

# Fostering the use of evidence: IA2030 impact and cost estimates

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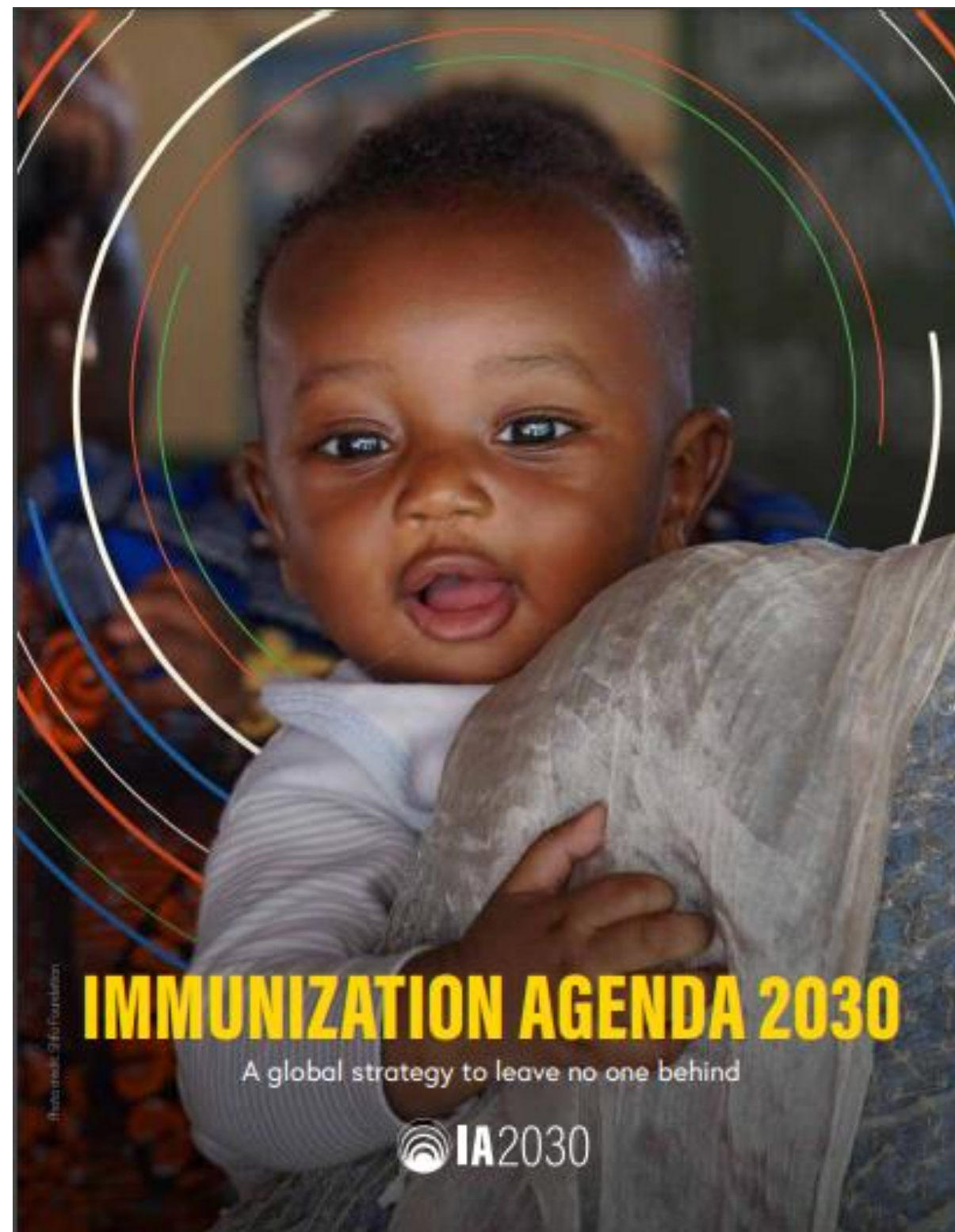
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# Agenda

1. Immunization Agenda 2030 (IA2030)
2. IA2030 impact and cost estimates: analytical framework and results
3. Use cases
4. Lessons learned & next steps

# Immunization Agenda 2030 (IA2030)

A Global Strategy to Leave No One Behind



## Vision

A world where everyone,  
everywhere, at every age...

... fully benefits  
from vaccines...

... for good health  
and well-being



## Impact goals

Reduce mortality and morbidity from vaccine-preventable diseases for all across the life course.

Leave no one behind, by increasing equitable access and use of new and existing vaccines.

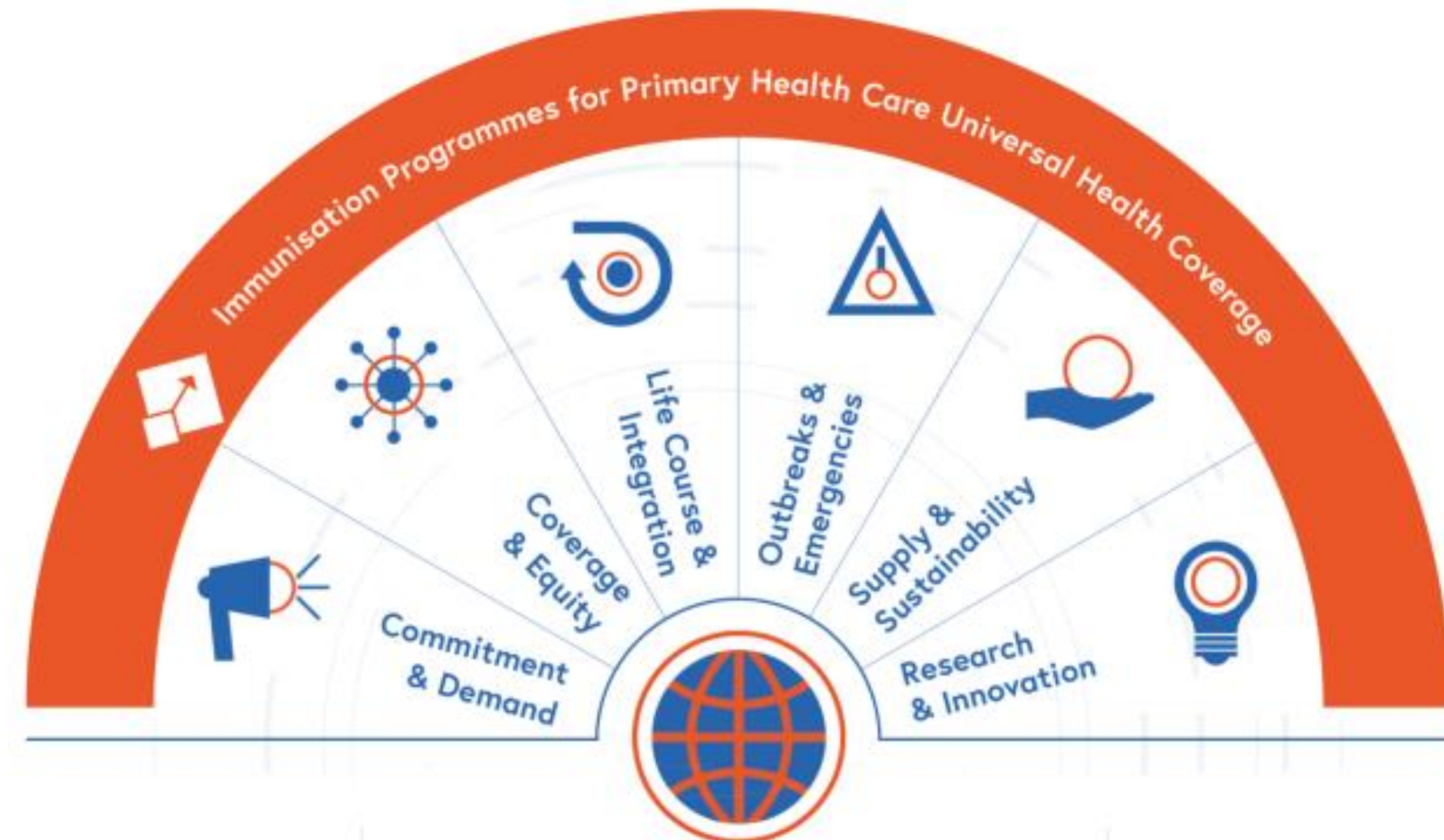
Ensure good health and well-being for everyone by strengthening immunization within primary health care and contributing to universal health coverage and sustainable development.

