concerns deter care-seeking
- Loss of trust due to mismanagement and weakening of traditional authorities
- Lack of trust and suspicion of outsiders, leading to misinformation
- Difficulties in care-seeking among mobile and displaced populations

Cost implications of expanding coverage



Higher costs of expanding access to zero-dose children and missed communities due to:

- Lack of existing resources (e.g. infrastructure; HR; etc)
- Need to address multiple barriers to access (multi-faceted interventions)

Scoping review and framework

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Systematic literature search + framework

Sustainability or
transition



Vaccines or
immunisation



Finance

Inclusion:

- Empirical assessment of financial sustainability (interventions or NIPs)
- Describes factors influencing financial sustainability (interventions or NIPs)
- All study designs
- N=27 studies included

Exclusion

- High-income countries; vaccines for livestock; vaccine manufacturing

Framework:

- Conceptual framework to measure financial sustainability of zero-dose interventions

Very limited evidence of financial sustainability of zero-dose interventions

- N=2

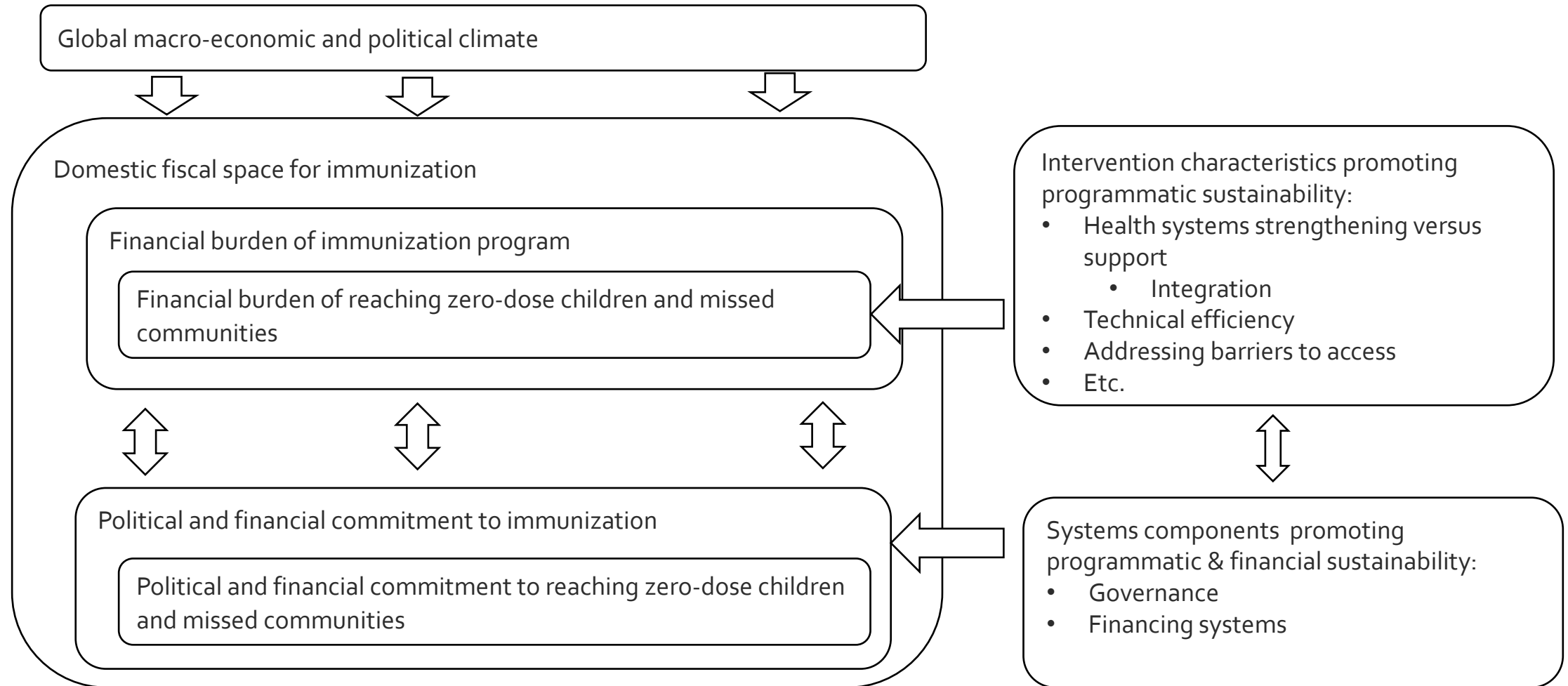
Example:

