



## 17th TechNet Conference

Panama City, Panama | October 16-19, 2023

Immunization Programmes That Leave No One Behind

[www.technet-21.org](http://www.technet-21.org)

# Tools and platforms that support selection, access, and service strategies

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October 18, 2023

# Presentation Overview

- **Priority setting of vaccine innovations**  
*The CAPACITI Innovation Framework*
- **Priority setting of available vaccines**  
*The CAPACITI Decision-Support Tool*

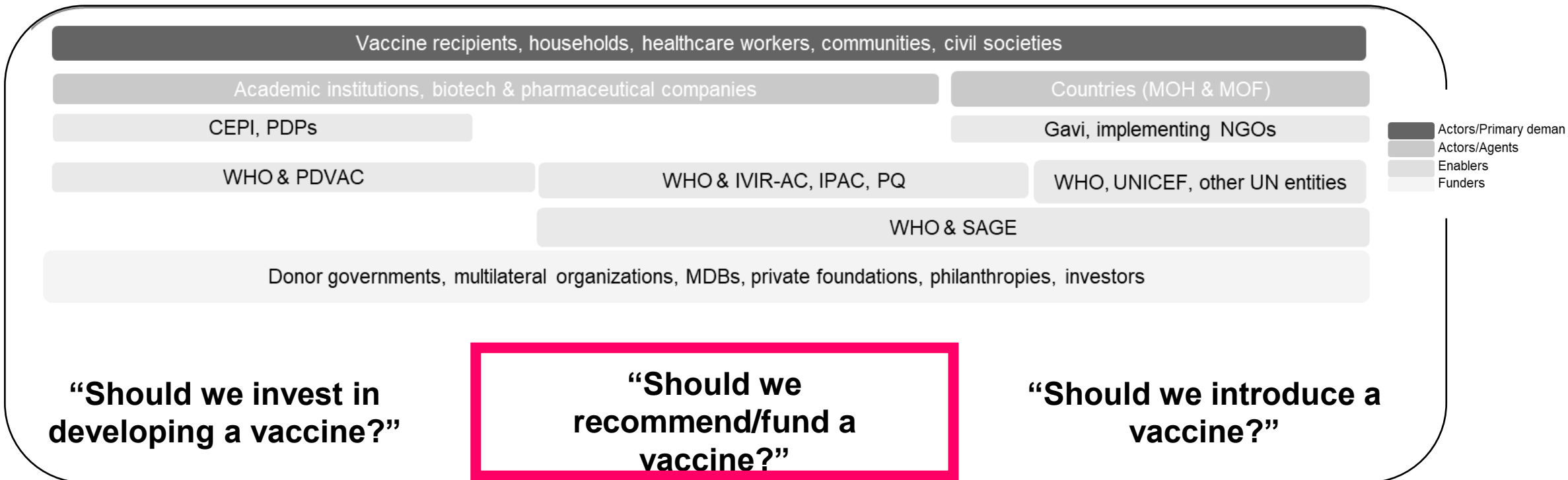
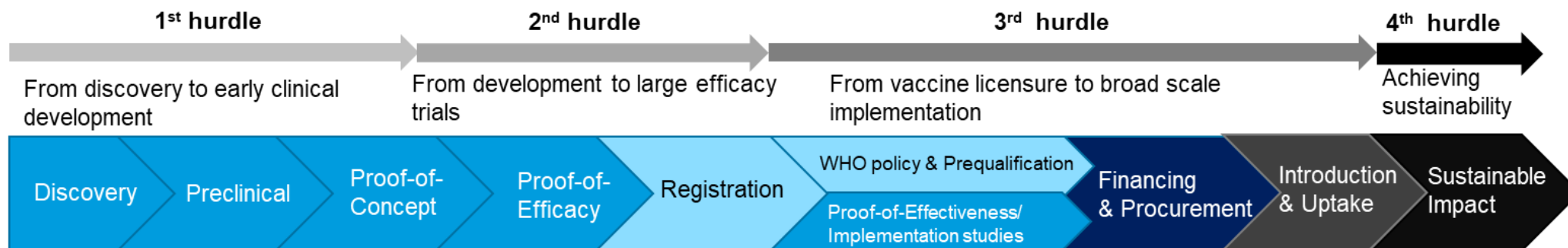
# Priority setting of vaccine innovations

Bridging country needs and priorities with innovative delivery technologies – a proven approach to help LMICs drive the innovation they need.



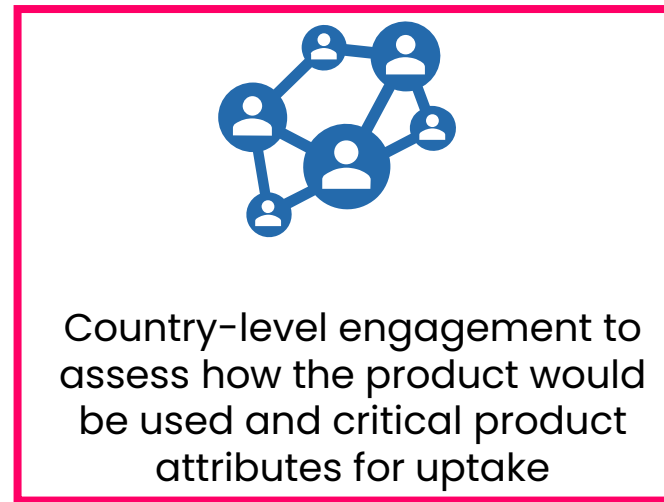
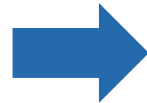
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# FULL VALUE OF VACCINE ASSESSMENTS



# THE CHALLENGE

Insufficient understanding of country needs and preferences leads to product design that does not meet country needs and preferences resulting in uncertainty in demand and uptake



Priority innovation areas identified

WHO communicates country preferences to global vaccine stakeholders

frontiers | Frontiers in Public Health | Original Research | Published: 10 January 2022 | doi: 10.3389/fpubh.2022.1037157

Check for updates

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Estimating the future global dose demand for measles-rubella microarray patches

Melissa Ko<sup>1\*</sup>, Stefano Malvotti<sup>2</sup>, Thomas Cherian<sup>3</sup>, Carsten Mantel<sup>4</sup>, Robin Biellik<sup>5</sup>, Courtney Jarrahian<sup>6</sup>, Marion Menozzi-Arnaud<sup>7</sup>, Jean-Pierre Amor<sup>8</sup>, Hans Christianlsen<sup>9</sup>, Mark J. Papantia<sup>10</sup>, Martin I. Meltzer<sup>9</sup>, Balcha Girma Masresha<sup>9</sup>, Desiree Pastor<sup>10</sup>, David N. Durrheim<sup>11</sup>, Birgitte Giersing<sup>12</sup> and Mateusz Hasso-Agostowicz<sup>13†</sup>

<https://www.frontiersin.org/articles/10.3389/fpubh.2022.1037157/full>

# CAPACITI INNOVATION FRAMEWORK WORKSHOPS



## Purpose

- To evaluate **vaccine product innovations** to clarify their **perceived value** and **acceptability** requirements
- Facilitates **deliberation and communication** between **stakeholders from diverse levels and disciplines** within the immunization system to agree on potential **programmatic implications** of the innovation's attributes
- Seeks to **identify criteria** and **evidence needed** for the decision-making processes which compare the current practice with the novel innovation



## Users

- WHO and partner organization as a platform for engagement with relevant stakeholders such as Ministry of Health, NITAGs, FDAs, etc.
- Can be implemented as single or multi-country **workshop**



## Status

- **Pilot consultations** in AFRO, SEARO, and PAHO
- Excel-based workbook adapted for 3 innovations: Measles and Rubella Microarray Patches (**MR-MAPs**), **thermostable** vaccines, and oral cholera vaccine **capsules**