# Immunization Agenda 2030 (IA2030)

Strategic framework: strategic priorities and principles

## 7 Strategic Priorities

*informed by*



## 4 Core Principles for action



People Centred



Country Owned

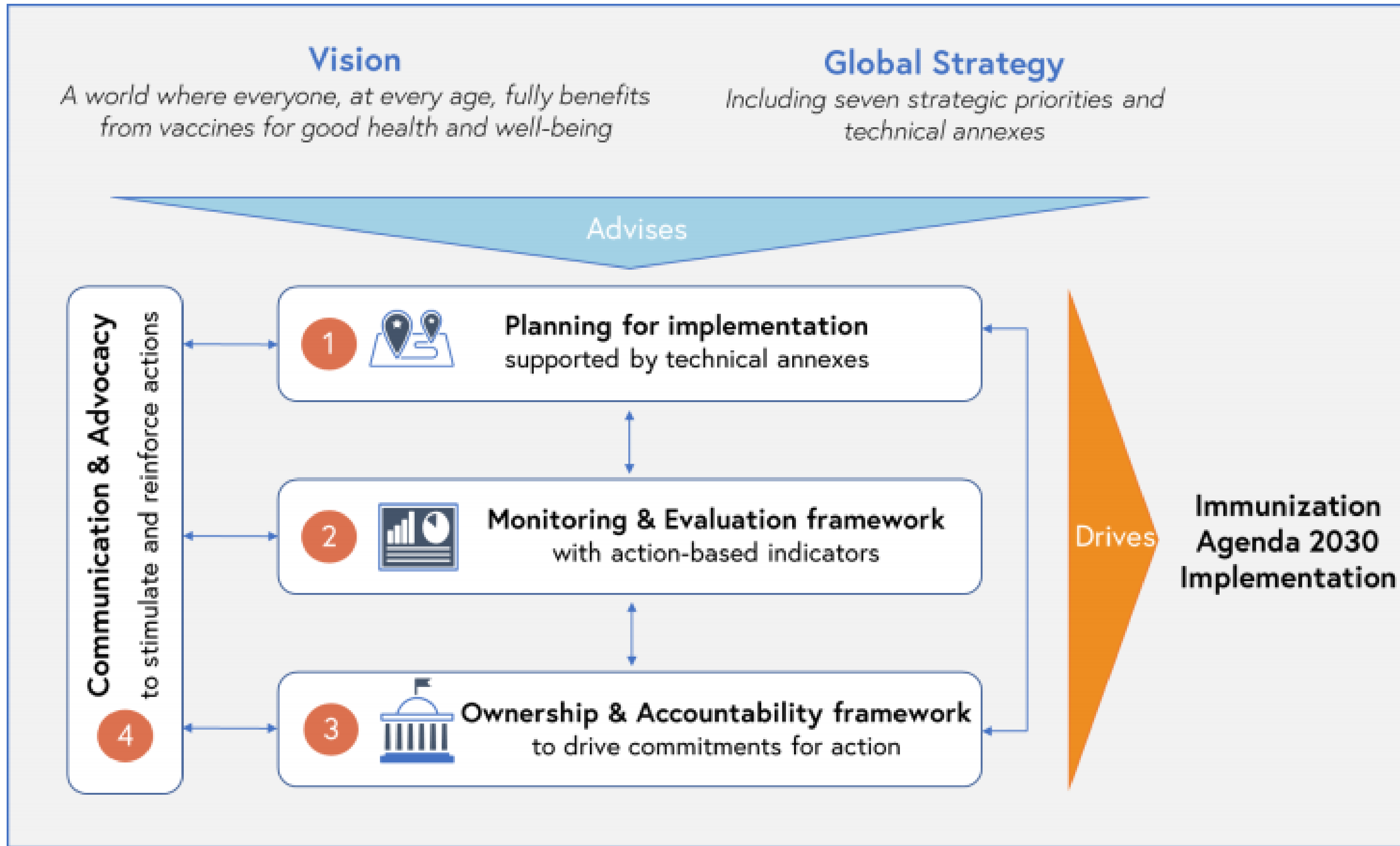


Partnership Based



Data Guided

# IA2030 Framework for Action



# IA2030 vaccine impact and cost estimates

## Objectives and scope of analysis

### Questions to inform IA2030

1. What is the impact of vaccination on mortality in the next decade at the global level? -> **impact estimates**
2. How much investment is needed for the next decade to achieve IA2030 targets? -> **cost estimates**

### Scope

#### Time frame

- Future projection for 2021–2030

#### Target countries

- All 194 WHO Member States
- Reporting at the global and regional level

#### Pathogens

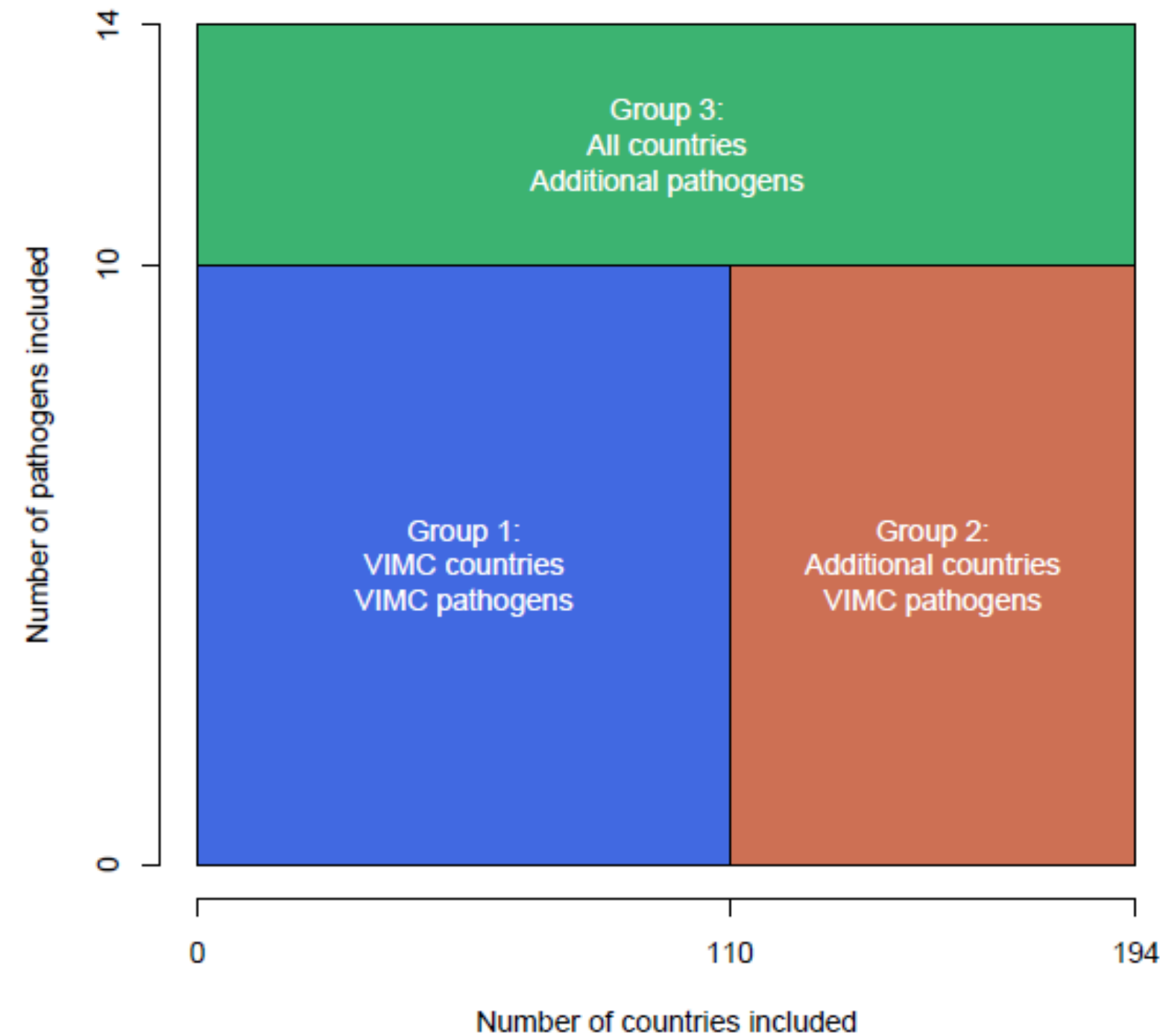
- 14 pathogens prioritized based on strategic priorities, data availability and feasibility