- Integrated human and animal vaccination campaign in Chad (Akbar et al 2021)
 - Donor financed
 - Sustainability measured as **impact on district budget for health**
 - Incremental budget impact of 1 campaign: 27% of health district budget

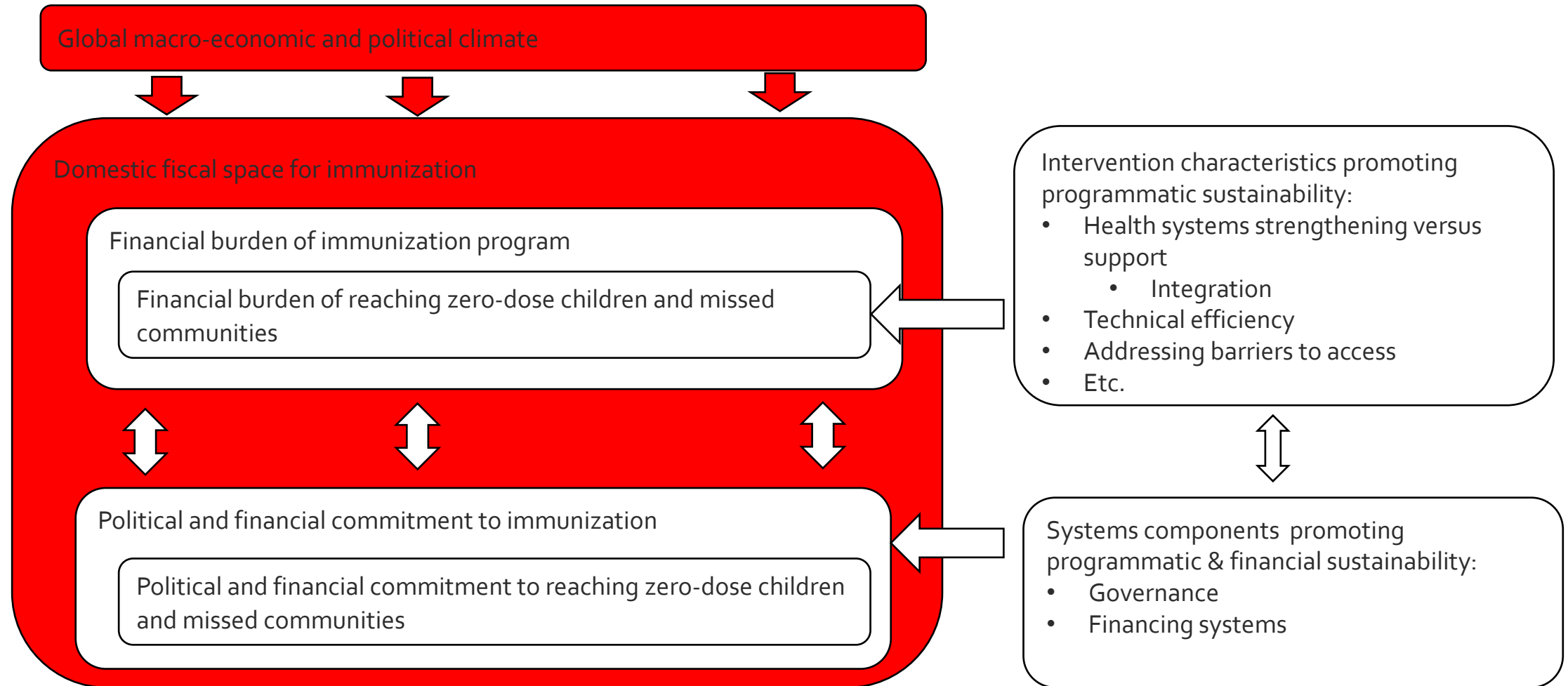
Much more work on financial sustainability of NIPs

Domain	Indicator
Fiscal space	GNI per capita (Atlas or PPP)
	GDP growth; projected annual average GDP growth
	GGHE as a share of GGE
	GGHE per capita; GGE per capita
	Increased total (government + donor) expenditure on primary healthcare (PHC)
Financial burden of immunization programs	Vaccine cost as a share of GGE (at year of transition)
	Vaccine cost as a share of projected GGHE (at year of transition)
	Number of vaccines adopted with GAVI support
	Estimated total fertility rate
	Population size
	Birth cohort size
	Antigen wastage rate
	Drop-out rate
Political and financial commitment to immunization programs	Budget line for immunization
	Increased government investment in RI per child; government expenditure on RI
	Total expenditure (government + donors) on vaccines
	Increased total expenditure (government + donors) on RI
	Public coverage of vaccination expenditure; Government expenditure on vaccines; increased share of government expenditures on vaccines
	Has never defaulted on co-financing payments; Has fulfilled co-financing commitments by the end of the year or has paid arrears in full within 12 months
	Immunization budget execution rate; Implementation ratio of projected national or external funding
	Proportion of debt relief funds (HIPC) allocated to immunization
Transition dynamics	Increase in vaccine cost per capita during GAVI accelerated transition phase
	Projected future country co-financing obligations