# THE OBJECTIVES OF THE CAPACITI INNOVATION FRAMEWORK WORKSHOPS



Determining and prioritizing specific immunization barriers which can be impacted by changing the way a vaccine is delivered



Identifying critical product attributes for the innovation to reduce or eliminate prioritized barriers



Understanding and validating potential use cases for the innovation



Identifying likely data and evidence needed for eventual introduction of the innovation, but not deciding whether to introduce the product



Familiarizing stakeholders with the innovation, its attributes and status of development, and potential for uptake by immunization programmes



# THE PRINCIPLES OF INNOVATION WORKSHOPS



1

## Country-driven

The assumptions around the development of the innovations are validated by country stakeholders

2

## Structured

A systematic approach allows for reproducibility, consistency across countries and comparison of results

3

## Evidence-based

Based on most recent evidence about country-level needs and priorities. Input from country stakeholders serves as evidence to guide the development of the innovation and to inform on additional evidence need

4

## Transparent

Credible and transparent consensus-building process that is fully documented

5

## Partnership

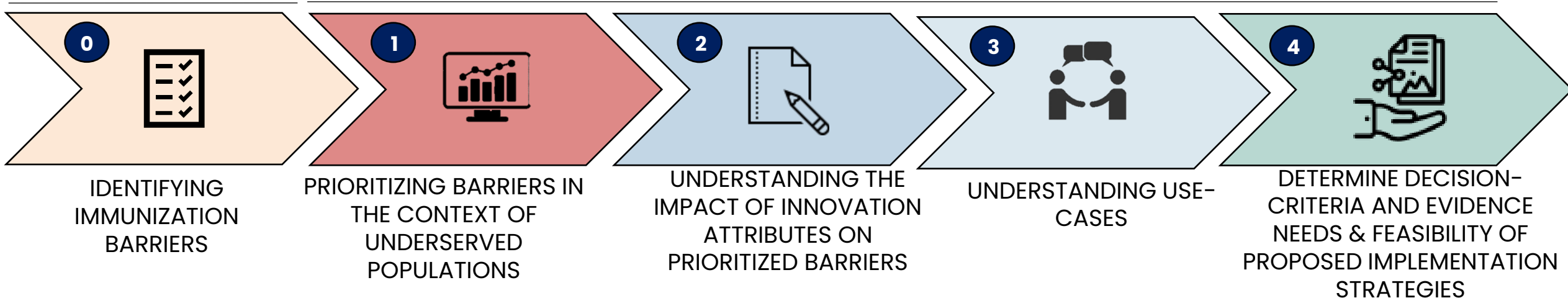
Encourages a multi-stakeholder dialogue across all levels (national, regional and global levels) and stakeholders with various expertise



# THE METHODOLOGY OF INNOVATION WORKSHOPS

## PRE-WORKSHOP PREPARATION

## WORKSHOP DISCUSSION



# THE METHODOLOGY OF INNOVATION WORKSHOPS

## Pre-workshop preparation

## Workshop discussion



• **Objective:** To identify critical barriers to immunization

• **Format:** Situation analysis using existing information sources completed by a country using the *Guide and Workbook for Immunization Programme Performance*

• **Objective:** To identify underserved populations and understand strengths and weaknesses of strategies used to reach them. Also, to prioritise the identified barriers based on their relevance to vaccination coverage these populations

• **Format:** Discussion across different sub-national settings/context to prioritize the relevant barriers

• **Objective:** To identify innovation product attributes that could address the prioritized barriers and enable vaccine delivery to the populations that aren't reached with current practice

• **Format:** Product presentation and workshop discussion in the context of product innovation target product profile and the prioritized barriers

• **Objective:** To identify most suitable application (use cases) of the innovation that would lead to reduction of the identified barriers

• **Format:** Discussion around implementation of innovation across the various sub-national contexts

• **Objective:** To understand potential decision-making criteria for inclusion of innovation into the immunization programme and feasibility of proposed implementation strategies

• **Format:** Structured discussion based on the CAPACITI decision-support tool to determine criteria, evidence needed, as well as policy, programmatic and procurement considerations for mixed delivery strategy (current and proposed strategy)

# THE METHODOLOGY OF INNOVATION WORKSHOPS

## Pre-workshop preparation

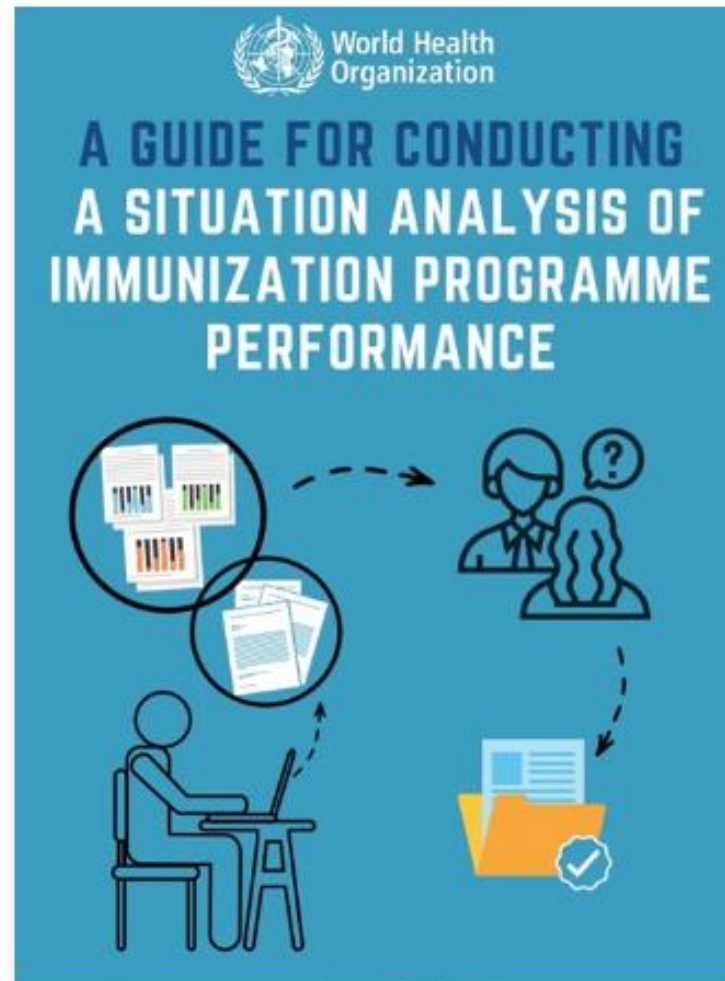
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### Identifying relevant barriers

• **Objective:** To identify critical barriers to immunization

• **Format:** Situation analysis using existing information sources completed by a country using the *Guide and Workbook for Immunization Programme Performance*