#### Output

- 1) IA2030 coverage scenarios for 2021–2030
- 2) Number of future deaths averted through vaccination if target coverage levels are achieved
- 3) Vaccine product, immunization delivery, and stockpile costs for 2021–2030

# IA2030 vaccine impact estimates

Analytical framework based on data availability



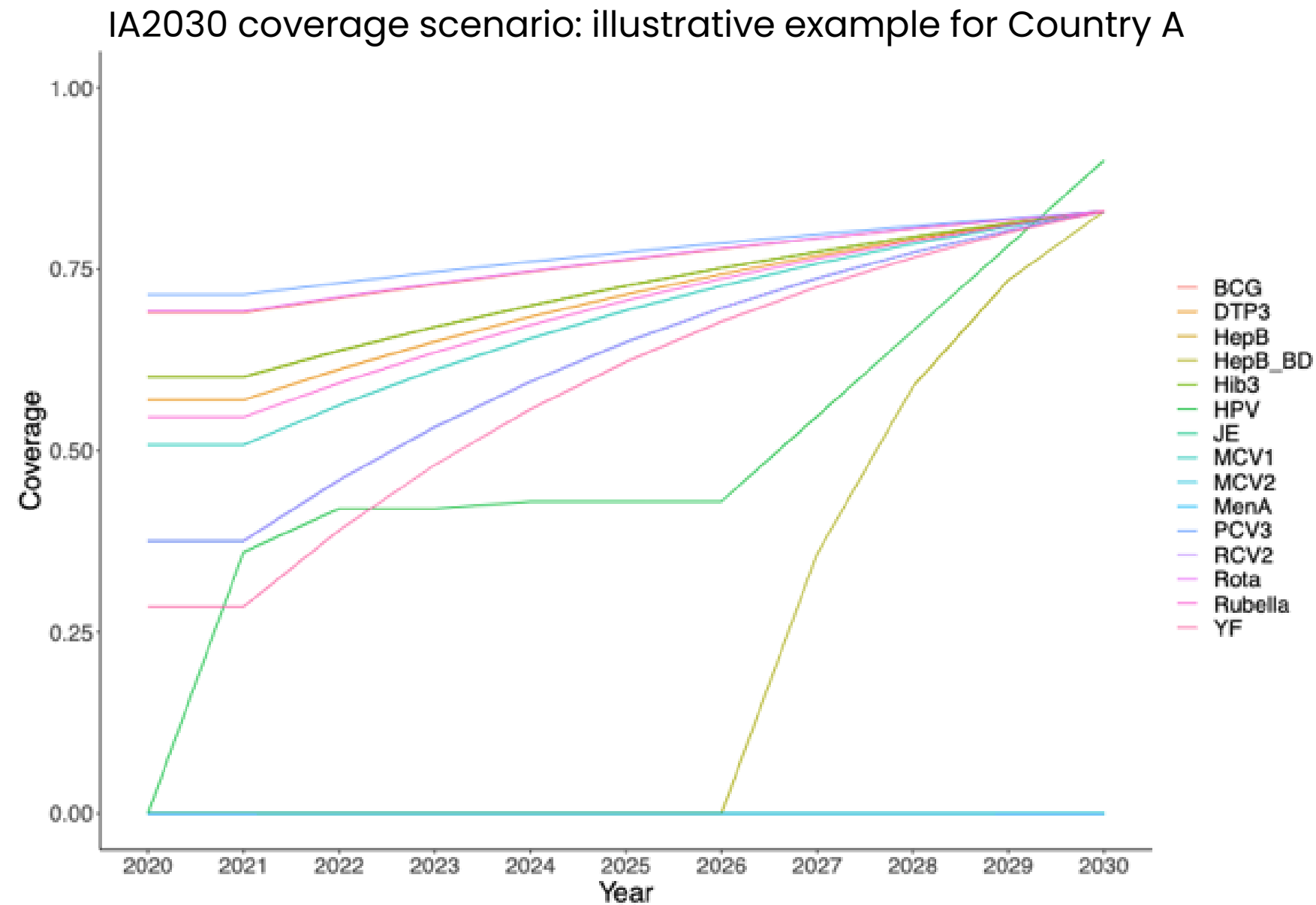
**For 10 pathogens:** impact estimates from the Vaccine Impact Modelling Consortium (VIMC)

Categories	Pathogens	Countries
<b>Group 1</b>	10 pathogens (HepB, Hib, HPV, JE, measles, MenA, Pneumo, Rota, Rubella, yellow fever)	110 countries
<b>Group 2</b>		84 countries
<b>Group 3</b>	4 pathogens (diphtheria, tetanus, pertussis and tuberculosis)	194 countries

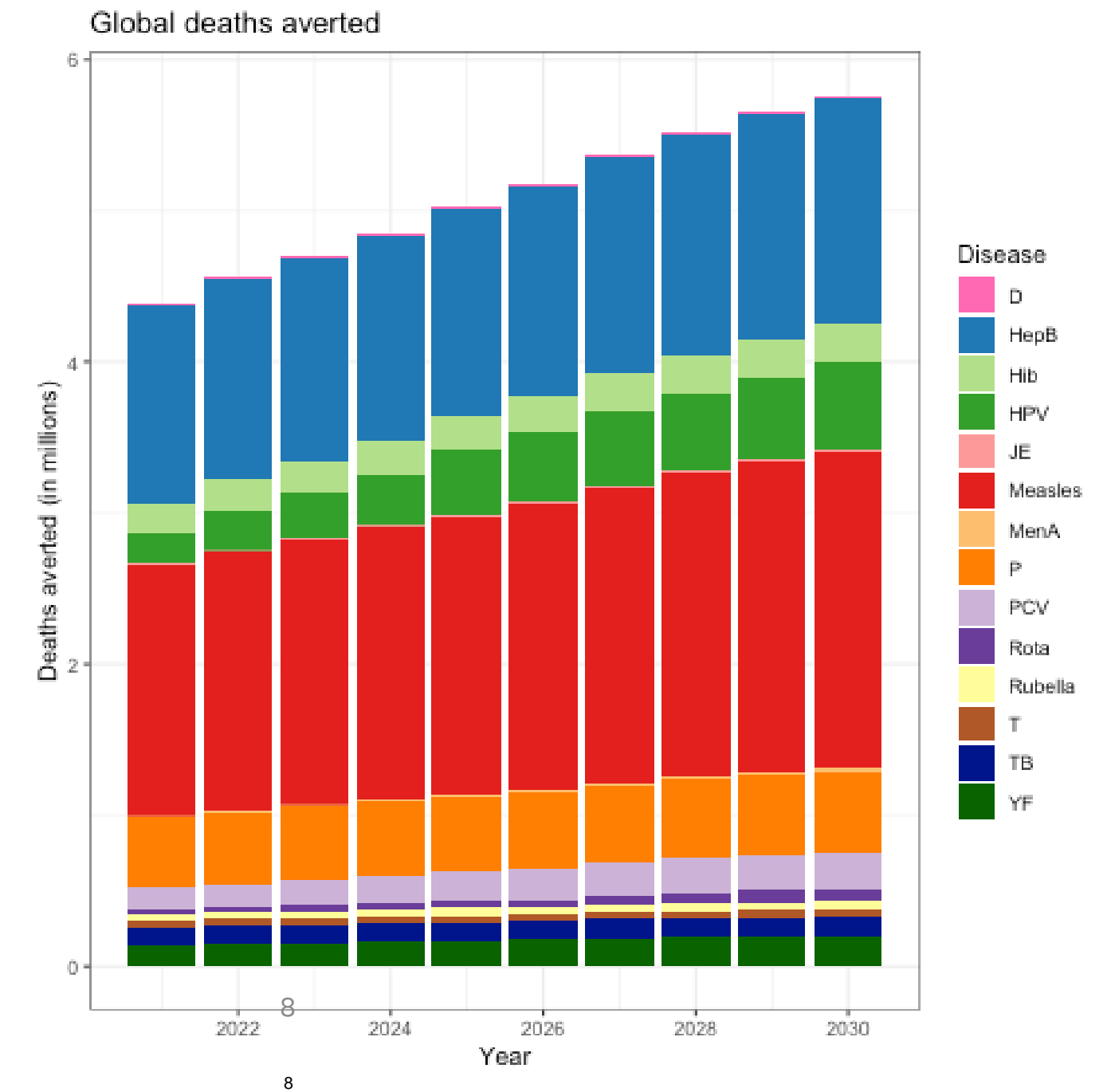
**For 4 pathogens:** observed deaths averted from the Global Burden of Disease study 2019; vaccine effectiveness estimates from published studies

