

# Vaccine market, market shaping and regional initiatives for vaccine production

ARVAC Lecture 9

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**World Health  
Organization**

# What is a market?

- Number of buyers and sellers
- Information availability
- Product variety
- Ease of entry and exit
- Degree of government intervention
- Price mechanisms



# Who sells vaccines?

# The great majority of vaccines is sold by a handful of manufacturers. Why?

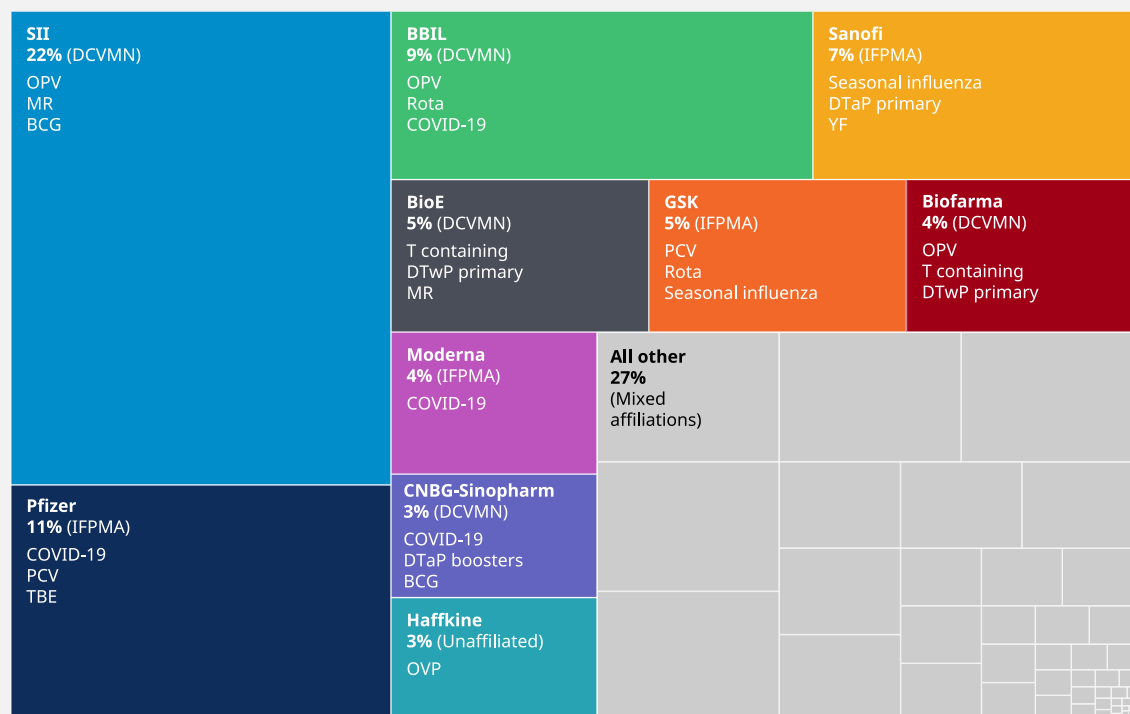


World Health  
Organization

MI4A  
MARKET INFORMATION FOR  
ACCESS TO VACCINES

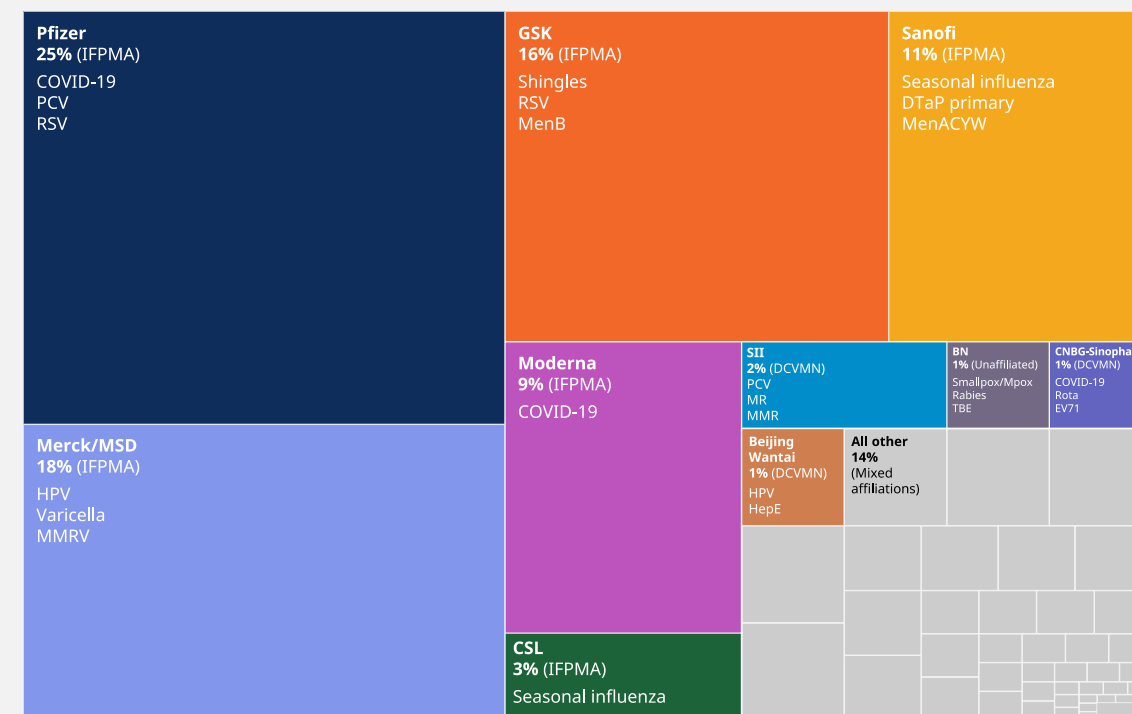
DATA AS OF EOY 2023

Top 10 manufacturers by volume 2023



- ~70% of volume captured by 10 manufacturers, and ~40% captured by three
- DCVMN companies accounted for >50% of volumes sold in 2023