# THE METHODOLOGY OF INNOVATION WORKSHOPS

## Pre-workshop preparation

## Workshop discussion



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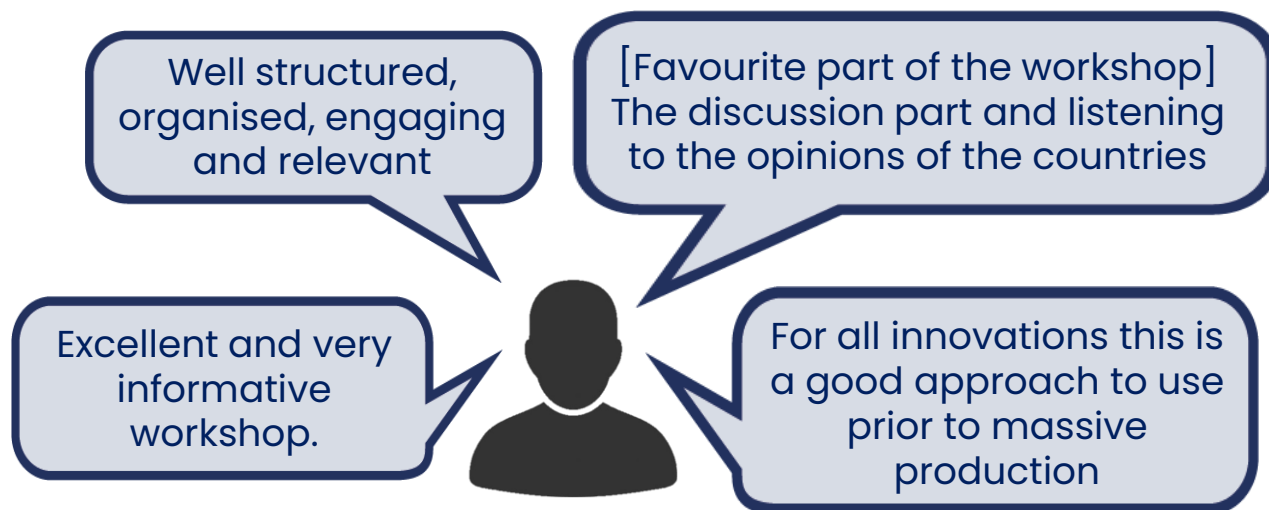
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# INNOVATION FRAMEWORK WORKSHOPS

	2022		2023		Upcoming 2023	
						 
	<i>Ethiopia</i>	<i>Indonesia</i>	<i>Guyana &amp; Caribbean Region</i>	<i>Uganda</i>	<i>Côte d'Ivoire</i>	<i>Bangladesh</i> <i>Tanzania, Kenya, Mozambique &amp; Ethiopia</i>
<b>Innovation</b>	Measles and Rubella Microarray Patches (MR-MAPs)				Thermostable vaccines	Oral Cholera Vaccine capsules
<b>Context</b>	<ul style="list-style-type: none"> <li>• IA2030 priority country</li> <li>• Current evaluations for switch in MCV presentation</li> </ul>	<ul style="list-style-type: none"> <li>• IA2030 priority country</li> <li>• Local production of vaccines</li> <li>• Sub-national variation</li> </ul>	<ul style="list-style-type: none"> <li>• MIC countries</li> <li>• High MMR coverage, at high cost for sustaining elimination</li> </ul>	<ul style="list-style-type: none"> <li>• Diverse sub-national context</li> <li>• High refugee population</li> </ul>	<ul style="list-style-type: none"> <li>• Interest to explore the use of thermostable vaccines</li> </ul>	<ul style="list-style-type: none"> <li>• Cholera endemic countries, experiencing outbreaks</li> <li>• Outbreak and preventive vaccination campaigns</li> </ul>
<b>Stakeholders</b>	<p>30-50 participants from:                      Ministry of Health (various departments), district health officers, logisticians, Institutes for Public Health, National Immunization Technical Advisory Group (NITAG), Academia, Research Institutes Food and Drug Administration (FDA), Civil Society Organizations representatives, donors, regional organizations, implementing partners, UNICEF, WHO HQ/RO/CO</p>					

# USER FEEDBACK

- CAPACITI Innovation Framework workshops are a suitable platform to assess innovations, receiving continuously positive feedback through a range of opinions and perspectives
- Continuous refinement of discussions



## PARTICIPANTS FEEDBACK (N=70), SCORE OUT OF 5.0

4.4 Content relevant to their work

Level of engagement during the workshop 4.3

4.4 Workshop allowed to express their opinion about MAPs

Workshop can be replicated for other innovations 4.4



# ✓ ACHIEVING THE OBJECTIVES

## EXAMPLE: MR-MAPS FINDINGS



- MR-MAPs could **address multiple immunization barriers** that prevent countries from achieving optimal MR coverage;



- Single dose presentation, easier administration and increased thermostability** are the three most important attributes to address the current barriers to MR vaccination;



- Ability to adopt certain use-cases for MR-MAPs, such as **delivery by Community Health Workers varies** depending on **country policy**

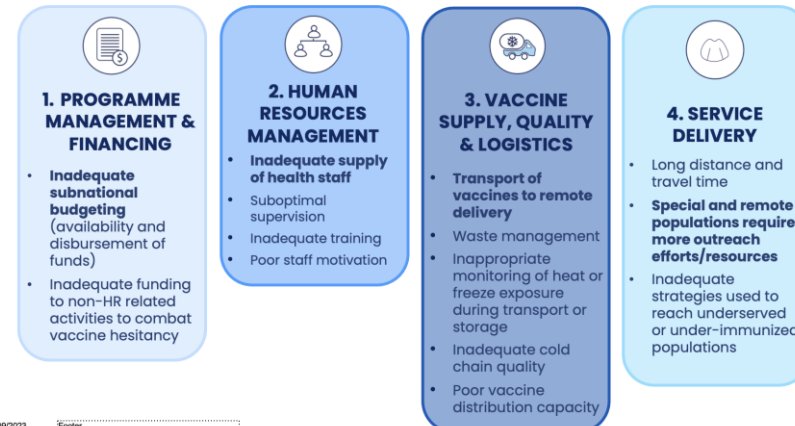


- Some countries would opt-in for a **pilot introduction** in areas with good MR coverage, to collect local data, develop strategies and communication to enable later MR-MAP roll-out in other settings;
- Well planned **communication and MR-MAP introduction strategies** with guidance and financing support from international organizations would be critical for a successful MR-MAP introduction;

Classified as Internal



### STEP 1: PRIORITIZED MR IMMUNIZATION BARRIERS

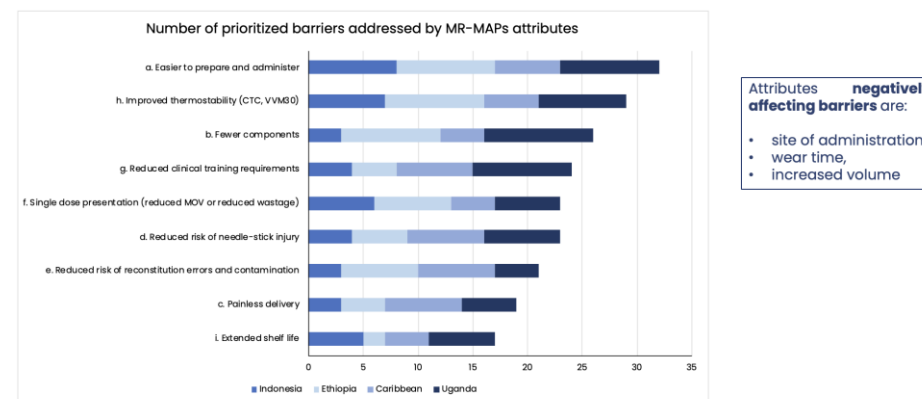


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### STEP 2: KEY MR-MAP ATTRIBUTES TO OVERCOME THE IMMUNIZATION BARRIERS



# USING FINDINGS TO

## Strengthen programmes

- Systematically documented strengths and barriers of the immunization programme
- Dialogue between various stakeholders focusing on underserved populations across sub-national settings

## Set national research agendas

- Evidence gaps of immunization programme performance systematically documented
- Conduct country specific studies to answer introduction questions for the innovation

## Optimize introduction

- Ahead of introduction plan to optimize the policy, programmatic and procurement considerations highlighted during the workshop

Findings

## Optimize product development

- Raise awareness on innovation progress at all 3 levels(country/region/global)
- Communicate to manufacturers critical product attributes
- Communicate potential use-cases and introduction preferences among countries to support demand and market assumptions

## Generate innovation evidence

- Communicate evidence needs for robust national decision making in countries
- Manufacturers and/or global partners to play a role in generating such evidence