# IA2030 vaccine impact estimates

## Results



Carter, Austin, Msemburi, William, Sim, So Yoon, A.M. Gaythorpe, Katy, Lindstrand, Ann and Hutubessy, Raymond C.W., Modeling the Impact of Vaccination for the Immunization Agenda 2030: Deaths Averted Due to Vaccination Against 14 Pathogens in 194 Countries from 2021-2030 (April 20, 2021). Available at SSRN: <https://ssrn.com/abstract=3830781> or <http://dx.doi.org/10.2139/ssrn.3830781> (*manuscript under peer review*)



IG 1.1	Year	# Deaths averted
<b>Baseline</b>	2019	4.2 M
<b>Target</b>	2021-30	Around 50 M (aggregate)
	2021-30	Around 5 M per year (average)
	2021	4.4 M
	2030	5.8 M

# IA2030 cost estimates

## Analytical framework



### Vaccine cost

- Vaccine products
- Injection supplies
- Wastage
- Buffer stock
- Freight

### Immunization Delivery cost

- Labor
- Storage
- Transportation
- Other capital cost
- Other recurrent cost (program management, IEC/social mobilization, etc.)

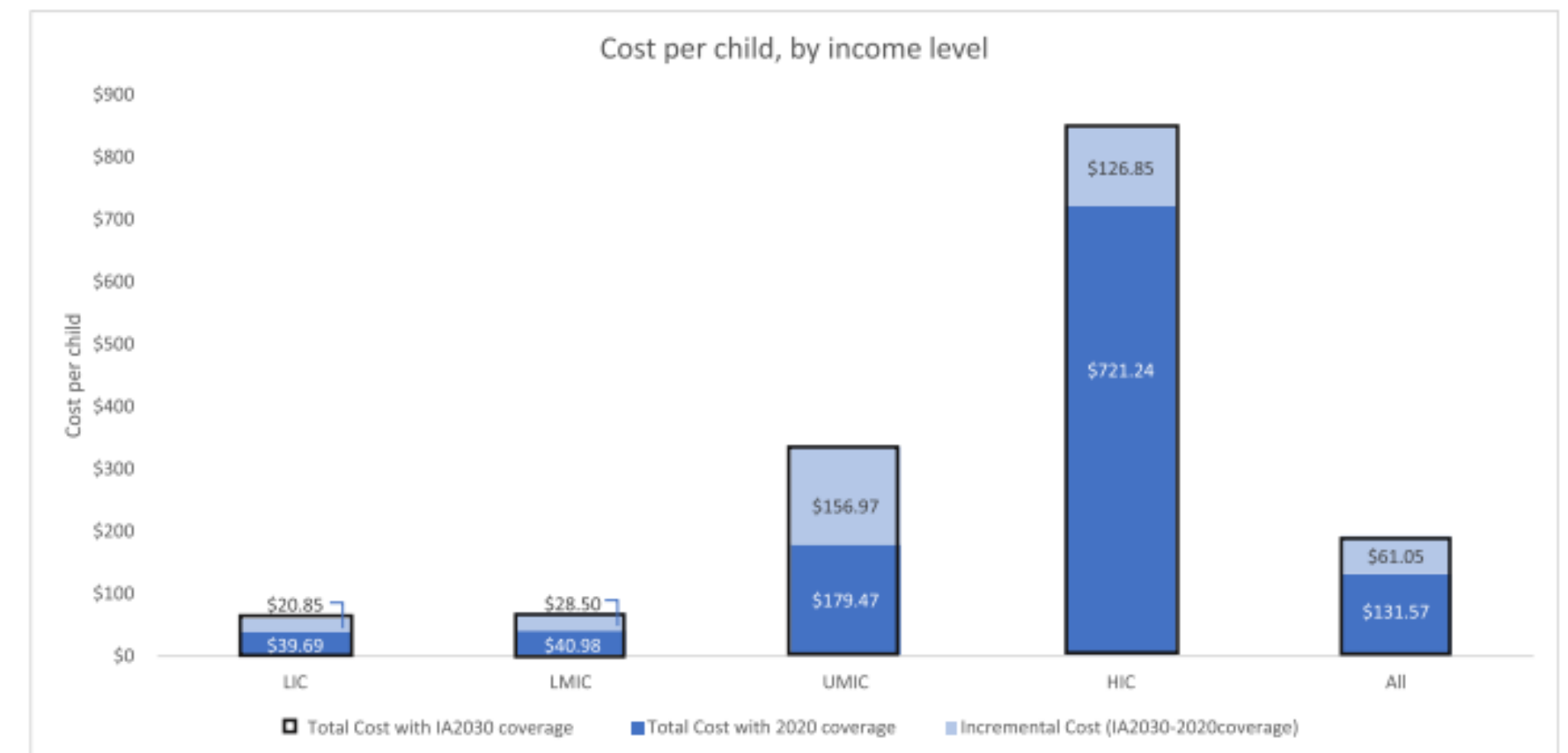
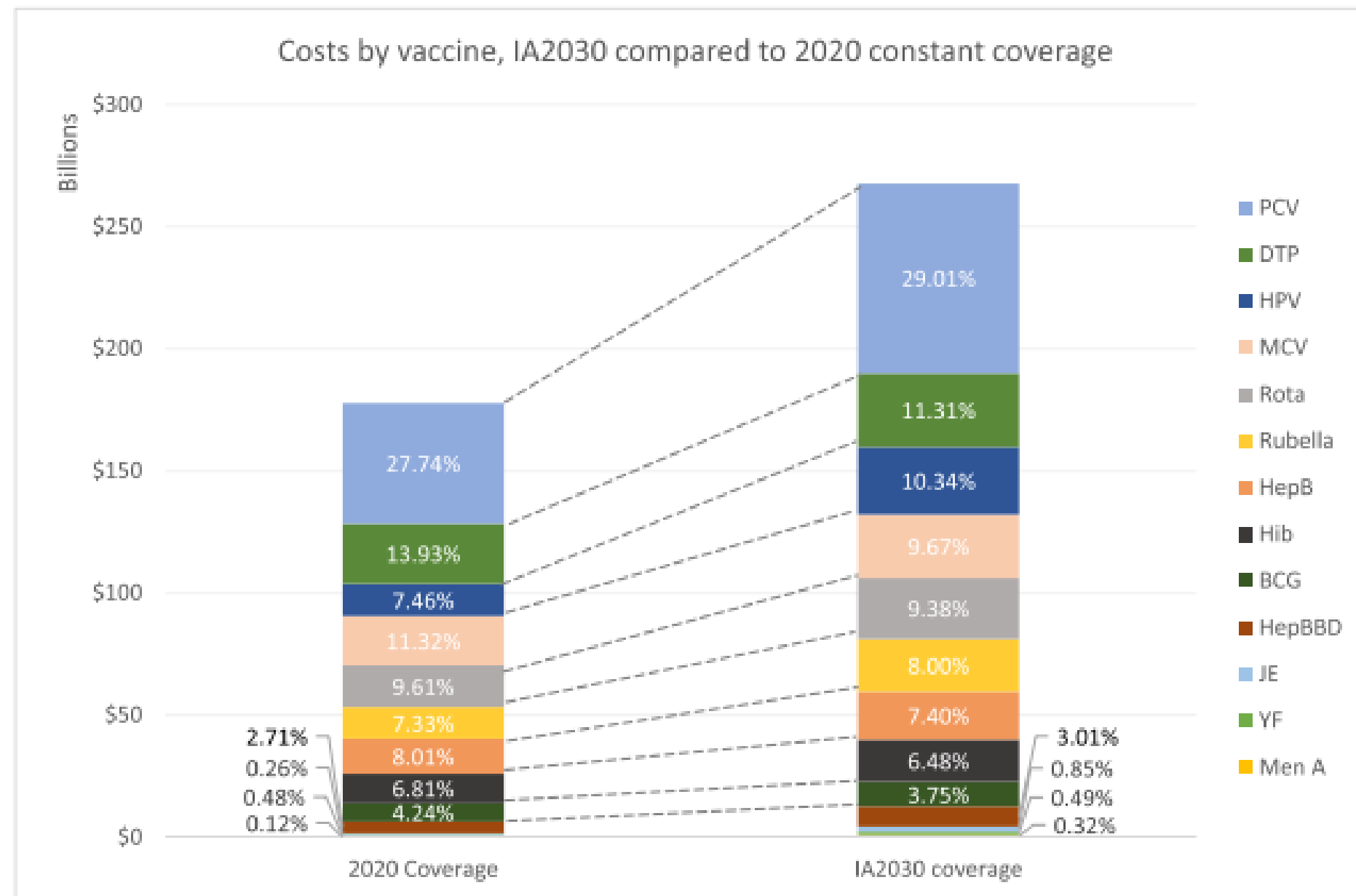
### Data availability for delivery cost per dose