Top 10 manufacturers by \$ value 2023



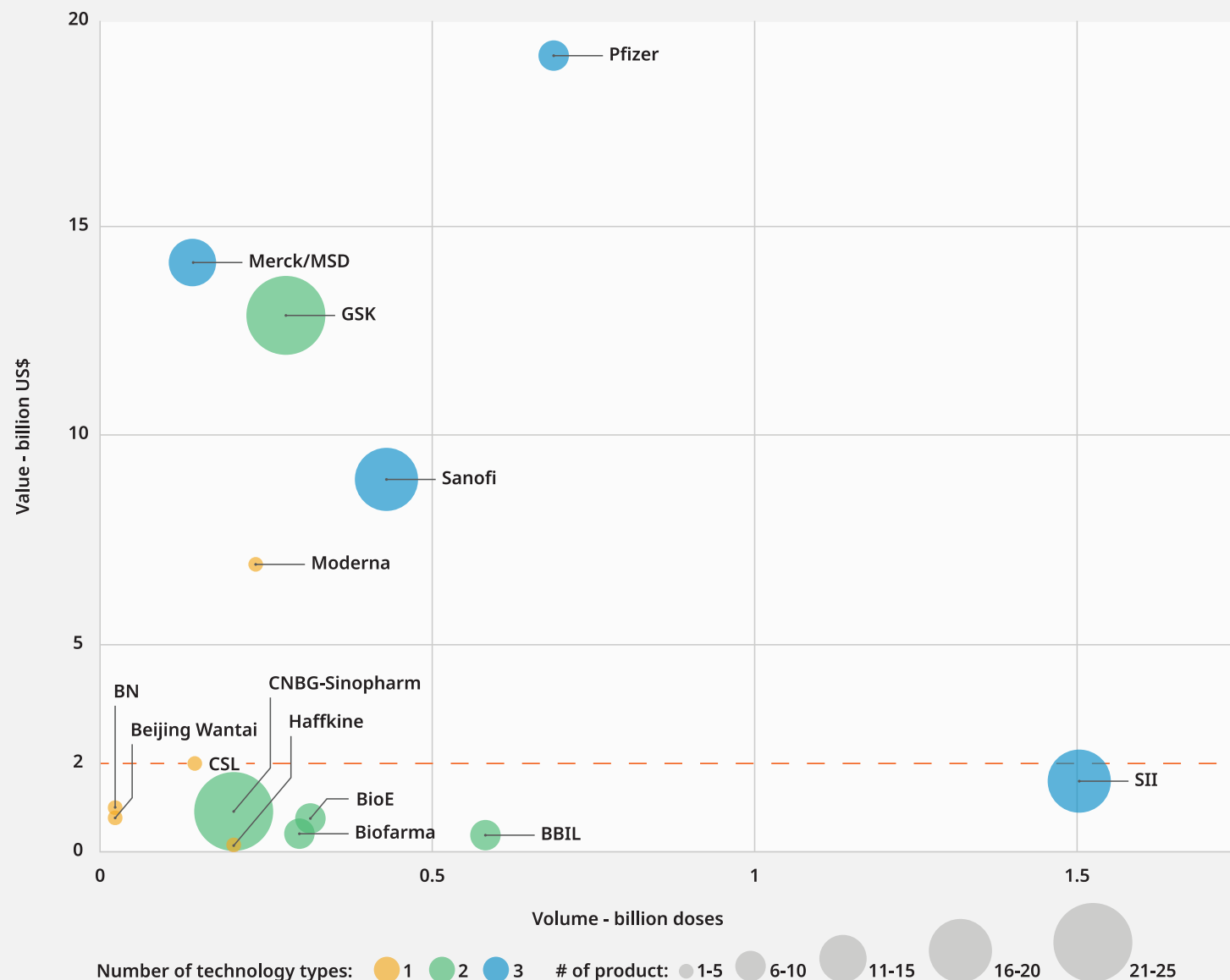
- 85% of value captured by 10 manufacturers, and >40% captured by two
- IFPMA companies captured >80% of total value in 2023

Source: WHO MI4A Global Vaccine Market Report 2024

## Two main business models co-exist in vaccine supply. How can we explain this?

- **Below the 2bn USD line** (mainly) manufacturers HQ'd in India and China, ~70% of total volume
- **Above the 2bn USD line** five IFPMA-affiliates, ~30% of global volumes and ~80% of total value
- **Pfizer and SII outliers** from value and volume perspectives

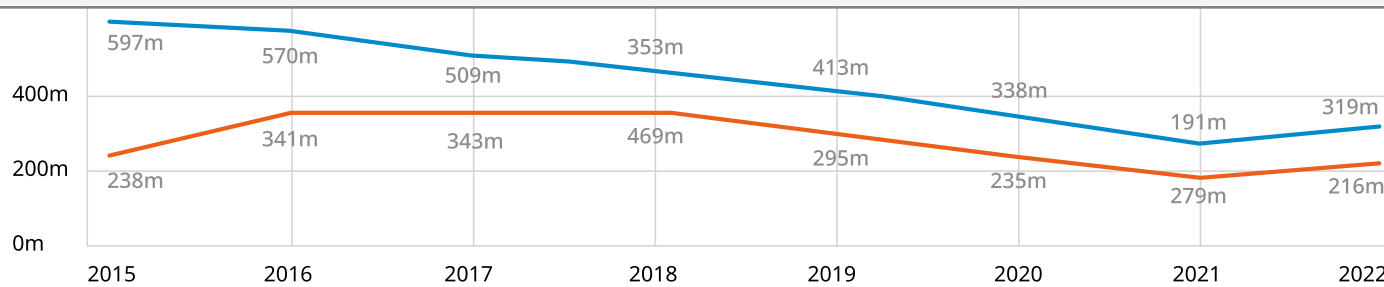
Top 10 manufacturers by volume or \$ value, portfolio size and technology types used



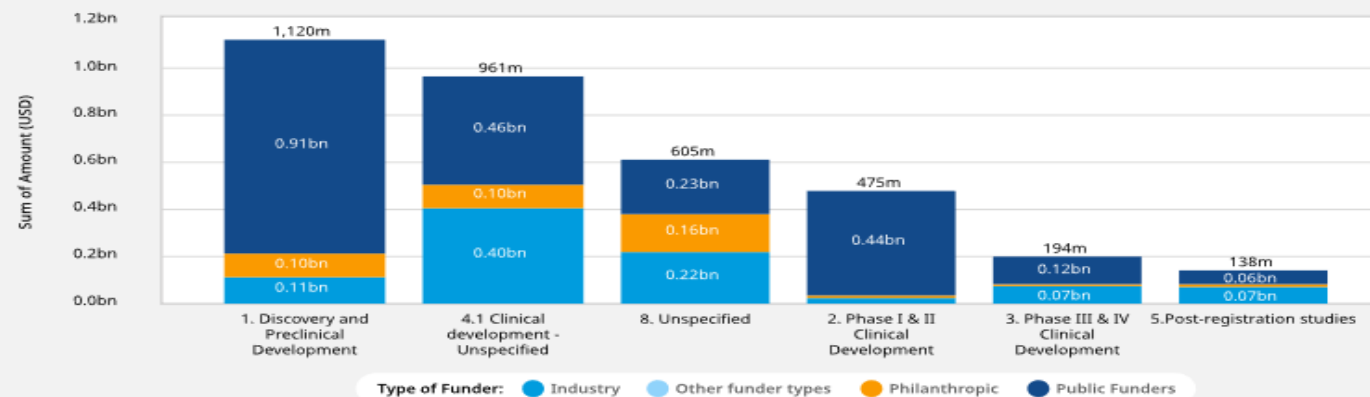
# Who funded development of these vaccines? Public funding accounts for a large portion of R&D funding