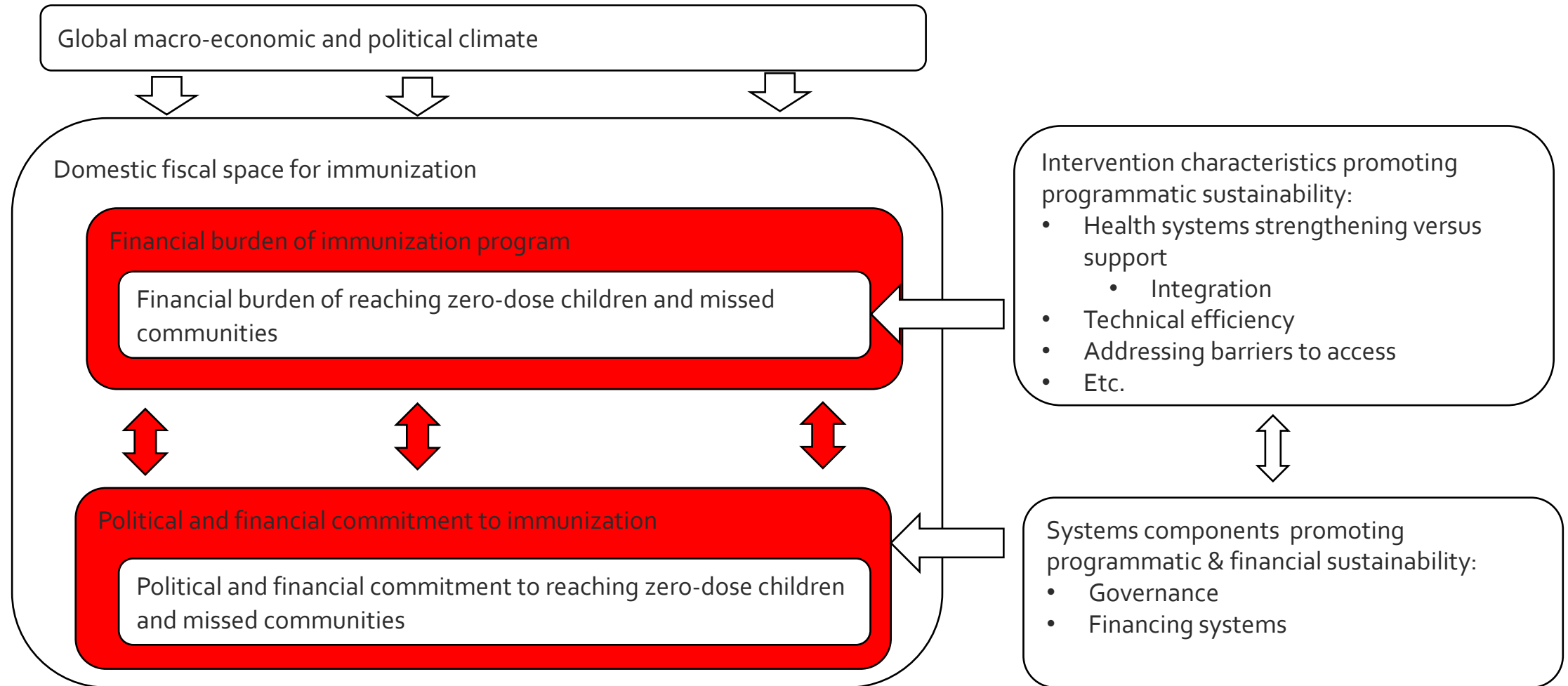
Framework for measuring financial sustainability of interventions to reach zero dose children