- WHO-UNICEF country multi-year plans (cMYP); C4P tool for HPV
- Immunization Delivery Cost Catalogue (IDCC)
- EPIC cost modeling study by Portnoy et al (2020)
- Additional literature review on HICs by IVAC (2021)

**Perspective:** the immunization funder perspective, including government and donors such as Gavi, the vaccine alliance, and other development partners

# IA2030 cost estimates

Results: total cost of immunization programs is \$269.8 billion (95% confidence interval: \$247.1 – \$311.8); incremental cost is \$89.9 billion (\$27.7–\$110.1)



Salin Sriudomporn, Elizabeth Watts, So Yoon Sim, Raymond Hutubessy, Bryan Patenaude, Achieving immunization agenda 2030 coverage targets for 14 pathogens: Projected product and immunization delivery costs for 194 Countries, 2021–2030, Vaccine: X, Volume 13, 2023, <https://doi.org/10.1016/j.jvacx.2022.100256>.

# World Immunization Week 2021 & 74<sup>th</sup> World Health Assembly

Use case: advocacy

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Immunization services begin slow recovery from COVID-19 disruptions, though millions of children remain at risk from deadly diseases – WHO, UNICEF, Gavi

## Immunization services begin slow recovery from COVID-19 disruptions, though millions of children remain at risk from deadly diseases – WHO, UNICEF, Gavi

### Ambitious new global strategy aims to save over 50 million lives through vaccination

26 April 2021 | News release | Reading time: 5 min (1221 words)

## New UN-led global immunization push aims to save more than 50 million lives

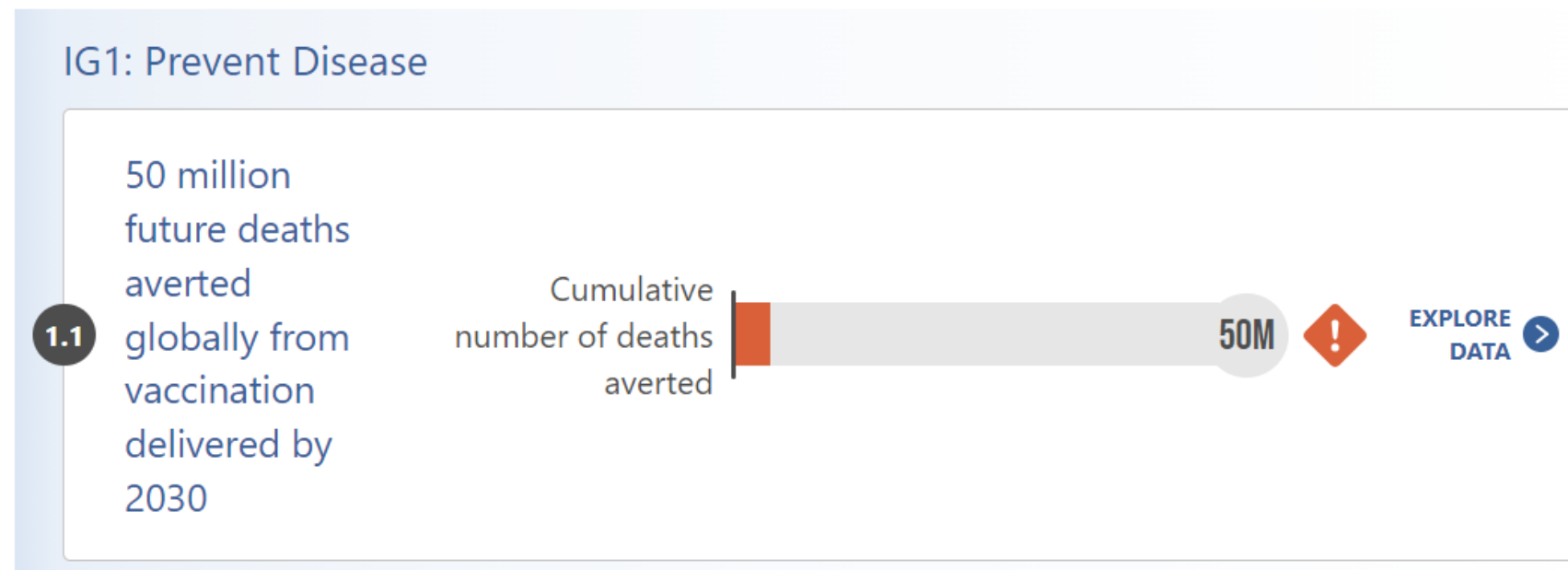


© UNICEF/Jannatul Mawa | A young boy is vaccinated against measles and rubella during a national vaccination campaign in Bangladesh.

*“The Agenda focuses on vaccination throughout life, from infancy through to adolescence and older age. If fully implemented, it will avert an estimated 50 million deaths, according to WHO – 75% of them in low- and lower-middle income countries.”*