# SUMMARY

- The CAPACITI Innovation Framework Workshop is a platform for country level engagement
- Through multi-stakeholder dialogue it assess the innovation's programme impact and how it would be
- To date used for 2 innovations, across 10 countries and 220 stakeholders
- Positive feedback received by users
- Further refinement and additional applications planned



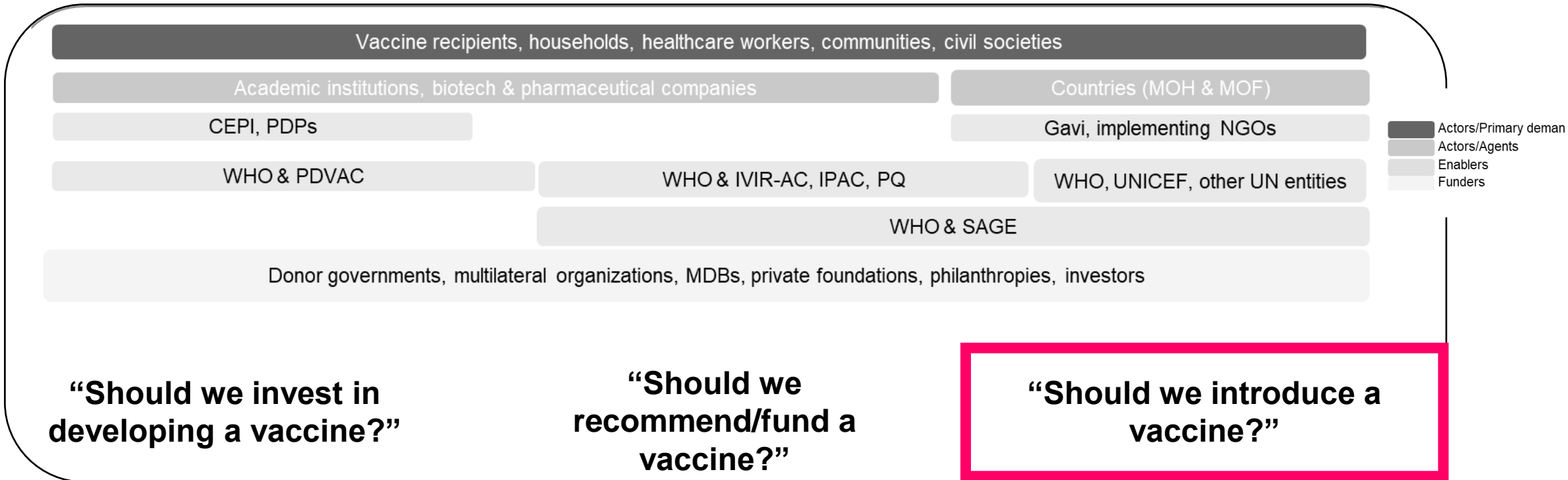
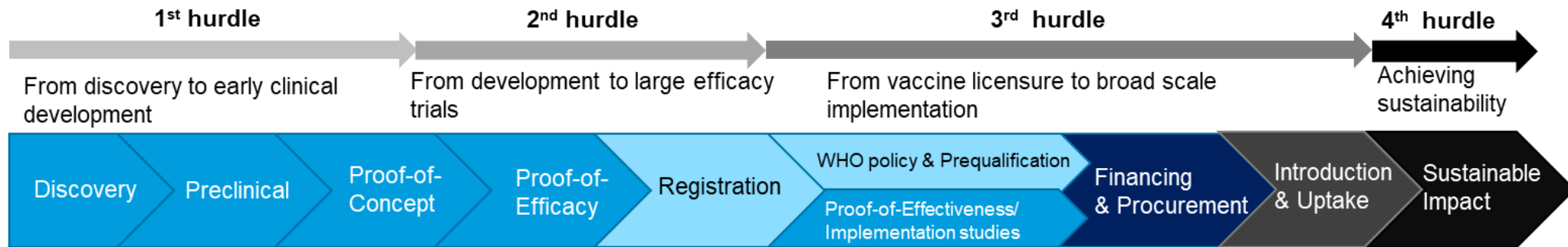
# Priority setting of available vaccines

The CAPACITI Decision-support Tool for National Immunization Programs:  
feedback from Indonesia and Ethiopia on immunization system benefits.



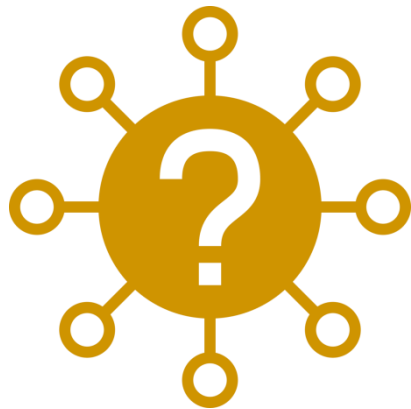
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# FULL VALUE OF VACCINE ASSESSMENTS



# THE CHALLENGE: HOW TO PRIORITIZE BETWEEN OPTIONS?

Health care decisions are **complex**. How can we assess the alternatives and the relevant evidence to make a good, informed decision?



There are often many options...



...with many factors impacting the decision...



...together with multiple viewpoints...



...and imperfect data

# CAPACITI DECISION-SUPPORT TOOL\*



## Purpose

- For prioritization among **multiple immunization products, services, or strategies**
- Incorporates input from **multiple stakeholders, evidence and perspectives across disciplines and health system levels**, operational and socio-ethical aspects, and **data uncertainty**
- **Documenting of country preferences** and drivers to decision making, as well as flagging **evidence needs and gaps**



## End-user

- **Country team** coordinating the recommendation/decision process in LMICs
- May be used for **policy or programme questions**



## Status

- Developed in collaboration with **12 countries** in Africa, Asia, and the Americas
- **Recommended for country implementation** by WHO Immunization and vaccines related implementation research advisory committee (**IVIR-AC**)

# TYPE OF PRIORITISATION QUESTIONS

## ➤ **Selecting between multiple options**

Potential applications include:

- **Product choice**, e.g. which Rotavirus product to procure;
- **Schedule choice**, e.g. 2+1 or 3+0 schedule for PCV vaccination;
- **Delivery strategy**, e.g. *controlled temperature chain delivery of birth dose hepatitis B vaccine, and under which conditions*

## ➤ **Ranking multiple options**

Potential applications include:

- **Vaccine prioritization**, e.g. Rotavirus, PCV, HPV vaccines;
- **Vaccine introduction or delivery strategies**, e.g. prioritising regions for phased introduction;
- **Prioritization of immunization and non-immunization alternatives**, e.g. *investment in Rotavirus vaccine introduction compared with other diarrhoeal disease prevention and control measures*

# THE PRINCIPLES OF THE DECISION-SUPPORT TOOL



1

## Country-driven

Use of the tool is country-led and certain steps are prefilled at the country level to tailor to country context and streamline the process

2

## Structured

The Excel-based tool guides the user through a consistent and reproducible five-step process

3

## Evidence-based

The tool is based on multi-criteria decision analysis, as a systematic way to incorporate multiple sources of evidence and stakeholder perspectives

4

## Transparent

Credible and transparent consensus-building process that is fully documented and allows preferences to be understood and evidence needs to be flagged.