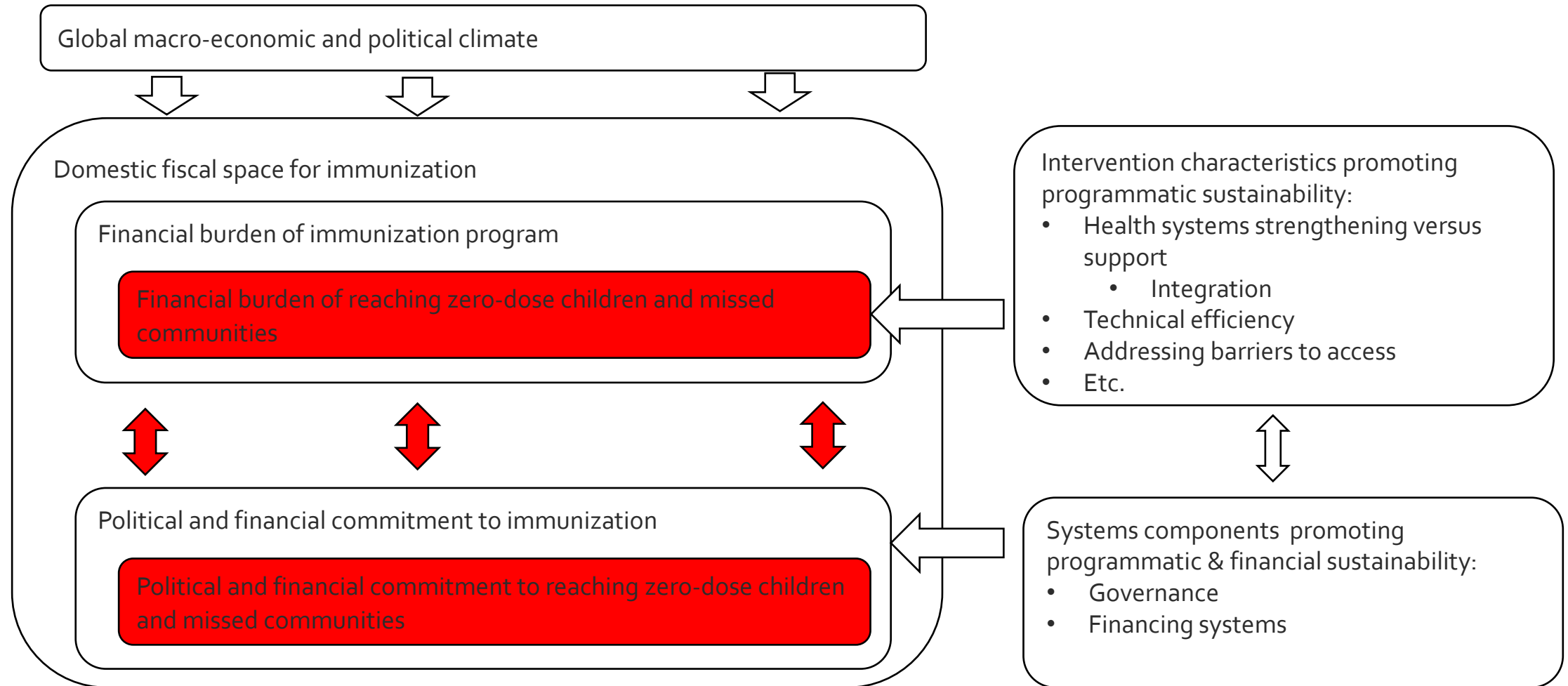
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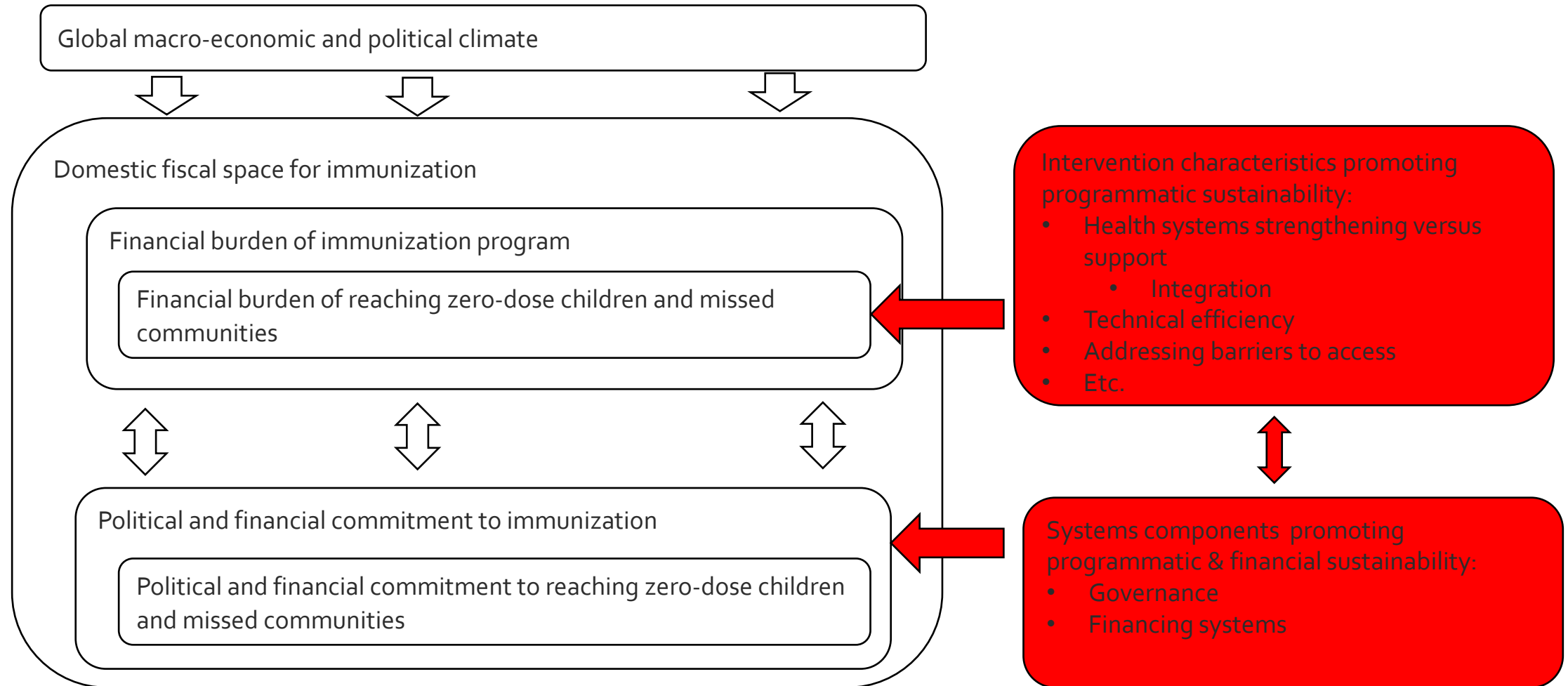
Framework for measuring financial sustainability of interventions to reach zero dose children