# Impact Goal indicator 1.1 “number of future deaths averted through immunization”

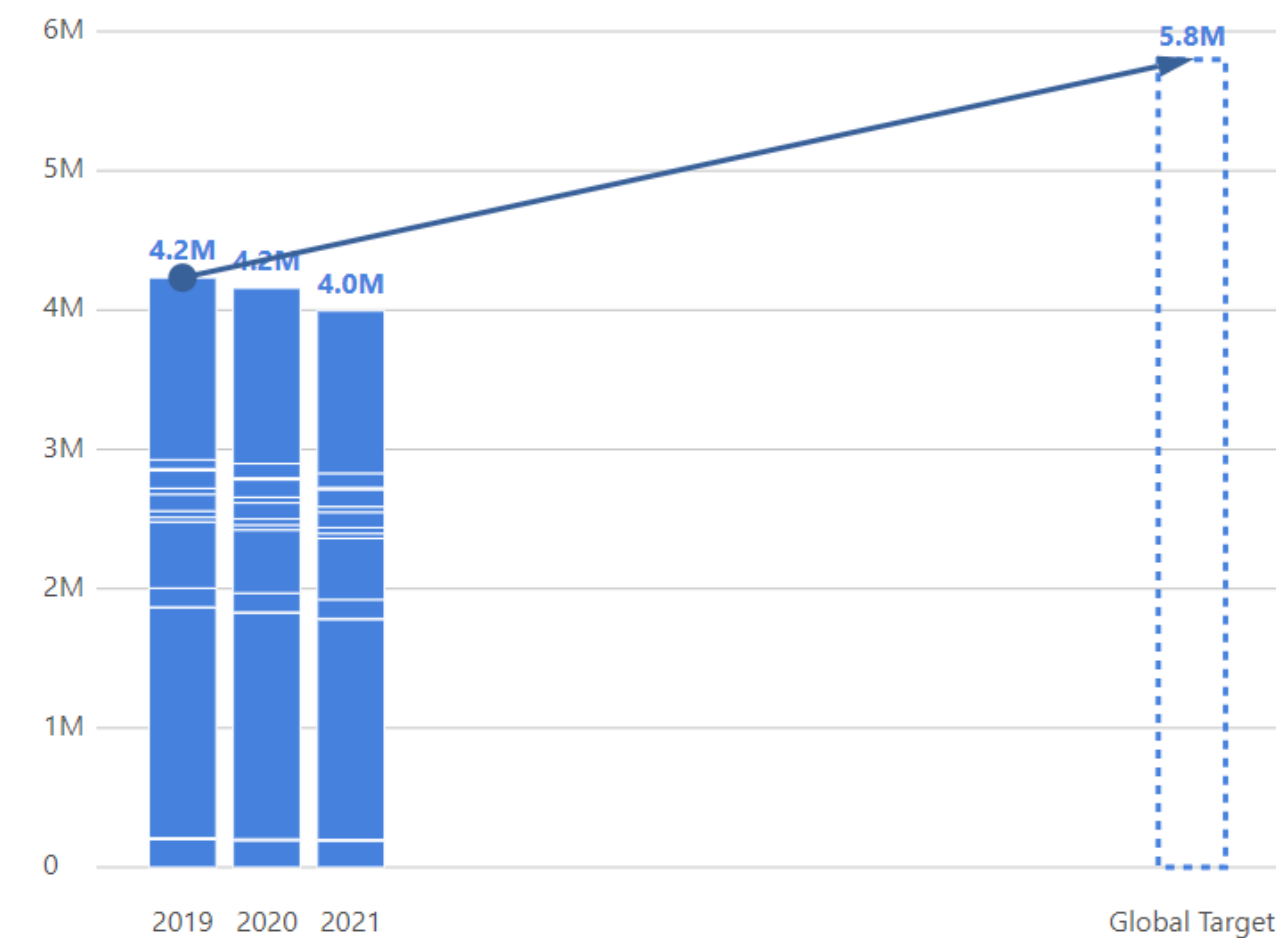
Use case: monitoring & evaluation



*IG 1.1 as one of 7 impact goal indicators for the IA2030 Monitoring and Evaluation (M&E) Framework that enables the use of data for action to continuously improve immunization programs at all levels*

Number of future deaths averted through immunization—Global

Download Chart



If target is reached, **50 million** total future deaths will be averted during 2021-2030 and an average of 5 million deaths will be averted each year.

Off track toward 2030 target

Available on [IA2030 Scorecard for Immunization Agenda 2030](#)

# WHO's second investment case

Use case: resource mobilization

*Input into estimation of Return on Investment through achieving the Triple Billion targets of WHO's Thirteenth General Programme of Work, 2019-2023*



**RETURN ON INVESTMENT**

## 1:35

The cost of WHO in net present value terms over the coming 10-year period, 2022-2031, is US\$ 33 billion and the public value created as a result of this investment in the most conservative estimation possible is likely to be between US\$ 1.155 trillion and US\$ 1.46 trillion. The resulting return on investment is US\$ 35 for every US\$ 1 invested in WHO.

## A healthy return

Investment case for a sustainably financed WHO



# Lessons learned

1. **Community of practice** to identify partners and available evidence
2. **Early engagement and consultation with partners** to coordinate global estimates generation
3. **Iterative development** of Impact Goal indicator 1.1 in collaboration with IA2030 Monitoring & Evaluation group and Advocacy & Communication group
4. **Independent appraisal of modeled evidence and recommendations** by Immunization and vaccines related implementation research advisory committee (IVIR-AC)
5. **IA2030 mechanism** for feedback from regional offices
6. **Acknowledgement of limitations** inherent in the estimates and appropriate targeting of use cases
7. **Lessons** to be incorporated into the next steps

# Immunization and Vaccines Implementation Research Advisory Committee (IVIR-AC)

- **IVIR-AC** is the principal advisory group to WHO providing independent appraisal of and advice on implementation research related to vaccines and immunization
- Comprising upto 15 members representing various disciplines (mathematical modelling/quantitative methods, health economics, implementation research, etc)
- IVIR-AC's reviews inform immunization policy recommendations by the Strategic Advisory Group of Experts on Immunization (SAGE)
  - Standing session for IA2030 vaccine impact estimates
- Ongoing work on developing guidance for translating modelled evidence to inform immunization strategies, policies and programs



# Acknowledgement

## IA2030 impact estimates

### Stakeholder Committee

- **BMGF:** Emily Dansereau, Brittany Hagedorn, Niket Thakkar
- **CDC:** Mike Lynch, Dimitri Prybilski, Erin Palmisano
- **Gavi:** Dan Hogan, Todi Mengistu
- **IHME:** Jon Mosser
- **VIMC\*:** Katy Gaythorpe, Cherry Kang (previously VIMC Science Advisory Board)
- **UNICEF:** Ulla Griffiths
- **IVIR-AC:** Walt Orenstein
- **WHO DDI:** Somnath Chatterji
- **WHO IVB:** Naor Bar-Zeev, Ann Lindstrand, Raymond Hutubessy

### Project team

- Austin Carter
- Andrew Shattock
- William Msemburi
- Katy Gaythorpe
- Philipp Lambach
- Raymond Hutubessy
- Yoonie Sim

## IA2030 cost estimates

### Technical consultations

- **BMGF:** Logan Brenzel
- **Gavi:** Todi Mengistu
- **UNICEF:** Ulla Griffiths
- **US CDC:** Sarah Pallas
- **WHO IVB:** Nathalie Vande Maele, Karene Yeung
- **WHO HGF:** Karin Stenberg

### Project team

- **IVAC:** Salin Sriudomporn, Libby Watts, Bryan Patenaude
- **WHO IVB:** Yoonie Sim, Raymond Hutubessy