Indicator Public over total funding, 2015-2022 (%)

● Total Amount (USD) ● Public Funders (USD)



Share of Funding Type of Funder and by R&D Stage (all years)



- |                                    |                                 |
|------------------------------------|---------------------------------|
| 1 Ebola                            | 7 Cholera                       |
| 2 Chikungunya                      | 8 MERS                          |
| 3 Crimean Congo Haemorrhagic Fever | 9 Nipah and henipaviral disease |
| 4 Lassa Fever                      | 10 SARS                         |
| 5 Marburg                          | 11 Zika                         |
| 6 Mpox                             | 12 Tuberculosis                 |
- Public spending accounts for more than 60% of total R&D funding for listed diseases
  - Early R&D stages like discovery & preclinical and Phase I & II clinical are **almost exclusively funded by public funders**
  - Public funding by HICs continues to be the **main funding source** (60-70% historically), and has increased in value
  - 8 out of the 12 listed diseases** still do not have an approved vaccine developed

# Different regions of the world display different levels of self reliance. What has changed over time?

DATA AS OF EOY 2023

<5%

The **AFR region** produces less than 5% of the vaccines it procures; 55% imported from India

<5%

The **EMR region** also produces less than 5% of the vaccines it procures; 56% imported from India

87%

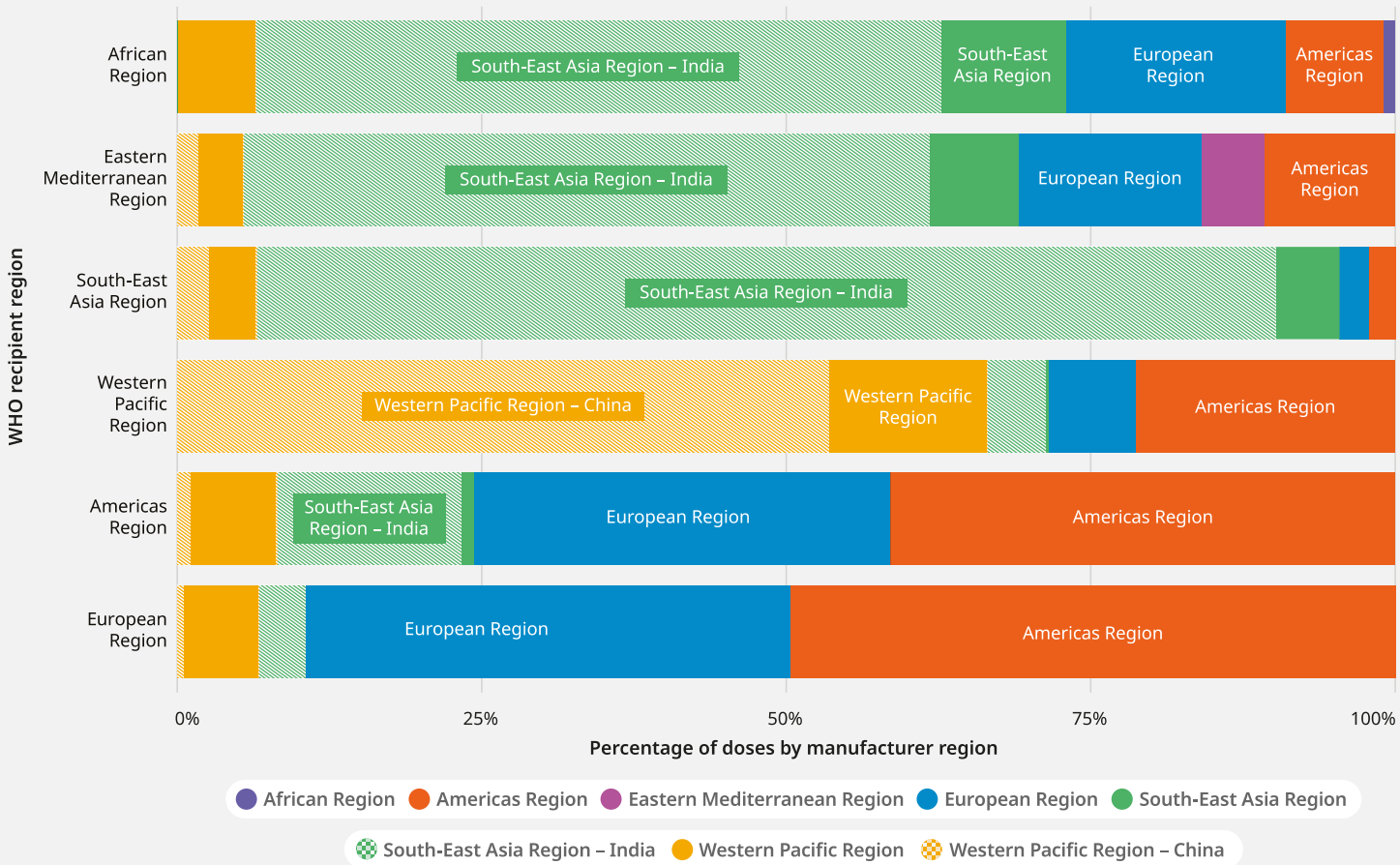
The **SEAR region** manufactured 87% of the vaccines it procured, with 84% produced in India

66%

The **WPR region** manufactured 66% of the vaccines it procured, with 54% produced in China

The **EUR and AMR regions** exhibit **diversification**, with some percentage of self-reliance combined with imports from other regions

Source of vaccine volume (%) by manufacturer region to recipient region



Source: WHO MI4A Global Vaccine Market Report 2024

# Who buys vaccines?

# Vaccine demand is also concentrated. Why?



It is largely **governments** who provide vaccines to their population free of charge