5

## Partnership

Encourages a multi-stakeholder dialogue across all levels (national, regional and global levels) and stakeholders with various expertise

# STEPS IN THE CAPACITI DECISION-SUPPORT TOOL

STEP 1

DECISION  
QUESTION

STEP 2

CRITERIA FOR  
DECISION-MAKING

STEP 3

EVIDENCE  
ASSESSMENT

STEP 4

APPRAISAL

STEP 5

RECOMMENDATION

Excel based tool supports  
**deliberative process** to come to  
a recommendation

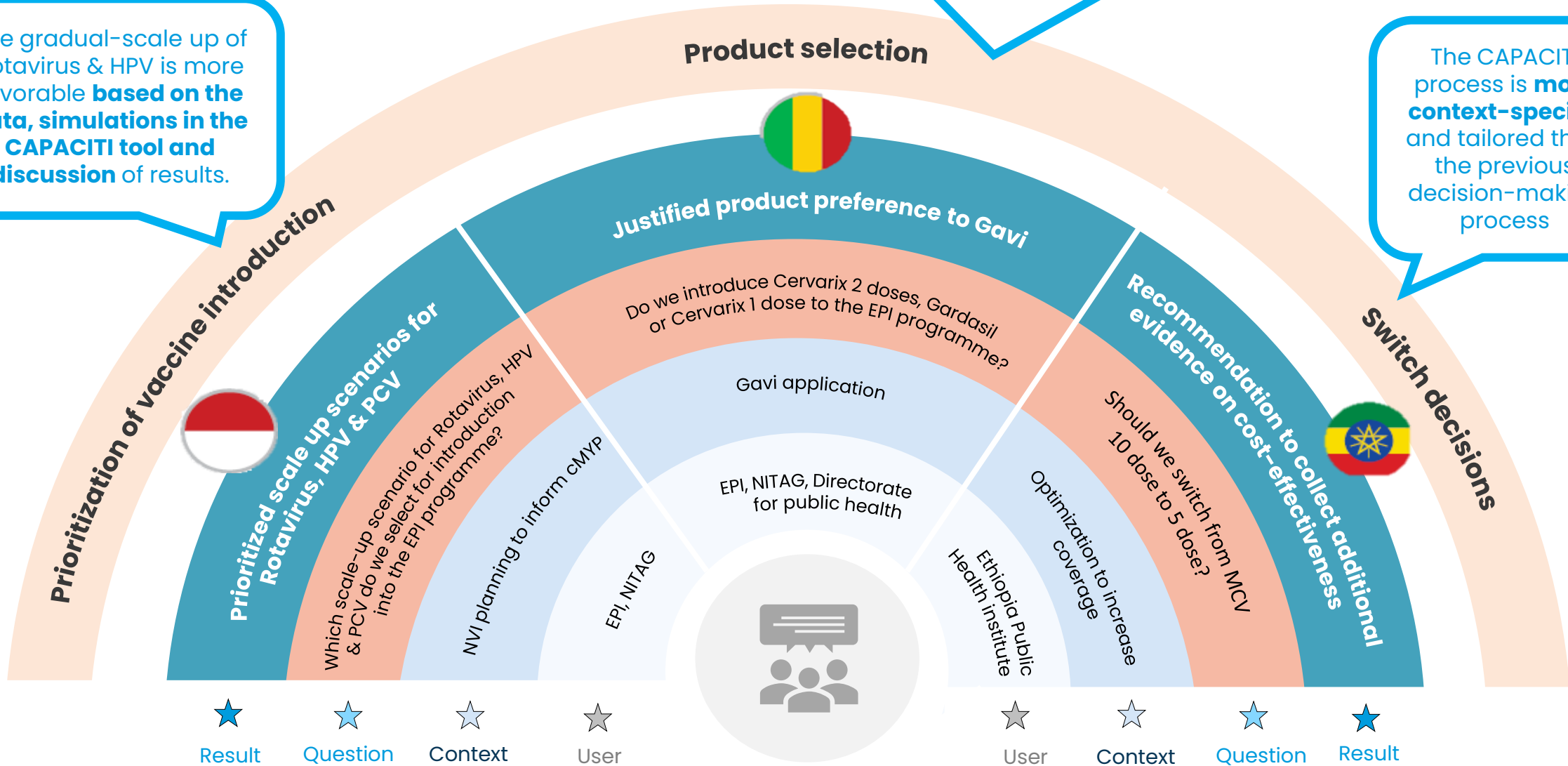




[CAPACITI is] **easy to use** compared with other methods for submitting a recommendation document. It allows decision-makers or recommendation bodies to consider **multiple factors and stakeholder perspectives** at the same time.

The gradual-scale up of Rotavirus & HPV is more favorable **based on the data, simulations in the CAPACITI tool and discussion** of results.

The CAPACITI process is **more context-specific** and tailored than the previous decision-making process



# DIFFERENT WAYS OF USING THE TOOL

		Qualitative	Rule-based	Quantitative
1) Decision question				
2) Criteria	Select criteria (2.1)	✓	✓	✓
	Define rules (2.2)		✓	
	Assign weights to criteria (2.3)			✓
	Set up a scoring scale (2.4)			✓
3) Evidence assessment				
4) Appraisal	Assign scores (4.1)			✓
	Calculate total scores (4.2)			✓
	Sensitivity analysis (4.2)			✓
4) Appraisal	Deliberation across criteria (4.2)	Evidence only	By decision rules	Total scores
5) Recommendation				



# CAPACITI DECISION-SUPPORT TOOL – EXAMPLE

Here are examples of a decision question and related criteria identified to address a need to scale up Rotavirus and HPV along with PCV introduction



## Step 1 – Decision question

### Context

- Unclear if a quick roll-out of RV and HPV with nationwide coverage by 2023 is preferred over a more gradual scale-up of either HPV or RV (or both) with a delayed nationwide coverage in 2025

### Decision question

- What is the preferred scenario for scale-up of RV and HPV, alongside introduction of PCV with nationwide coverage by 2022?



## Step 2 – Decision criteria

### Criteria examples

- Burden of disease
- Impact
- Local production
- Cold chain capacity
- Vaccine availability
- Level of wastage
- Schedule
- AEFI
- Community acceptance
- Cost-effectiveness
- Budget impact

# CAPACITI DECISION-SUPPORT TOOL - EXAMPLE

## Step 3 – Assessment

- **Evidence collection** – identify, analyze and record available evidence.
- **Performance matrix** – summarize the performance of each option against each criterion based on the evidence statements in a summary table, or performance matrix.

# EVIDENCE STATEMENTS

## Criterion

Criteria are selected and defined by users.

## Confidence in the evidence

Evaluates quality of the evidence, including its applicability to the question and any major limitations or unknowns.

Criterion	Evidence statement(s)	Confidence (certainty) in the evidence	References										
1 Cost-effectiveness	Country-specific estimates from a global level model suggest \$0/DALY averted (95% CI -\$2/DALY averted to \$1/DALY averted) for maximised cold chain delivery (1) and -\$33/DALY averted (95% CI -\$29/DALY averted to -\$36/DALY averted) for CTC (2).	The model did not account for country level granularity. A 10% coverage increase was assumed for CTC delivery.	<table border="1"> <tr> <td>1</td> <td>Seaman et al. Lancet Glob Health 2020; 8: e931–41</td> </tr> <tr> <td>2</td> <td>Scott et al. Lancet Glob Health 2018; 6: e659–67</td> </tr> <tr> <td>3</td> <td></td> </tr> <tr> <td>4</td> <td></td> </tr> <tr> <td>5</td> <td></td> </tr> </table>	1	Seaman et al. Lancet Glob Health 2020; 8: e931–41	2	Scott et al. Lancet Glob Health 2018; 6: e659–67	3		4		5	
1	Seaman et al. Lancet Glob Health 2020; 8: e931–41												
2	Scott et al. Lancet Glob Health 2018; 6: e659–67												
3													
4													
5													

## Evidence statement

Gives a succinct overview of available data sources (with references) and conclusions that can be drawn from the evidence.

## References

Data sources referenced in the evidence statement.

# PERFORMANCE MATRIX

## Performance

Size and direction of the effect, including uncertainty bounds, taken from the evidence statement.