Framework for measuring financial sustainability of interventions to reach zero dose children



Framework for measuring financial sustainability of interventions to reach zero dose children



Take home messages

- Ensuring adequate and predictable financing for zero dose interventions is not just about costs
 - High costs in short-term can ultimately promote financial sustainability in the long-term
 - Strengthen systems
 - Address barriers
 - Improve efficiency

Analysis of Gavi proposals (FPP/EAF)



Background: Gavi funding for zero-dose children

- Largest source of external (donor) financing for immunization globally
- Special funding mechanisms for reaching zero dose children:
 - Zero-dose immunization programme: US\$ 100 million
 - Equity Accelerator Funding: US\$ 400 million
- Countries can apply for EAF funding with standalone application or part of FPP
- EAF funding is complimentary to other sources of vaccine delivery support (i.e. HSS)

Aim and objectives

Aim: Assess the financial sustainability of interventions targeted to zero-dose children in proposals to GAVI in 12 countries

Objectives:

1. Measure the affordability of the zero-dose interventions
 - 1.1 Calculate the cost per targeted child of EAF investments
 - 1.2 Calculate the affordability of the interventions by comparing cost per targeted child to benchmarks

2. Assess the extent activities contribute to financial sustainability
 - 2.1 Classify the approaches used and budget allocated across approaches
 - 2.2 Classify approaches on whether they address supply or demand constraints
 - 2.3 Assess the extent activities support versus strengthen the health system
 - 2.4 Assess the extent activities improve the technical efficiency of immunization systems
 - 2.5 Document whether there are TA activities to promote sustainable domestic finance

3. Assess the quality of applications to create guidance for future applications

Overall approach

- Desk-based analysis of documentation submitted to GAVI
 - Narrative documents (e.g. situational analysis; strategic narrative)
 - Gavi excel templates (e.g. workplan; ToC; budget)
 - Other supporting documents
- Analysis is based on proposal ‘as written’
 - Difference in overall approaches across countries
 - Level of detail insufficient to answer some questions
- Classification of activities built on other frameworks
 - 1) Activity ‘types’ based on mapping of pro-equity interventions
 - 2) Checklist for assessing health system strengthening versus support
 - ~~3) Checklist for assessing technical efficiency used for Global Fund grant applications~~

Limitations

1. Analysis is of a proposal
 - Targets may or may not be met
 - Resources may not be spent as planned
2. Analysis is based on a budget, so only includes financial costs of resources purchased using GAVI funds
3. Classification of activities is based on proposal documents
 - Inconsistencies across countries on classifying HSS activities as reaching zero dose communities
 - Subjective nature of classification of activities
 - Limited detail in descriptions can be difficult to answer questions related to systems strengthening and support; **efficiency**