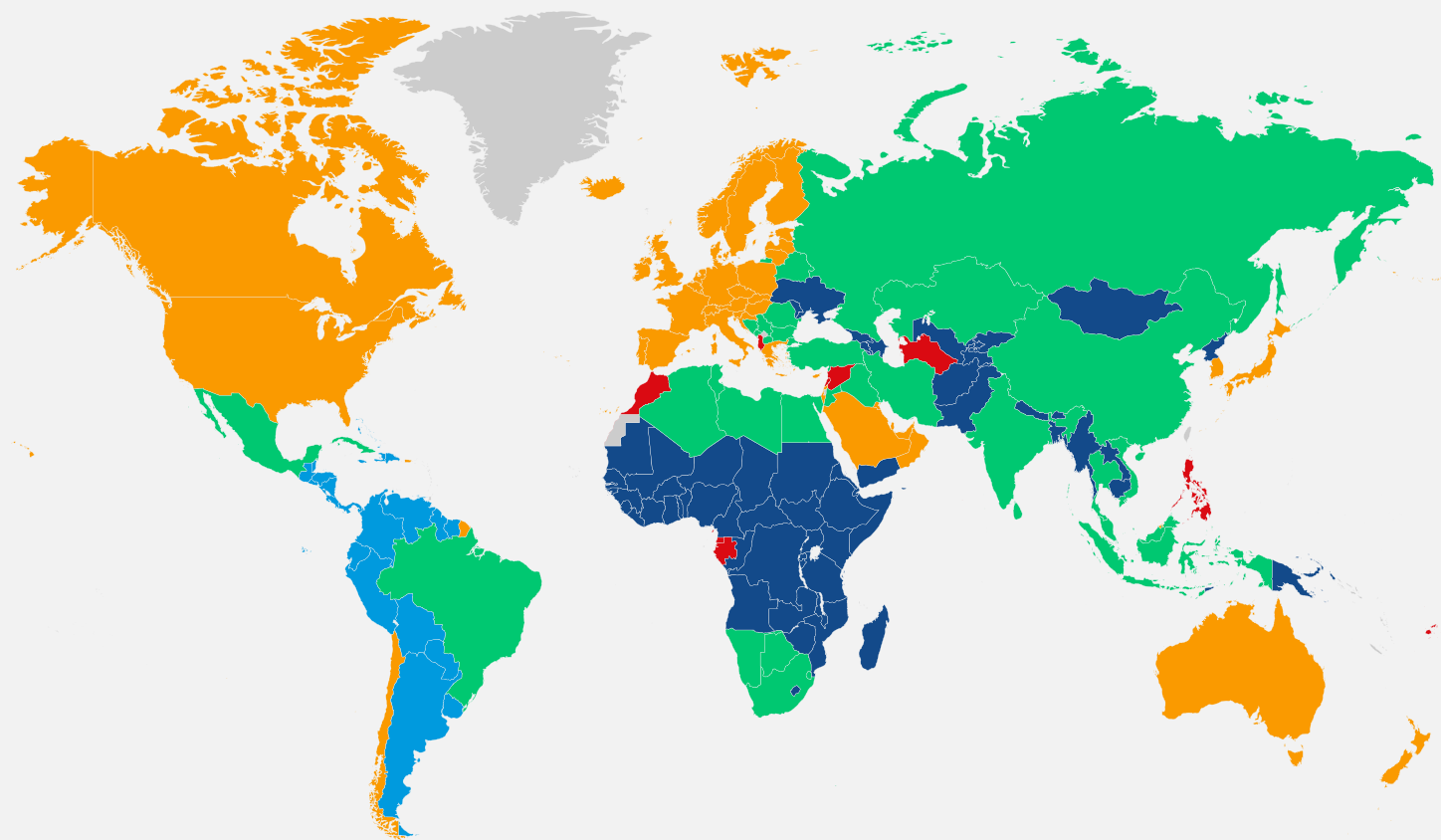


In low- and middle-income settings remains very **unpredictable** due to unclear agendas, limited funding, ineffective procurement, weakness of programmes

**Mechanisms such as UNICEF, PAHO Revolving Fund, Gavi - the Vaccine Alliance** - have worked to strengthen demand for lower- and middle-income settings by **improving predictability as well as procurement and payment procedures**



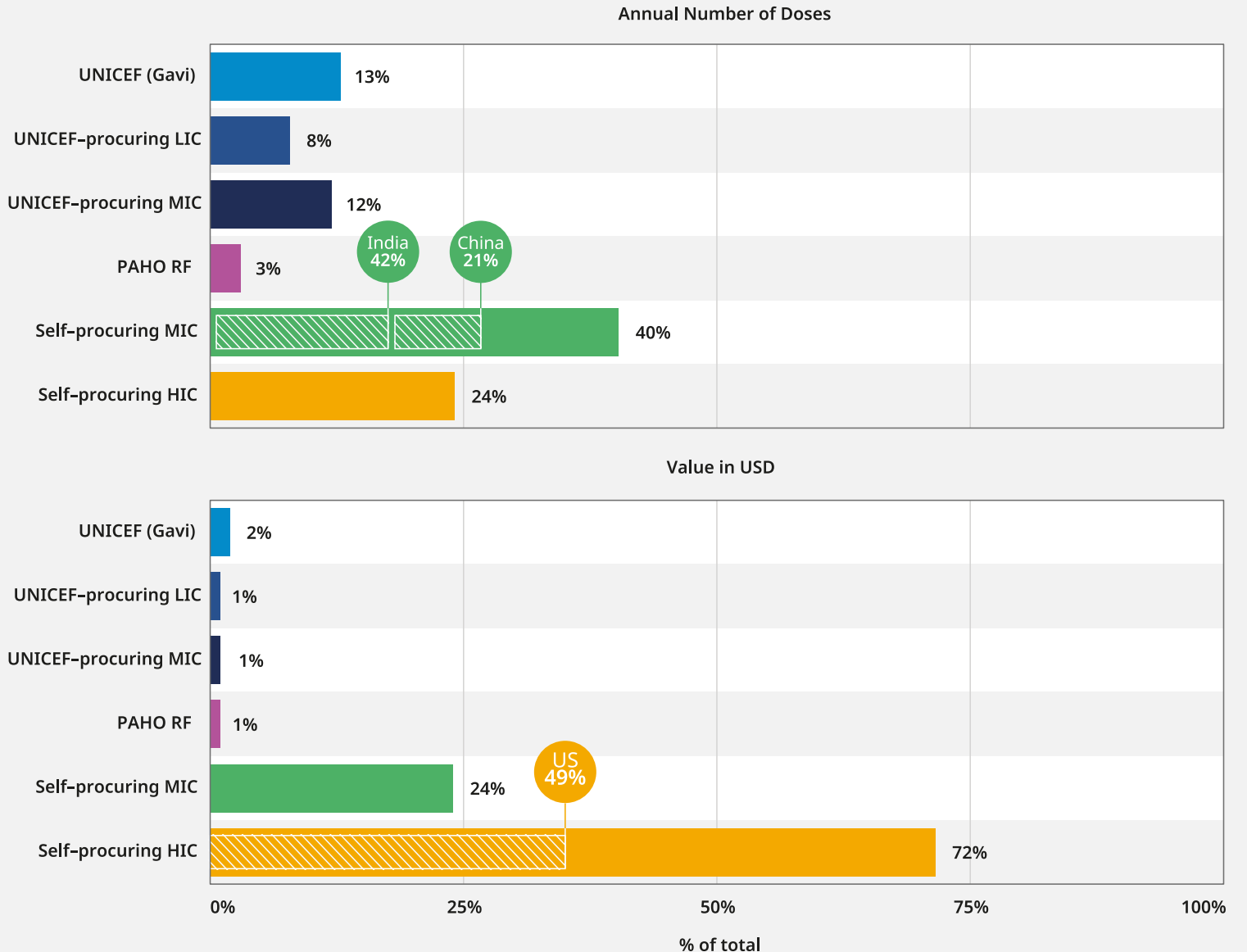
# How do countries purchase vaccines?