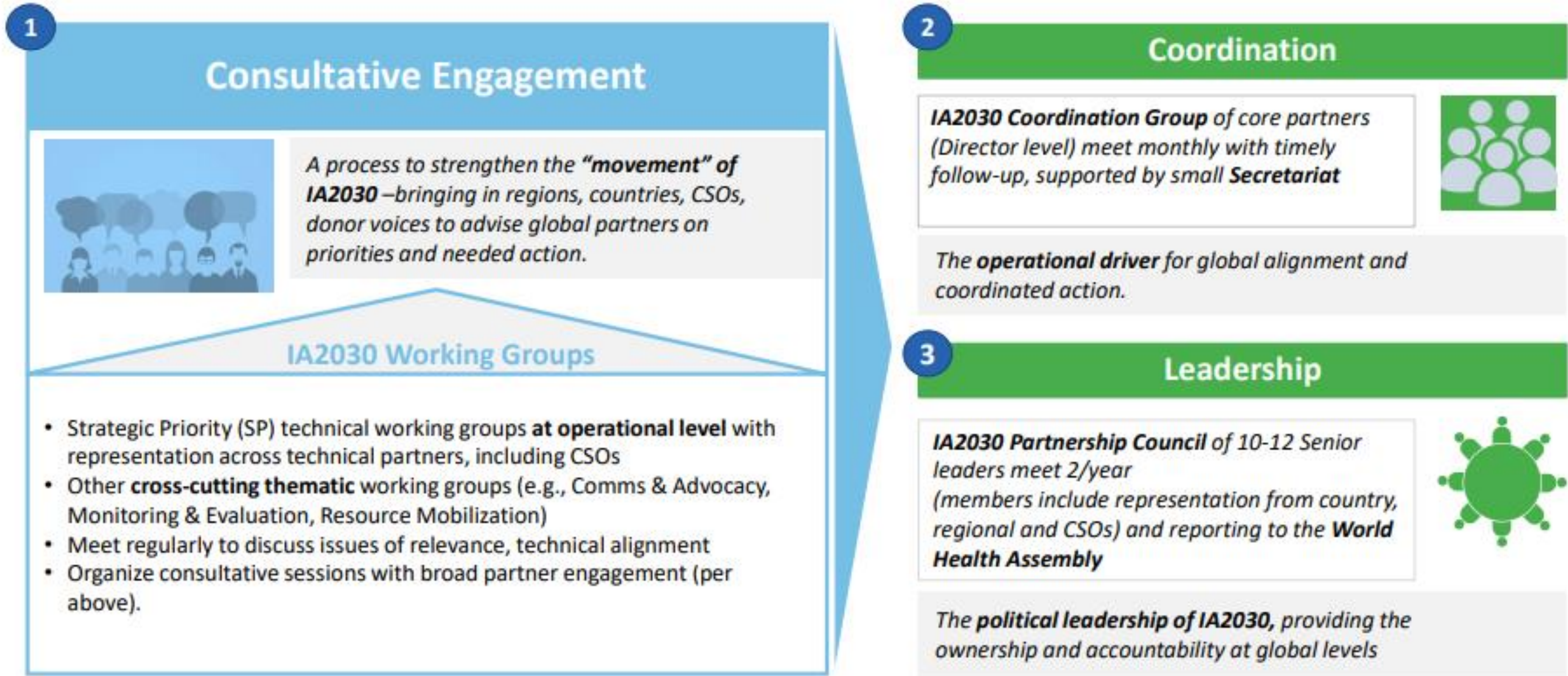
# Thank you



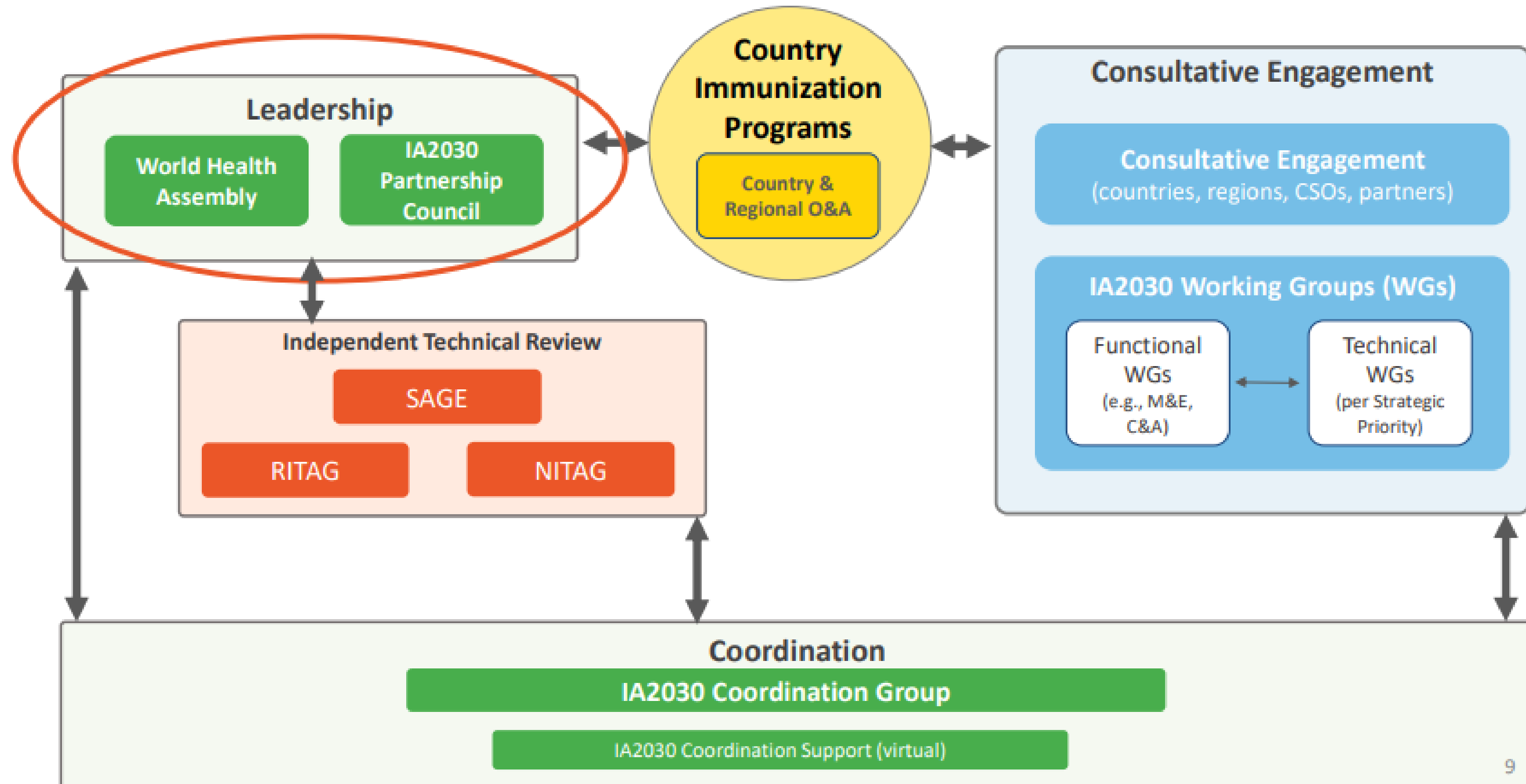
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# Appendix

# The IA2030 partnership model at global level



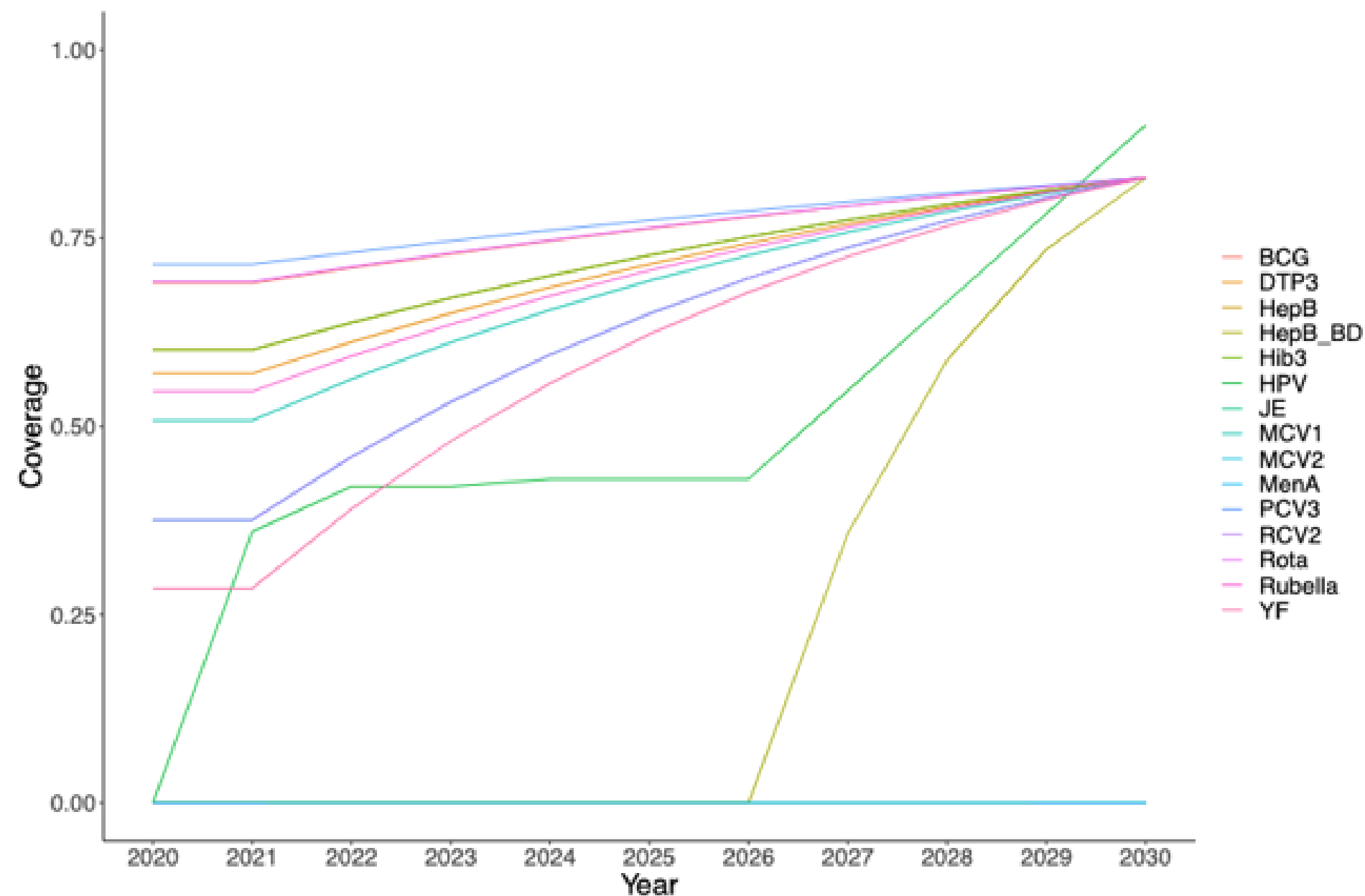
# Key information flow: IA2030 global-level partnership