	Criterion	Product A	Product B
1	Performance – including upper and lower bounds	75% (62% - 86%)	83% (79% - 88%)
	Evidence quality	Low	Very low
2	Performance – including upper and lower bounds	Guaranteed at fixed price for 5 years	Supply from 2022
	Evidence quality	High	Low

## Evidence quality

Brief assessment of evidence quality, based on the confidence in the evidence summary in sheet 3.2.

# CAPACITI DECISION-SUPPORT TOOL – EXAMPLE

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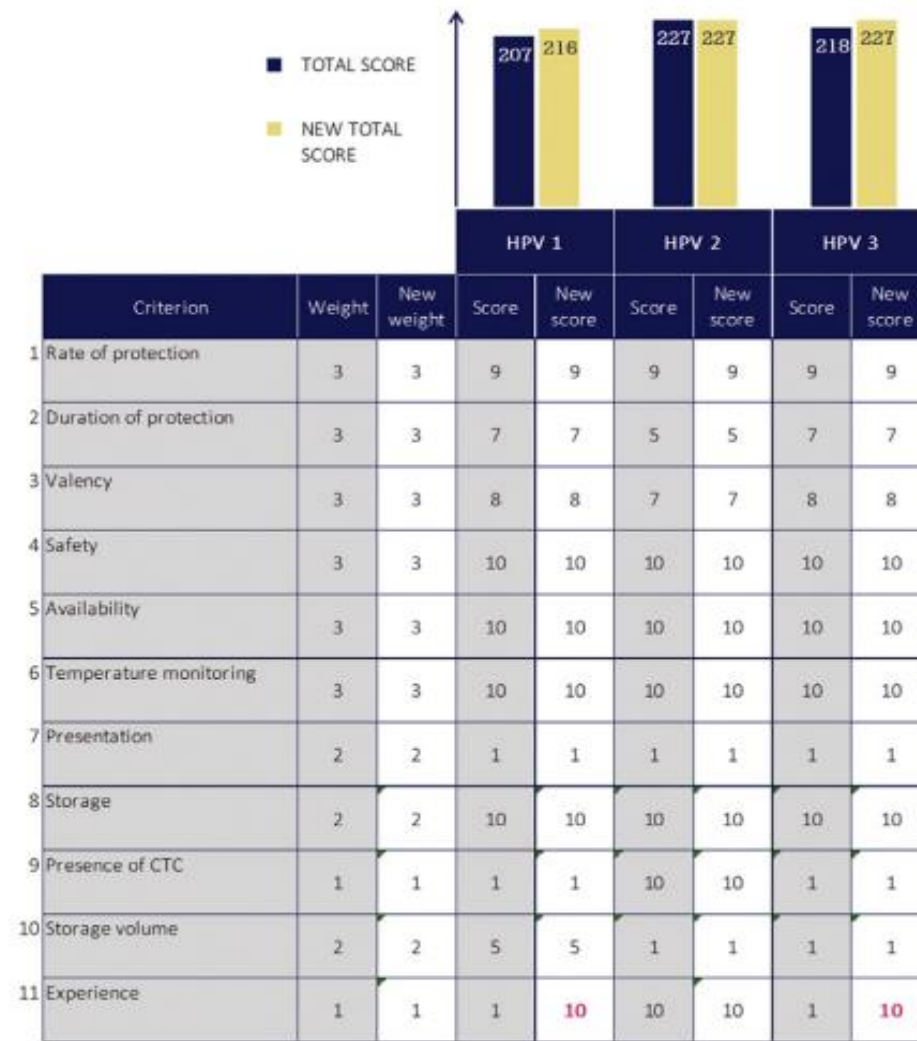
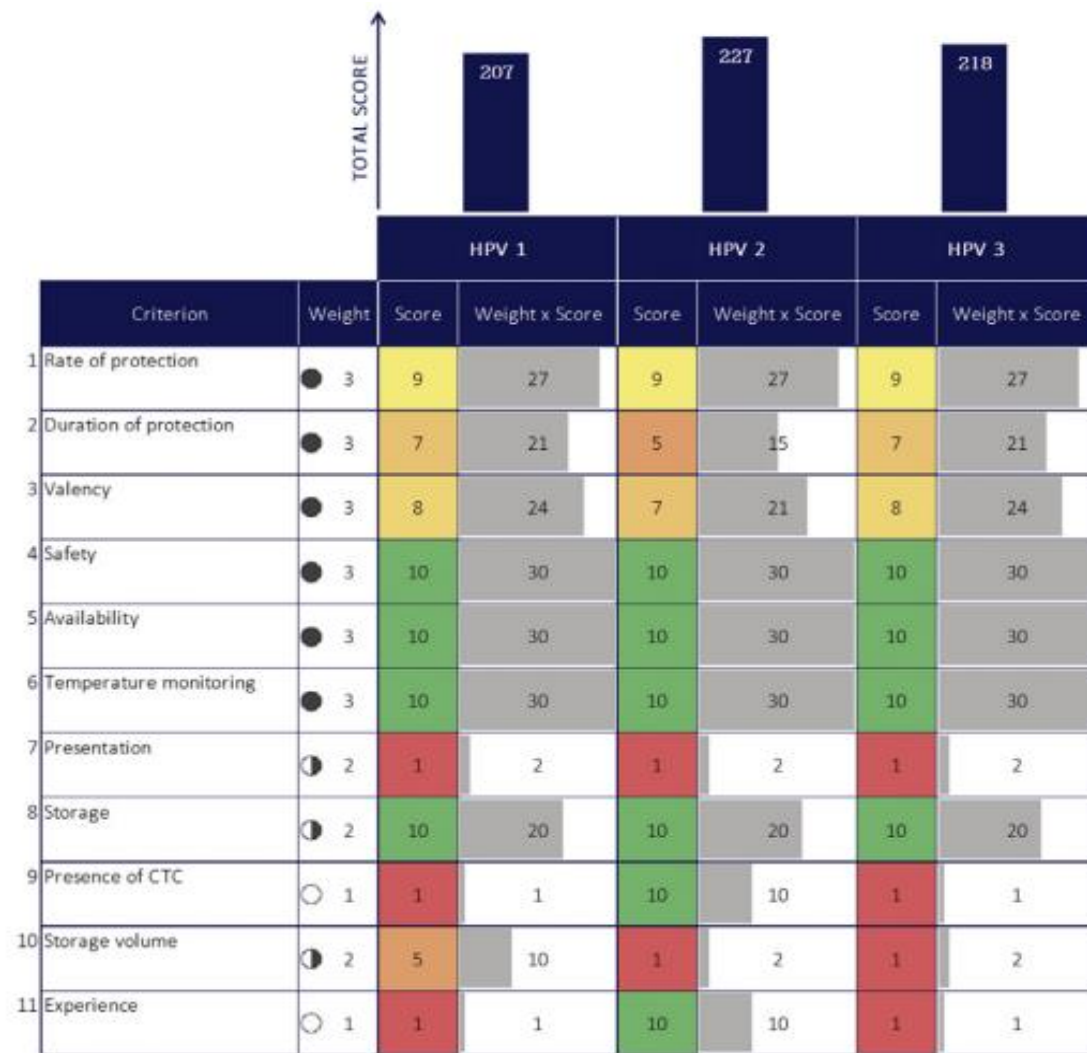
## Step 4 – Appraisal

Scoring according to selected criteria and their relative weights will then support deliberation to identify the most favorable option to be vetted by relevant stakeholders