## Pooled procurement mechanisms account for an important share of volume, but a small share of \$ value. Is this good or bad?

- Most vaccines are self-procured (MICs and HICs) ~65% of the market volume and ~95% of market value
- Pooled procurement mechanisms have evolved to represent the remaining 35% and 5%, respectively
- Vaccines procured by HICs account for 24% of volume and 72% of value, driven by higher prices
- Vaccine volumes purchased by MICs account for >50% of the total

Vaccine volumes (doses) and \$ value (US\$) during 2023 by procurement mechanism

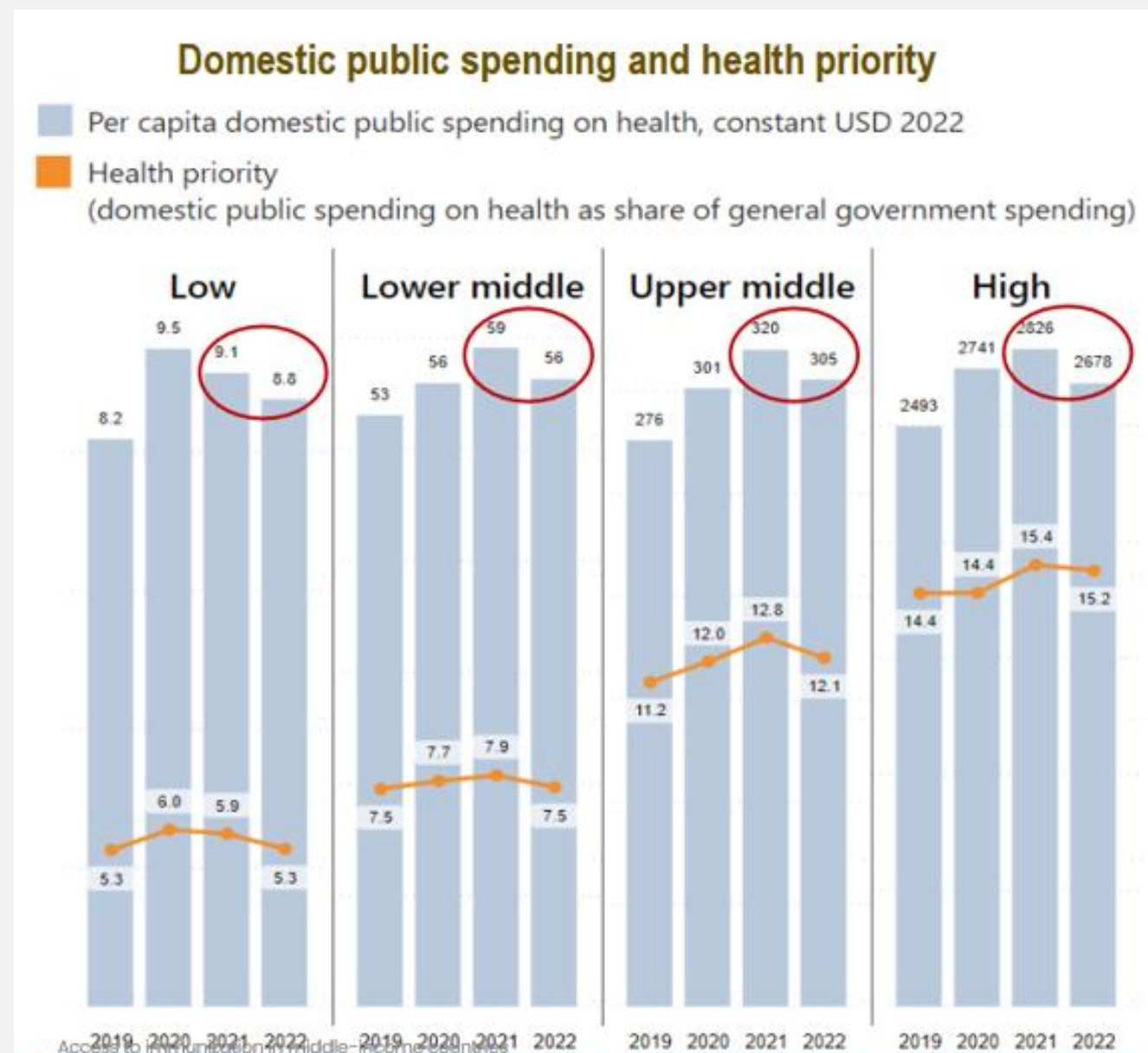


Source: WHO MI4A Global Vaccine Market Report 2024

## Historically, domestic public spending on health has been increasing, but trend is changing

- Since 1970s, **LICs have been spending more and more** on vaccines in absolute terms
- **Domestic spending increased across all income groups during the pandemic**
- **Since 2022 it has been decreasing** as health is being deprioritized
- **Further decline is expected in the future**

Source: [WHO Global Health Spending Report, 2024](#)



**Supply + Demand = Access**

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# What have we achieved?