# IA2030 coverage scenario

Common input for IA2030 vaccine impact and cost estimates

Illustrative example for Country A



## IA2030 coverage scenario

- The scenario reflects the vision of IA2030 where countries introduce all recommended vaccines in national immunization schedules and reach aspirational target coverage rates for the vaccines by 2030.

### Baseline level

- 2019 coverage levels are kept constant through 2021

### Vaccine-specific DTPcv-3 endpoints

- All coverage levels rise to country-specific DTP-cv 3 endpoints by 2030 (except HPV rising to 90% by 2030)

### New vaccine introduction

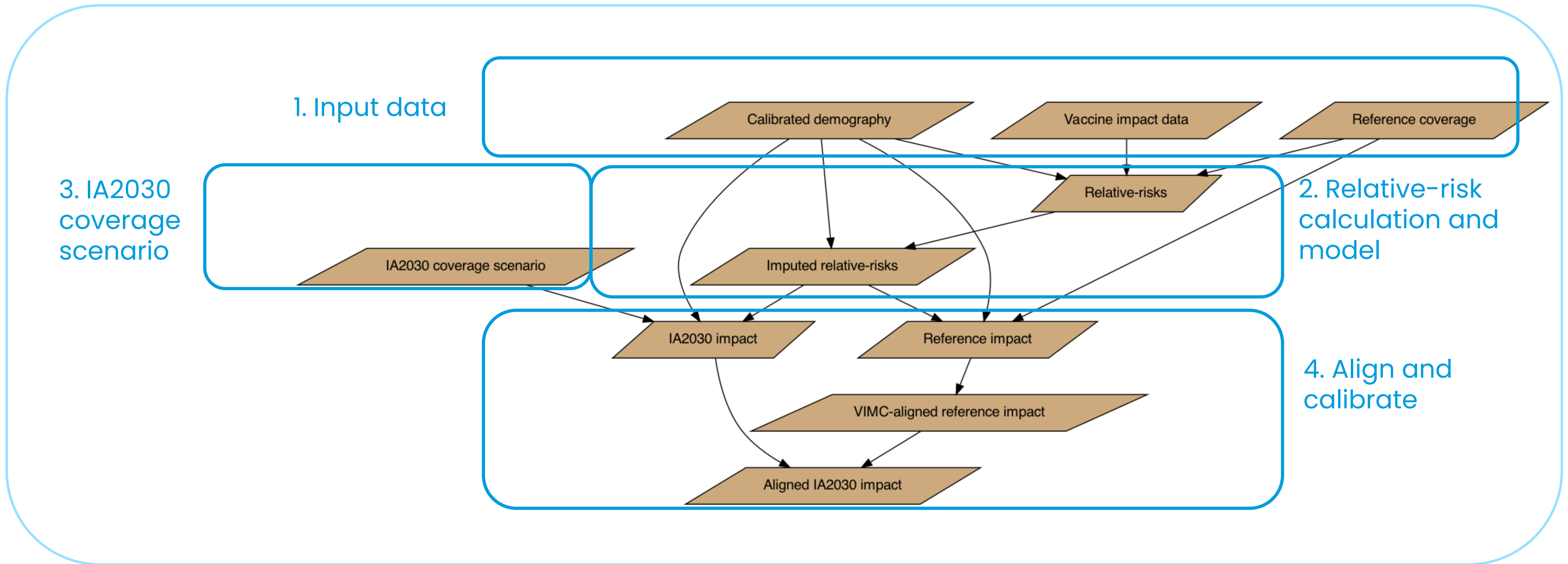
- Spread across years based on DTP3 coverage rate; assumptions based on disease-specific initiatives

### Speed of scale-up

- Non-linear scale up; assumptions based on disease-specific initiatives

# IA2030 vaccine impact estimates

## Process flowchart



# Year 3 Objectives

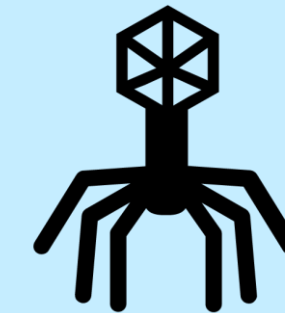
## YEAR 3 (2022-23) Objectives



1. Establish tools, platforms and protocols to facilitate the tracking of progress for IG 1.1 at the global and regional level



2. Improve underlying models and methods



3. Expand the scope of pathogens and include additional impact measures (DALYs)

2021

2022

2023

2024

2025

2026

2027

2028

2029

2030

Annual reporting using 2021 model

Annual reporting using 2025 model

### Annual reporting

- **Cycle:** Annual IA2030 technical progress report (SAGE) in Aug/Sep
- **Platform:**
  - [IA2030 scorecard](#)
  - [The WHO Immunization Data Portal](#)

### Target updates in 2025

- **Scope:** pathogens, DALYs, SIA data
- **Model and method:** validation framework, documentation and reproducibility, disease expert groups
- **Stakeholders:** In line with Gavi 6.0 and VIMC 2.0 timeframe

# IA2030 cost estimates

## Results

		Total Costs per FIC		Incremental Costs per FIC	
		Diminishing returns	Constant returns	Diminishing returns	Constant returns
<b>Income Level</b>	LIC	\$60.54	\$48.28	\$20.85	\$8.59
	LMIC	\$69.48	\$57.00	\$28.50	\$16.02
	UMIC	\$336.44	\$283.06	\$156.97	\$103.59
	HIC	\$848.09	\$811.12	\$126.85	\$89.88
<b>Regional Level</b>	EMRO	\$142.98	\$125.26	\$45.48	\$27.77
	AFRO	\$82.41	\$70.02	\$23.34	\$10.95
	EURO	\$504.71	\$465.85	\$100.60	\$61.73
	SEARO	\$61.62	\$48.05	\$35.52	\$21.95
	AMRO	\$462.71	\$430.28	\$70.46	\$38.02
	WPRO	\$381.09	\$324.22	\$209.43	\$152.57
<b>All countries</b>		\$192.62	\$170.62	\$61.05	\$39.05

Standard routine immunization schedule includes vaccines against 10 pathogens: measles, tuberculosis (BCG vaccine), diphtheria, tetanus, pertussis, S. pneumoniae, Hepatitis B, Hib, rubella, rotavirus.

# Expanding the scope of pathogens for mid-point target updates

- Need for expanding the scope of pathogens and impact measures (e.g. DALYS) to fully describe the value of vaccines included in the national immunization schedule
- Based on consultation with the IA2030 vaccine impact estimates project – Stakeholder Committee, four pathogens were selected to be prioritized for updating targets for the midpoint of IA2030 in 2025

Pathogen	Justification
Malaria	New high impact vaccine
Covid-19	Current global priority
Polio	Historically high impact vaccine
Influenza	High impact life course vaccine

*The list of next target pathogens include Varicella, dengue, mumps, rabies, HepA and HepE based on the scoring criteria developed in 2020.*