Country context

	Burundi	CAR	Cote d'I	Djibouti	Ethiopi.	Kenya	Laos P.	Mali	Nepal	Tajijist.	Uganda	Zambia
Co-financing group	ISF	ISF	AT	AT	ISF	AT	AT	ISF	PT	PT	ISF	ISF
UNICEF region	ESARO	WCARO	WCARO	MENA	ESARO	ESARO	EAPRO	WCARO	ROSA	ECARO	ESARO	ESARO
DPT1	93%	54%	85%	70%	70%	95%	87%	82%	95%	98%	94%	86%
DPT3	91%	42%	76%	59%	65%	90%	80%	77%	90%	97%	89%	82%
DPT3 in 20 lowest cover. districts	60%	56%	79%	40%	52%	75%	56%	58%	77%	93%	64%	19%
Birth cohort (Millions)	0.4	0.2	0.9	0.02	3.9	1.5	0.2	0.9	0.6	0.3	1.7	0.7
GNI per capita (US\$)	220	460	2290	2830	880	2170	2470	790	1180	1050	930	1130
DGHE per Capita (US\$)	6	3	21	29	6	46	18	12	22	18	10	32

High-level proposal summaries

Country	# of activities				Budget of activities targeting ZD (Million of US\$)				Budget of activities targeting ZD per surviving infant per year** (US\$)			
	Targeting ZD			Overall	EAF	HSS	Other	Total	EAF	HSS	Other	Total
	EAF	HSS	Total	Total								
Burundi	27	95	122	126	3.7	21.4	-	25.0	2.3	13.4	-	15.7
CAR	15	49	95	98	2.9	7.8	8.8	19.5	4.9	13.1	14.7	32.6
Cote d'Ivoire	9	47	92	93	4.0	10.0	10.0	24.6	1.1	2.9	1.9	4.6
Djibouti	6	42	84	84	1.0	3.0	-	4.0	8.4	25.2	-	33.6
Ethiopia	38	126	196	196	26.2	47.8	3.0	77.0	2.3	4.2	0.3	6.7
Kenya	4	23	27	54	6.6	6.8	-	13.4	1.3	1.6	-	2.9
Lao PDR	4	*	*	56	1.3	8.8		10.1	3.3	22.0	-	25.3
Mali	21	42	91	93	10.0	25.6		35.6	3.7	9.5	-	13.2
Tajikistan	19	10	51	52	1.5	0.6	1.8	3.8	2.4	1.0	2.9	6.3
Uganda	66	78	156	156	11.3	35.0	-	47.4	3.4	10.5	0.4	14.2
Zambia****	22	41	90	124	2.6	8.5	4.8	16.0	1.3	4.3	2.4	8.0

*Country did not use the standardized dropdown; unclear whether HSS activities contribute to reaching zero-dose.

** Number of years for EAF funding used for standardization.

Targets for number of zero dose children reached

	# of ZD children (no DPT1 at national level)			# of children with DPT1 in areas targeted with interventions		
	Base	End	Change	Base	End	Change
Burundi	17,000	4,250	-12,750	34,758	42,466	7,708
CAR	102,416	61,450	-40,966	114,811	131,591	16,780
Cote d'Ivoire	133,748	13,337	-132,411	1,021,121	1,031,332	10,211
Djibouti	-	-	-	-	-	-
Ethiopia	1,100,000	550,000	-550,000	1,018,687	1,429,055	410,368
Kenya	180,000	90,000	-90,000	660,468	750,000	89,532
Laos PDR	5,305	2,301	-3,004	24,443	29,415	4,972
Mali	157,055	122,503	-34,552	583,809	723,923	140,114
Tajikistan	7,638	5,729	-1,909	-	-	-
Uganda	49,266	24,633	-24,633	805,583	869,949	64,366
Zambia	344,352	120,523	-223,829	284,176	400,567	116,391

Cost per additional child reached with DPT1 (EAF funds only)

Country	Worst case ('Per proposal')	Best case (Targets met in 1 st year and sustained)	Domestic General Government Health Expenditure (GGHE-D) per Capita in US\$
Burundi	\$482.59	\$120.65	\$5.94
CAR	\$173.69	\$57.90	\$3.00
Cote d'Ivoire	\$391.84	\$97.96	\$21.00
Ethiopia	\$63.90	\$21.30	\$6.00
Kenya	\$63.01	\$21.00	\$46.14
Laos PDR	\$269.36	\$134.68	\$18.05
Mali	\$71.66	\$23.89	\$11.77
Uganda	\$174.77	\$87.39	\$9.79
Zambia	\$22.60	\$7.53	\$32.03