**Reduced timelines for introduction** between HICs and LICs;

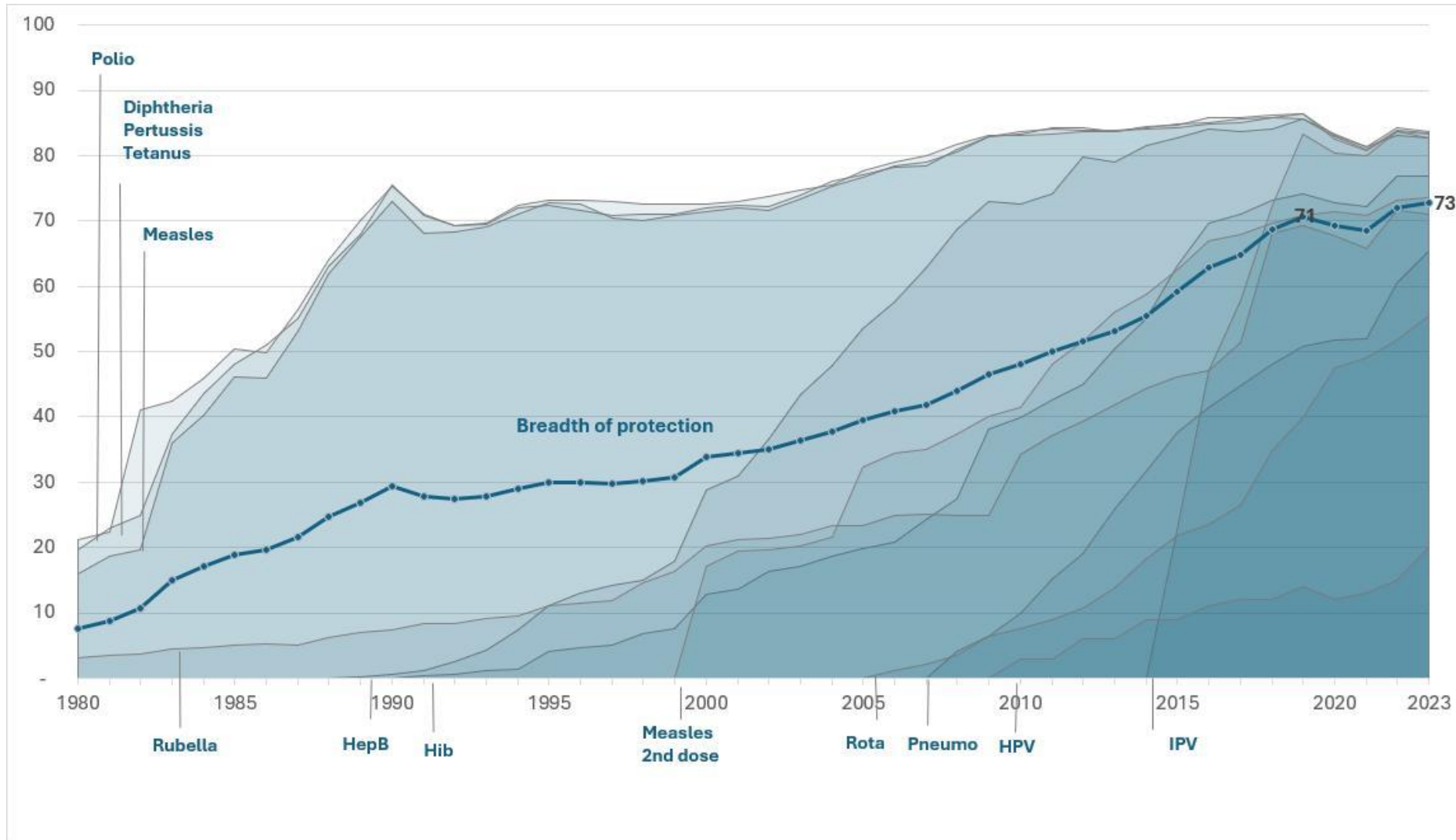
Increased **market transparency**;

Increased **number of manufacturers from developing economies**;

**Improved affordability** for lower income settings;

What else?

**We are stuck on DTP3 coverage (systems' reach), but we have succeeded in NVI thanks to a more effective funding and procurement system**



# Every year countries share data with WHO increasing transparency

- [MI4A Vaccine purchase database](#) published in September 2024, with information on 2023 purchases from **169 countries**; historical data from **2005**
- [Table containing price ranges](#) as reported by countries

**The MI4A vaccine purchase database** contains information on vaccines purchased, volumes, price, procurement mechanism

26,065 reported purchases

From 190 member States

Covering 900+ unique products

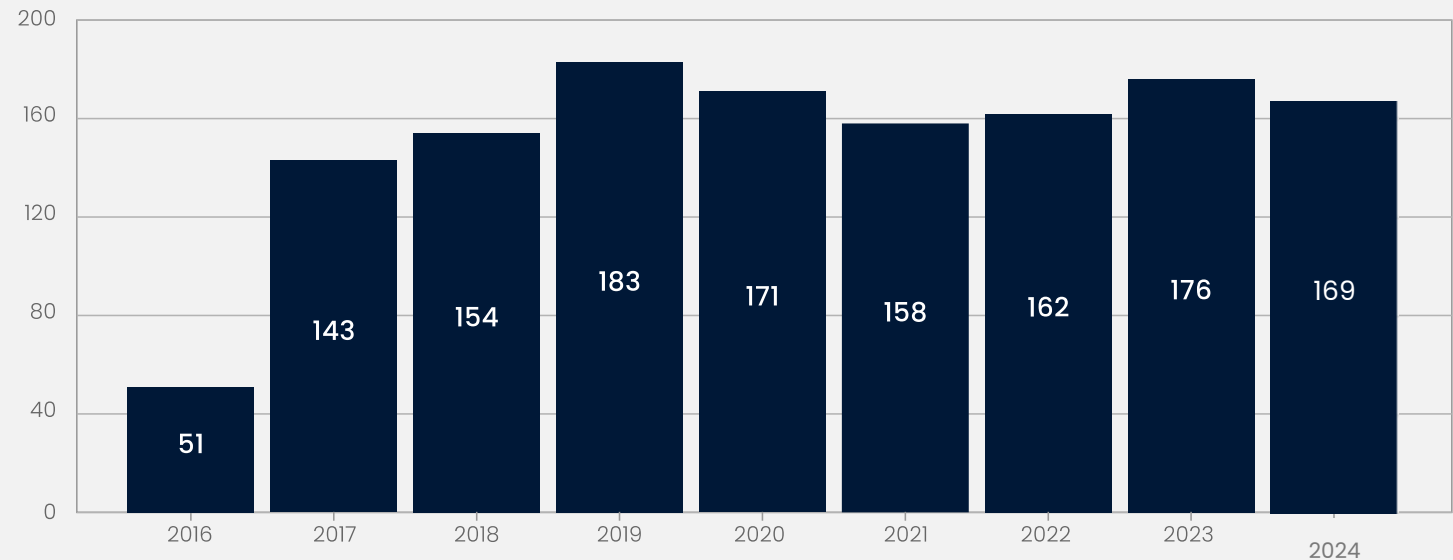
Across 100 vaccine types

C-190 vaccine price information from 129 countries

*WHO website anonymizes country information in respect of confidentiality*



Evolution of number of countries reporting in the indicated year (2016 – 2024)