Criterion	Weight	RV scenario 1		RV scenario 2	
		Score	Weight x Score	Score	Weight x Score
1. Burden of disease	5	9	45	9	45
2. Impact	4	9	36	8	32
3. Local production	3	10	30	10	30
4. Cold chain capacity	4	0	0	10	40
5. Vaccine availability	4	5	20	5	20
6. Level of wastage	3	0	0	10	30
7. Schedule	3	10	30	10	30
8. AEFI	4	10	40	10	40
9. Community acceptance	4	0	0	0	40

Total score: 201 (RV scenario 1), 307 (RV scenario 2)

# DATA UNCERTAINTY



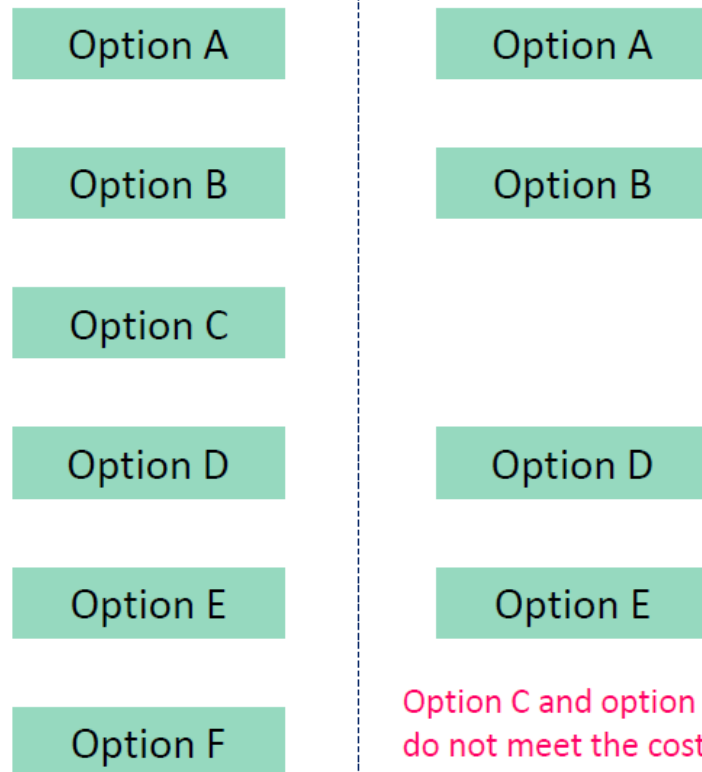


# USING DECISION-RULES

## Using rules for the criteria cost-effectiveness and budget impact

### Criterion: cost-effectiveness

Applied before other criteria. Options meeting the threshold are evaluated further.

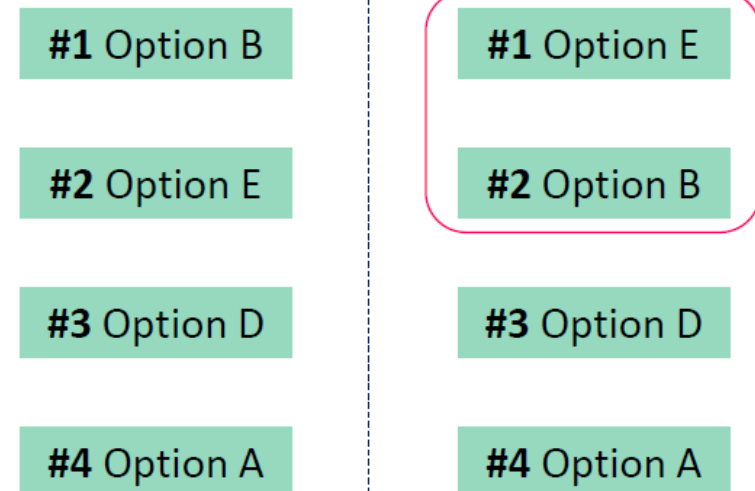


Rank options according to **all criteria** (except cost-effectiveness and budget impact)



### Criterion: budget impact

Applied after other criteria. May change the final rank order.



Option B performs best against the criteria and option A performs worst.

If option E requires a lower budget than option B, the final ranking may change.

# CAPACITI DECISION-SUPPORT TOOL – EXAMPLE



## Step 3 – Assessment

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7. Schedule	3	10	30	10	30
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9. Community acceptance	4	0	0	0	40



## Step 5 – Recommendation

# BENEFITS TO THE IMMUNIZATION PROGRAMME AND THE HEALTH SYSTEM BENEFITS IN ETHIOPIA AND INDONESIA

- 1. The approach provided a deliberative and inclusive process** that included relevant stakeholders with various functions in the health system, and ultimately led to shared and aligned decision making.
- 2. The MCDA approach encouraged users to consider a broader set of criteria and systematically identify and summarize available evidence** when making immunization related decisions.
- 3. The stepwise approach helped identify and make explicit important evidence gaps**, which can contribute to setting research agenda, both at national and regional levels, encouraging collaboration between different sectors.

# WHAT WHO REGIONS ARE SAYING ABOUT THE CAPACITI DECISION-SUPPORT TOOL

## PAHO

### Regional workshop on evidence-based decision-making

Rio, Brazil, 13-15 March 2023

**Feedback based on group work:** Recognized value in using CAPACITI in synergy with ProVac in the PAHO region to support evidence-based decision-making

## SEARO

### Regional workshop on introduction of new and underutilized vaccines

Bangkok, Thailand, 25-28 April 2023

**Feedback based on group work:** "CAPACITI approach can be useful tool to support prioritization of NVIs"

## AFRO IST/West

**Dr. Joseph Biey**, medical officer, vaccine preventable diseases

*"The decision-support framework is right now very much needed because **programmes are facing so many challenges in terms of deciding on various options**. The tool will enable countries to quickly and based on best evidence decide, and here I refer to the multi-criteria-decision analysis, [...] **when it comes to vaccine introduction, strategy, activity.**"*

*"I'm referring to this **for the EPI programmes**. [...] **If this approach, this methodology, is very well used it can change really in terms of how the country and EPI are performing, at least for our region.**"*

# USING FINDINGS TO

## Strengthen programmes

- Improving prioritization of immunization interventions specific to country context
- Engagement of relevant stakeholders represented for a given question through engagement in deliberative decision-making processes

## Optimize product development

- Building evidence of country preferences/priorities to inform product development at national, regional and global level

Findings

## Generate evidence

- Communicate evidence needs for robust national decision making in countries
- Manufacturers and/or global partners to play a role in generating such evidence
- To analyze and understand trends in decision-making and associated criteria/drivers

## Set national research agendas

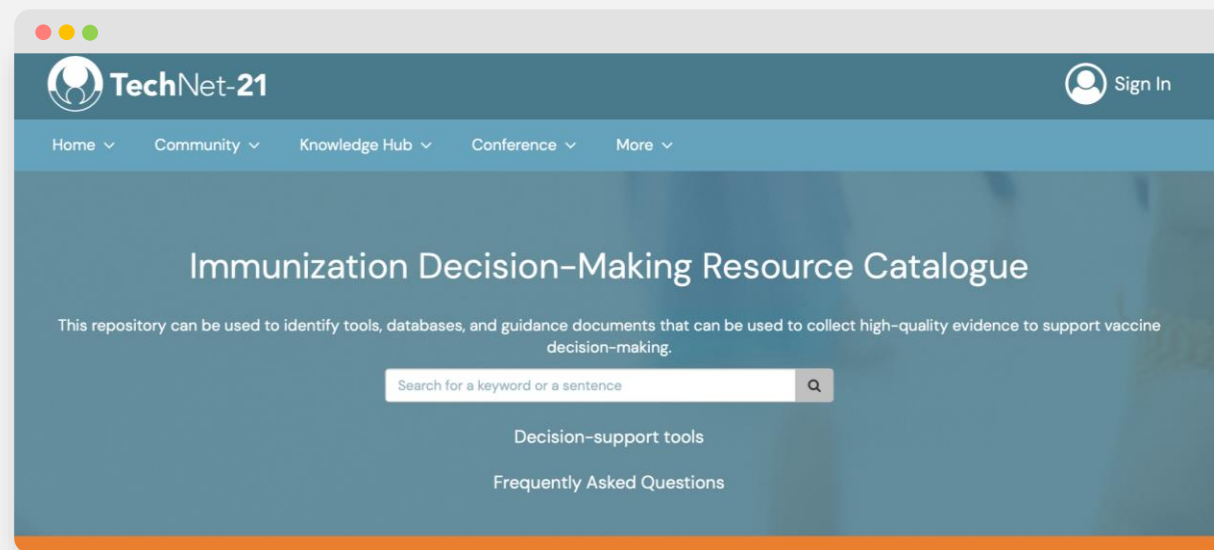
- Evidence gaps of immunization programme performance systematically documented
- Conduct country specific studies to inform country decision-making