Top 3 strategies by budget

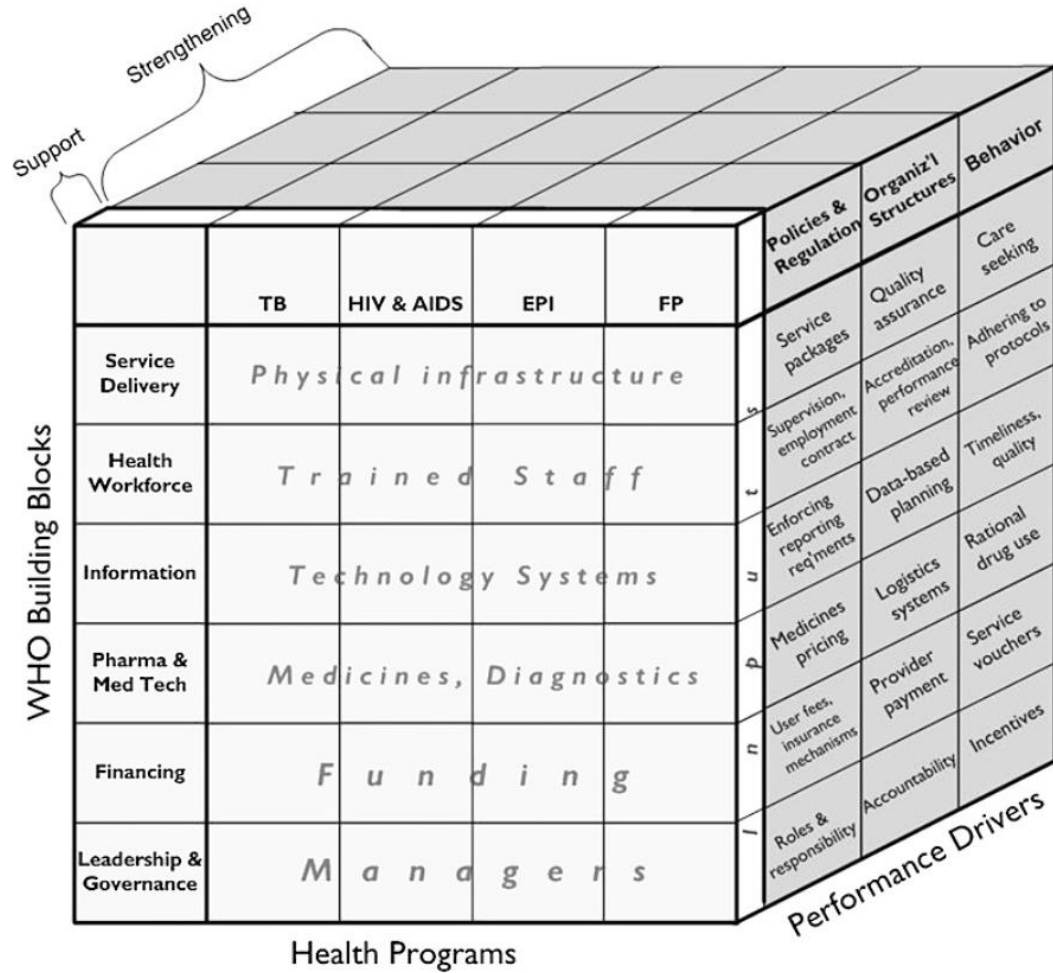
Kenya

1. Outreach sessions/tailor location of service delivery and partnerships for service delivery
2. Immunization promotion activities: engage community/religious leaders to promote immunization
3. Other: Improve health data systems and utilization of data, including evaluation

Uganda

1. Cold chain functionality
2. Integration of immunization with other health services to enhance convenience and strengthen Universal Primary Care
3. Other: Integration of immunization with services from sectors outside of health or nutrition

Do activities support or strengthen health systems?



Assessed by 4 questions

1. Do the interventions have **cross-cutting benefits** beyond a single disease?
 2. Do the interventions address **policy and organizational constraints** or strengthen relationships between the building blocks?
 3. Will the interventions produce **permanent systemic impact** beyond the term of the project?
 4. Are the interventions **tailored to country-specific constraints and opportunities**, with clearly defined roles for country institutions?
- No single activity met all 4 criteria, BUT each country had multiple activities that met each criteria
 - Many activities did not meet any of criteria 1-3, but almost all met criteria 4

Technical efficiency

EFFICIENCY

Technical efficiency

Does the funding request demonstrate technical efficiency? Will the proposed activities and budget assumptions contribute to achieve the greatest outcome and greatest quantity of outputs with resources invested?