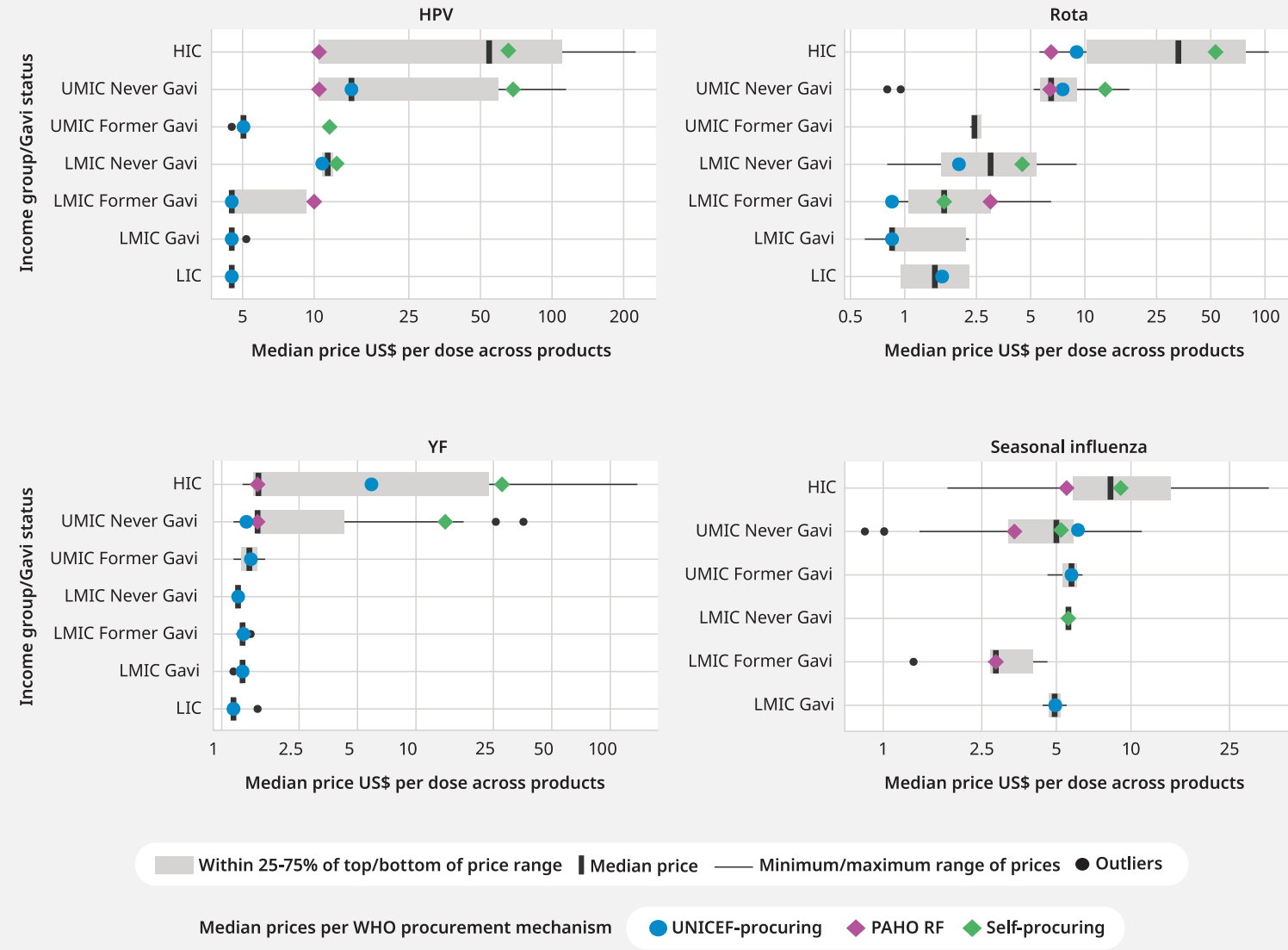
| VACCINE           | UNICEF Supply Division (incl. COVAX) |         |          |        |        |         | PAHO<br>Revolving<br>Fund |         | Self-procurement |         |         |         |         |         |
|-------------------|--------------------------------------|---------|----------|--------|--------|---------|---------------------------|---------|------------------|---------|---------|---------|---------|---------|
|                   | Gavi                                 |         | Non-Gavi |        |        |         |                           |         | LMIC             |         | UMIC    |         | HIC     |         |
|                   |                                      |         | Min      | Max    | Min    | Max     | Min                       | Max     |                  |         |         |         |         |         |
| BCG               | \$0.10                               | \$0.20  | \$0.10   | \$0.22 | \$0.10 | \$0.27  | \$0.12                    | \$0.33  | \$0.16           | \$0.80  | \$0.03  | \$1.24  | \$0.25  | \$29.53 |
| bOPV              | \$0.11                               | \$0.20  | \$0.14   | \$0.23 | \$0.14 | \$0.20  | \$0.13                    | \$0.20  | \$0.18           | \$0.18  | \$0.16  | \$0.38  | \$0.25  | \$4.94  |
| COVID-19          | \$3.70                               | \$20.00 | \$6.70   | \$7.50 | \$4.00 | \$12.00 | \$12.00                   | \$12.00 |                  |         | \$4.00  | \$15.00 | \$17.68 | \$93.54 |
| Dengue            |                                      |         |          |        |        |         |                           |         |                  |         |         |         | \$95.18 | \$95.18 |
| Diphtheria        |                                      |         |          |        |        |         |                           |         |                  |         | \$0.04  | \$0.04  |         |         |
| DT                | \$0.18                               | \$0.21  | \$0.17   | \$0.38 | \$0.20 | \$0.21  | \$0.18                    | \$0.18  | \$0.24           | \$0.47  | \$0.09  | \$1.13  | \$0.78  | \$1.42  |
| DTaP              |                                      |         |          |        |        |         | \$18.20                   | \$18.20 |                  |         | \$0.81  | \$0.81  | \$13.04 | \$20.81 |
| DTaP-HepB-Hib-IPV |                                      |         |          |        |        |         | \$20.00                   | \$21.54 |                  |         | \$19.92 | \$39.20 | \$20.99 | \$96.86 |
| DTaP-HepB-IPV     |                                      |         |          |        |        |         |                           |         |                  |         |         |         | \$63.48 | \$63.48 |
| DTaP-Hib          |                                      |         |          |        |        |         |                           |         |                  |         | \$0.81  | \$0.81  |         |         |
| DTaP-Hib-IPV      |                                      |         |          |        |        |         | \$17.61                   | \$19.00 |                  |         | \$12.75 | \$26.41 | \$17.75 | \$67.11 |
| DTaP-IPV          |                                      |         |          |        |        |         | \$13.49                   | \$13.66 |                  |         | \$15.47 | \$24.50 | \$14.08 | \$46.52 |
| DTwP              | \$0.18                               | \$0.19  | \$0.17   | \$0.19 | \$0.18 | \$0.19  | \$0.18                    | \$0.18  | \$0.46           | \$0.61  | \$0.11  | \$0.11  | \$0.34  | \$0.68  |
| DTwP-HepB         | \$0.85                               | \$0.85  |          |        |        |         |                           |         |                  |         | \$1.42  | \$1.42  |         |         |
| DTwP-HepB-Hib     | \$0.78                               | \$1.29  | \$0.78   | \$1.29 | \$0.80 | \$3.77  | \$1.19                    | \$1.19  | \$1.63           | \$2.29  | \$1.25  | \$1.25  | \$6.47  | \$11.69 |
| HepA (adult)      |                                      |         |          |        | \$7.45 | \$8.30  | \$10.99                   | \$13.50 |                  |         | \$33.13 | \$33.13 | \$17.50 | \$39.11 |
| HepA (ped.)       |                                      |         | \$6.99   | \$6.99 |        |         |                           | \$8.03  | \$11.09          | \$11.09 | \$4.13  | \$21.08 | \$11.42 | \$27.71 |
| HepA+B            |                                      |         |          |        |        |         |                           |         |                  |         |         |         | \$46.65 | \$72.05 |
| HepA-Typhoid      |                                      |         |          |        |        |         |                           |         |                  |         |         |         | \$87.94 | \$89.74 |
| HenB (adult)      |                                      |         | \$0.70   | \$0.70 |        |         | \$0.33                    | \$0.78  | \$1.40           | \$1.40  | \$0.97  | \$7.85  | \$2.29  | \$74.94 |

The table is non-exhaustive and only representative of min-max prices as they are reported by countries. Variations can be attributed to different vaccine presentations, manufacturers and other factors.