## Optimize introduction

- Ahead of introduction decision-making countries can use the decision-support tool to prioritize the order of new and underutilized introduction

# There are several tools and guidance documents to support decision making

- The **Immunization decision making resource catalogue** contains resources of relevance to **high-quality evidence** to support vaccine decision-making.
- Organized in a **user-friendly** way for structured browsing and comparison of resources.
- **Intended users** include country-level decision-makers, NITAGs, international partner organizations, and other policy making and coordination bodies.

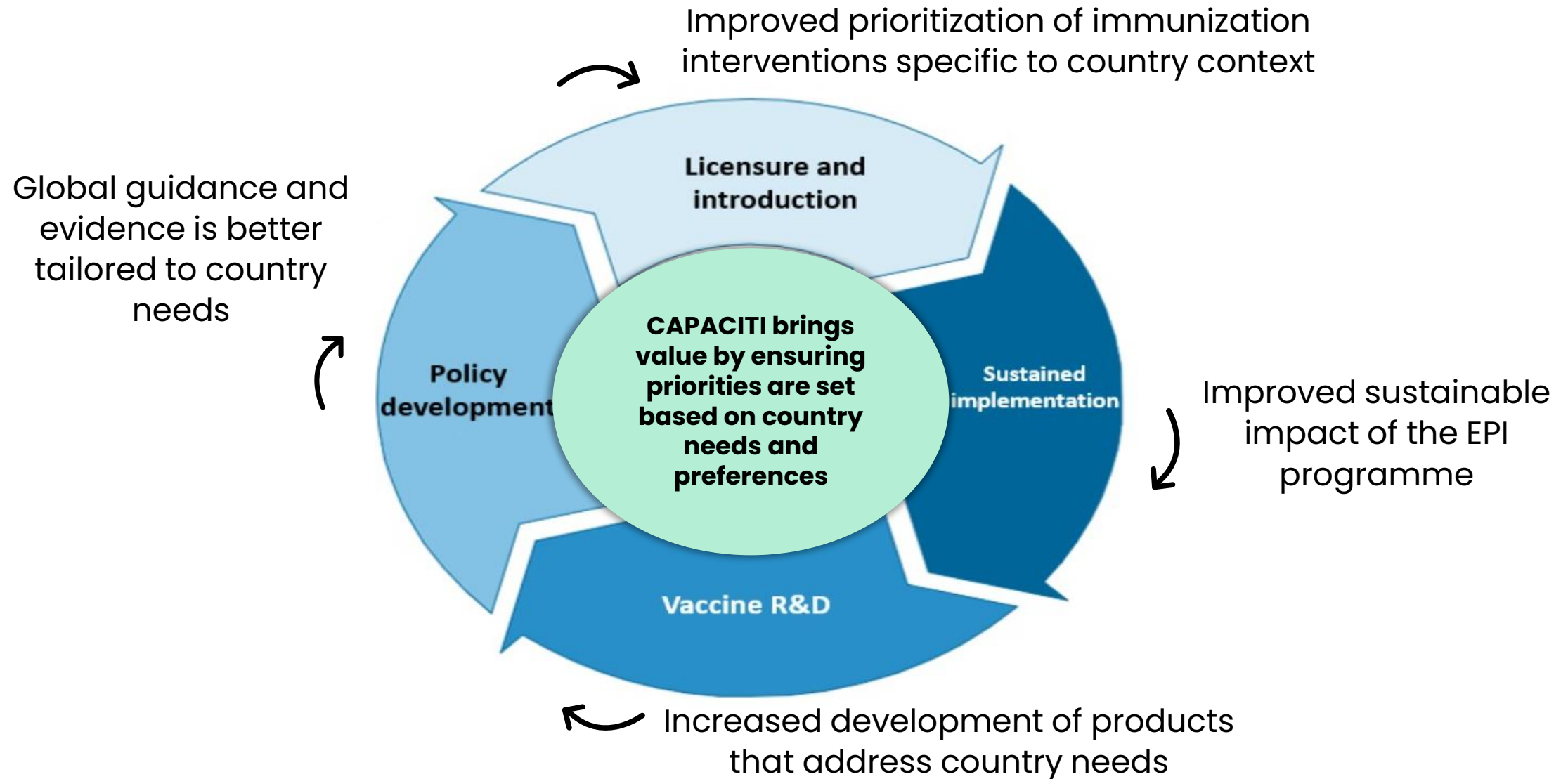


## Key features:

- ✓ TechNet-21 integrated
- ✓ Information sources are classified per criteria for decision-making to allow for easy browsing
- ✓ Synopsis is provided for each of the sources to allow comparison between sources
- ✓ Sub-pages can be shared as links with colleagues

## [TechNet-21 Decision-Making](#)

# Summary



**QUESTION:** Which innovations would benefit from use of the CAPACITI Innovation Framework?

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**QUESTION:** Which decision-questions you are facing would benefit from leveraging the CAPACITI decision-support tool?

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# Thank You!



## Resources

**WHO webpage for  
CAPACITI:**

<https://www.who.int/teams/immunization-vaccines-and-biologicals/immunization-analysis-and-insights/vaccine-impact-value/economic-assessments/vaccine-prioritization>

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# Which type of MCDA to use?

	Qualitative	Rules-based	Quantitative
Evidence complexity	Suitable for <b>complex evidence</b>	Suitable for <b>complex evidence</b>	Less suitable for discussing nuances in the evidence
Group dynamics	Works better in committees with equal participation	Works better in committees with equal participation	Good to deal with <b>hierarchy</b> and <b>dominant</b> members
Number of options	Increased complexity with more options	Medium complexity with many options.	Reduces complexity if there are <b>many options</b>
Criteria	Can incorporate constraints and <b>inter-dependent</b> criteria	Limited ability to capture trade-offs between options	Inter-dependent criteria and constraints must be separated
Transparency	Less appropriate in settings with limited transparency	Some level of structure and transparency	Structured and transparent for <b>high priority</b> questions

# QUALITATIVE MCDA – DELIBERATION BASED ON EVIDENCE STATEMENTS

## Assessing evidence quality

There are established frameworks for assessing the quality of clinical evidence (GRADE) and economic analysis (CHEERS checklist)<sup>1</sup>.

To apply a consistent scale across criteria, you can use checklist #2. The points of checklist #2 generalise the principles in GRADE and CHEERS.

Criterion:	Very low	Low	Moderate	High
1 Study limitations and risk of bias				
2 Quantity and consistency of results				
3 Applicability of evidence				
4 Precision				
OVERALL SCORE				

<sup>1</sup>Husereau D, Drummond M, Petrou S, et al. Consolidated health economic evaluation reporting standards (CHEERS)—explanation and elaboration: a report of the ISPOR Health Economic Evaluations Publication Guidelines Good Reporting Practices Task Force. Value Health. 2013;16(2):231-250.