Ideal service delivery modality:

- The service delivery modalities (i.e., level of service, processes and activities to implement an intervention) are the most appropriate to provide quality services and reach the greatest outputs.
- Diagnostic approaches are well designed to result in finding more cases and improve the yield.
- Digital health technologies are leveraged to improve access to services, linkage to care or adherence.
- Community services are well integrated into health services to reach more patients.

Integration of system level investments:

- The proposed system level investments avoid parallel and duplicative disease specific management systems (e.g., health information systems, human resources, laboratory systems, and supply chains).
- Service delivery is integrated to PHC platforms to achieve both economies of scope (i.e., providing two types of health services (e.g., HIV testing and TB testing) together results in a lower cost than providing them separately) and economies of scale.
- Laboratory service delivery are integrated and optimized through systems integration, multi-disease testing laboratory equipment, improving instrument placement strategies, and optimizing referral networks.

Selecting the right mix and quantity of inputs to achieve more outputs:

- The proposed budget builds on lessons learned from previous implementation periods, addresses previous inefficiencies, and aims to achieve economies of scale.
- Variation of service unit costs across SR or sub-national areas are reviewed and analyzed to identify potential efficiency gains.
- Projections are made to identify interventions or geographic areas where economies of scale can be achieved, such as providing larger quantity of the same service (e.g., testing, or treatment) to reduce the average cost of service provision).
- Conduct cost-effectiveness analysis to rationalize new product/technology adoption and scale up.
- Processes are in place to minimize wastage and underutilization of resources.

Examples on ideal service delivery modality:

- ✓ Adopt more efficient drug refill or patient visit schedules. Leverage CHW and pharmacies.
- ✓ Expand active index-based testing and contact tracing.
- ✓ Move services from hospital-based delivery to out-patient services and primary health care (PHC) facilities to lower the cost-of-service provision and improve access.
- ✓ Private sector is leveraged to improve accessibility and quality of health services.
- ✓ Optimize laboratory testing algorithms to avoid unnecessary double testing.
- ✓ Use virtual tools to provide tailored services to marginalized or hard to reach populations.

Examples on integration:

- ✓ Adopt a systems approach to address common bottlenecks in service delivery across the three diseases, such as stock-outs or HRH shortages.
- ✓ Provide integrated service delivery through PHC facilities, community health workers, as well as community-led and based organizations.

Strengthen sample transport systems to optimize the use of laboratory equipment across diseases.

Examples to select the right input mix and quantity:

- ✓ Cost-effectiveness analysis conducted to decide when and where pyrethroid-piperonyl butoxide (PBO) nets should be deployed.
- ✓ Costing studies and detailed expenditure reviews are done to carefully select and quantify inputs.
- ✓ Task-shifting to less costly human resources (e.g., nurses or CHWs) can save financial resources and improve service outcome.
- ✓ Improve supply chain management system to reduce drug expiration and wastage.

Technical efficiency

- 12 questions covering:
 - Ideal service delivery modalities
 - Integration of investments
 - Selecting the right quantity and mix of inputs
- Very difficult to answer based on proposal details, especially questions on input mix
- Questions related to service delivery and integration overlap with health systems strengthening questions
- Interesting results related to use of digital technologies
 - Large proportion of activities have a of digital technology component !

TA to promote financial sustainability

- Both countries had at least one activity related to promoting sustainable domestic finance

Key take away messages

- Cost per additional child reached with DPT1 is high
 - Cost likely underestimated as based on EAF funds only
- Most activities support the health system (buy inputs), but some strengthen health system by having benefits outside of immunization; address operational or policy constraints; and have lasting impacts beyond the scope of funding

Lessons learned (so far)

- Some quality issues are related to Gavi templates
 - Baseline and endline targets, but no targets for interim years
 - Templates change over time
- Inconsistencies across different components within an application
 - E.g. Based on narrative description urban-focused activity not classified as such in workplan
- Inconsistencies across countries in whether identical HSS activities are 'flagged' as targeting ZD children
- Difficulties in assessing systems strengthening and especially technical efficiency based on level of detail in the proposal
- Limited focus on financial sustainability / domestic financing in Gavi proposals (although some TCA activities in both countries; learning agenda question on ZD financing in 1)

Next steps

- Extend analysis to remaining countries
- Complete cross-country analysis
- Write country guidance for future proposals



Thank you.