# Lower income countries pay considerably lower prices, though opportunities for streamlining in MICs

- Prices are tiered by income group
- Pooled procurement agencies are typically offered a single price for a given product for a specific pricing tier, exhibited via narrower price ranges
- Never-Gavi UMICs often exhibit wide price ranges and price overlaps with HICs
- Newer vaccines like HPV and rota, are more expensive and have wider price ranges, potentially due to the several different products on the market

Source: WHO MI4A Global Vaccine Market Report 2024



The median prices started in the table are taken across products for the same antigen. The data used for the median calculation are reported by countries, might contain errors, and the reporting countries are solely responsible for their accuracy.

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# But did we change the paradigm or are we tinkering at the margins?



**Decisions** on vaccine development, production, distribution are largely **driven by private corporations** who respond to shareholders;

**Access to vaccines in lower income settings remains second in line** to higher income settings;

**Continents still rely heavily on a few HICs** for research and development and emergency needs;

**Investment in R&D** for LIC diseases improved but **still insufficient**;

What else?

# The examples of TB and RSV. Thoughts?

## 1. New TB vaccine – M72 example<sup>1</sup>

- In the 80's the U.S. Army brings in GSK to work on a malaria vaccine and helped develop an adjuvant (patented by GSK ASO1)
- USD 2 million in federal money (mainly NIH) is invested from 1995 to 2005 to conduct trials for a TB vaccine using the adjuvant
- As the vaccine progressed into testing, BMGF, UK, the Netherlands and Australia contributed. Important role of Areas and IAVI with public funding
- GSK discontinues TB vaccine development. Focus on shingles vaccine using the adjuvant gets FDA approval, focused on the US market, priced between USD 100 – 200 a dose.
- Gates MRI obtains exclusive license to develop and commercialize M72 (licensing agreement confidential)

## 2. RSV vaccine

- Early investments by the NIH (first in the 60's, then early 00's) in lab work, clinical trials, and issuing of grants to universities, biotechs and manufacturers led to successful vaccine and monoclonal development
- NIH licensed technology
- BMGF stepping in in early to mid 00's to fund universities, small biotechs as well as multinationals like Pfizer to develop RSV vaccines
- Currently only available in HICs by Pfizer, GSK, Astra Zeneca, Sanofi Pasteur, priced between USD 175 – 395 a dose<sup>2</sup>
- Not yet introduced in LICs and MICs. Recent policy recommendation by WHO SAGE

1. [How a Big Pharma Company Stalled a Potentially Lifesaving Vaccine in Pursuit of Bigger Profits — ProPublica](#)

2. [https://cdn.who.int/media/docs/default-source/immunization/mi4a/who-global-market-study-on-rsv-immunization-products\\_november-2024.pdf?sfvrsn=e6ff42a9\\_3&download=true](https://cdn.who.int/media/docs/default-source/immunization/mi4a/who-global-market-study-on-rsv-immunization-products_november-2024.pdf?sfvrsn=e6ff42a9_3&download=true)

# WHO calls for a new paradigm for vaccine development and access



WHO calls for<sup>1</sup>:

- **increased investment in & oversight of** vaccine manufacturing & distribution, especially when publicly funded;
- **international collaboration rules** on sharing vaccines equitably;
- **improved transparency** along value chain by industries (licensing/access agreements?);
- **technology transfer** to manufacturers in low- & middle-income countries



We will not recover from the historic backsliding in essential immunization if we continue to allow market dynamics alone to shape global vaccine priorities. Nor will we achieve equitable access to vaccines globally unless we have more transparency and active government oversight.

Dr. Tedros Adhanom Ghebreyesus  
WHO Director General

1. <https://www.who.int/publications/i/item/9789240062726>

# The pandemic catalyzed many such changes, even if their scale remains moderate

The draft of the Pandemic Accord, agreed upon by INB (for consideration by WHA 2025) warrants:

- rapid access targeting **20% of manufacturers' real time production**
- promotion and facilitation of **transfer of technology**
- encouragement to **publish terms of purchase agreements** with manufacturers for pandemic-related health products



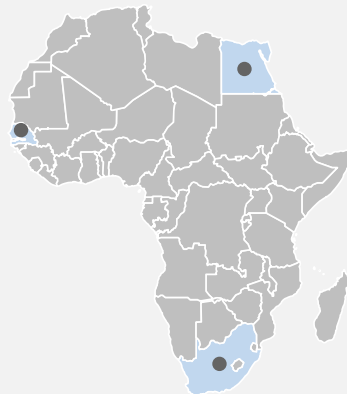
**Regional pooled procurement, local manufacturing and regulatory strengthening** will mitigate import risks... and ensure that much of the money spent on essential medical products will benefit the countries of the Region<sup>1</sup>

[Regional flagship initiative 1: Expanding equitable access to medical products](#)

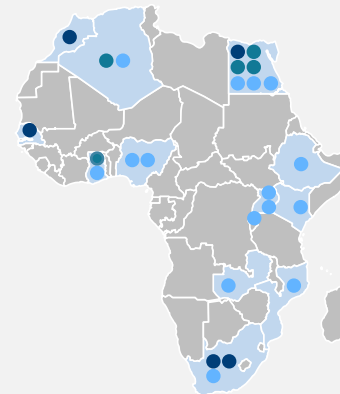


**Local production** of health products has been on the agenda for years, renewed emphasis with **Africa's 2040 vision and partners' support**

Prior to 2020, there were 3 mfcts. capable of commercial-scale vaccine manufacturing<sup>1</sup>



In 2024, there are 25 African vaccine manufacturing projects with commercial-scale ambitions in the pipeline



**~1.4B doses of DP capacity installed / ordered**

- Segment 1 - AVMs with facilities & TTs signed or started
- Segment 2 - AVMs with facilities awaiting TT initiation
- Segment 3 - AVMs with facilities in development

# Thank you!

## Special thanks to:

- Tania Cernuschi
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- Nathalie Vande Maele
- Tara Prasad
- Kate O'Brien

## Want to learn more?

<https://www.who.int/teams/immunization-vaccines-and-biologicals/vaccine-access/mi4a>

## Want to help our work?

<https://www.oneworldhealthforall.org/>



# Annex