

Actions taken towards developing accessible vaccines

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International Vaccine Institute

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**International
Vaccine
Institute**

Disclosures:

- **Dr. Kim is a consultant for SK biosciences**
- **IVI works on the Inovio, Genexine, Cellid, Sanofi, SK bioscience, Sinopharm, and Clover vaccines in human clinical trials**

Current and future COVID-19 vaccines

PLATFORM TECHNOLOGY	Wave 1: Approved 'prototype'	Wave 1a: Ph3 VE data expected	Wave 2: VE: Immunobridging?
	mRNA		
	<ul style="list-style-type: none"> BNT/Pfizer, Germany/USA Moderna, USA 	<ul style="list-style-type: none"> CureVac, Germany 	<ul style="list-style-type: none"> SP/TBio, USA/France Walvax, China IC, UK [saRNA] Gennova, India [saRNA]
	Viral vector		
	<ul style="list-style-type: none"> AZ/Uo Oxford, UK J&J, USA CanSino, China Gamaleya (Sputnik V), Russia 		<ul style="list-style-type: none"> Altimmune, USA Gritstone, USA
	Protein / adjuvant		
	<ul style="list-style-type: none"> Novavax, USA 	<ul style="list-style-type: none"> Clover, China BioE*, India Medicago, Canada 	<ul style="list-style-type: none"> SK Bio*, SK SP/GSK, France/UK COVAXX, USA
	Whole inactivated virion		
	<ul style="list-style-type: none"> Sinovac, China Sinopharm (BIBP), China Bharat, India 	<ul style="list-style-type: none"> IMB, China 	<ul style="list-style-type: none"> Valneva, Austria
	Other		
	<ul style="list-style-type: none"> none 	<ul style="list-style-type: none"> Inovio, USA [DNA] Zydus, India [DNA] 	<ul style="list-style-type: none"> VBI, USA [VLP]

*) RBD-based

[Assumptions made based on publicly available data:

<https://www.nytimes.com/interactive/2020/science/coronavirus-vaccine-tracker.html>

So, lots of safe and efficacious vaccines and more on the way



And in 2022, companies project that they will make 30 billion doses



for every child

COVID-19 Vaccine Market Dashboard

Overview

Pipeline

Capacity

Reported global COVID-19 vaccine production capacity

The capacity information does not account for vaccine probability of success and may project a highly optimistic view of the potential supply

View option

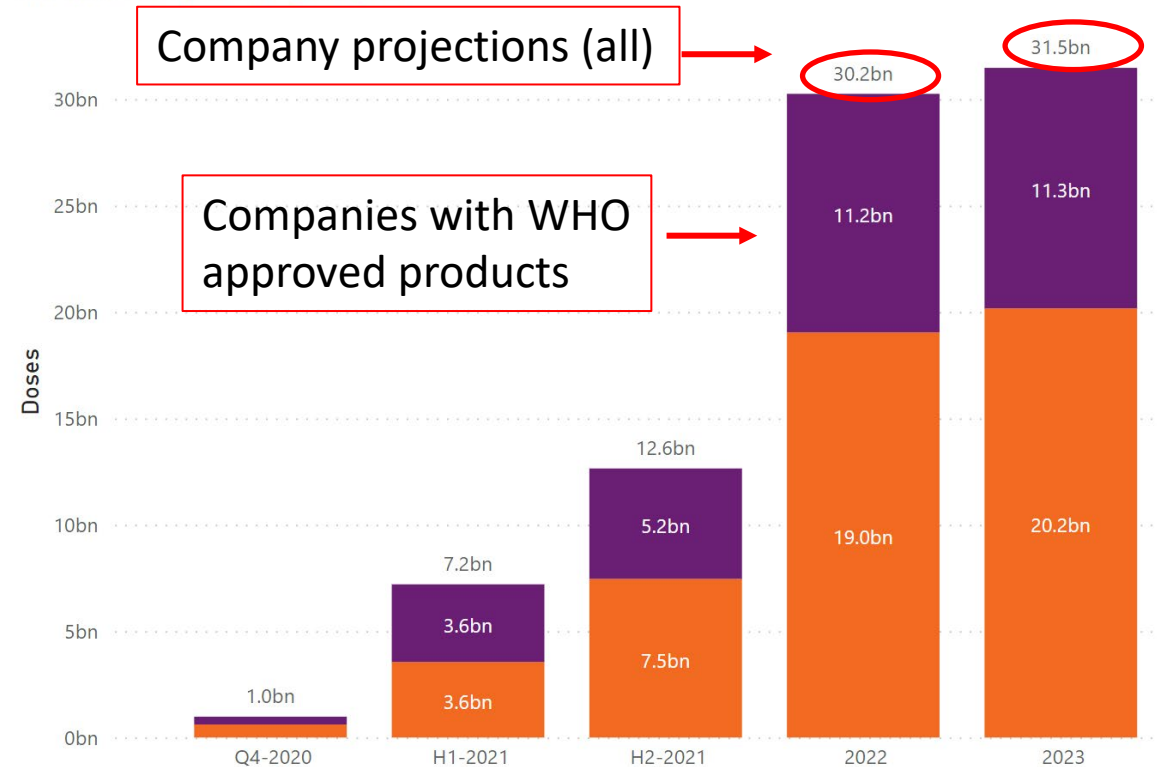
- ☐ By vaccine platform
- ☐ By development stage
- ☐ By licensure experience
- ☒ By WHO PQ experience



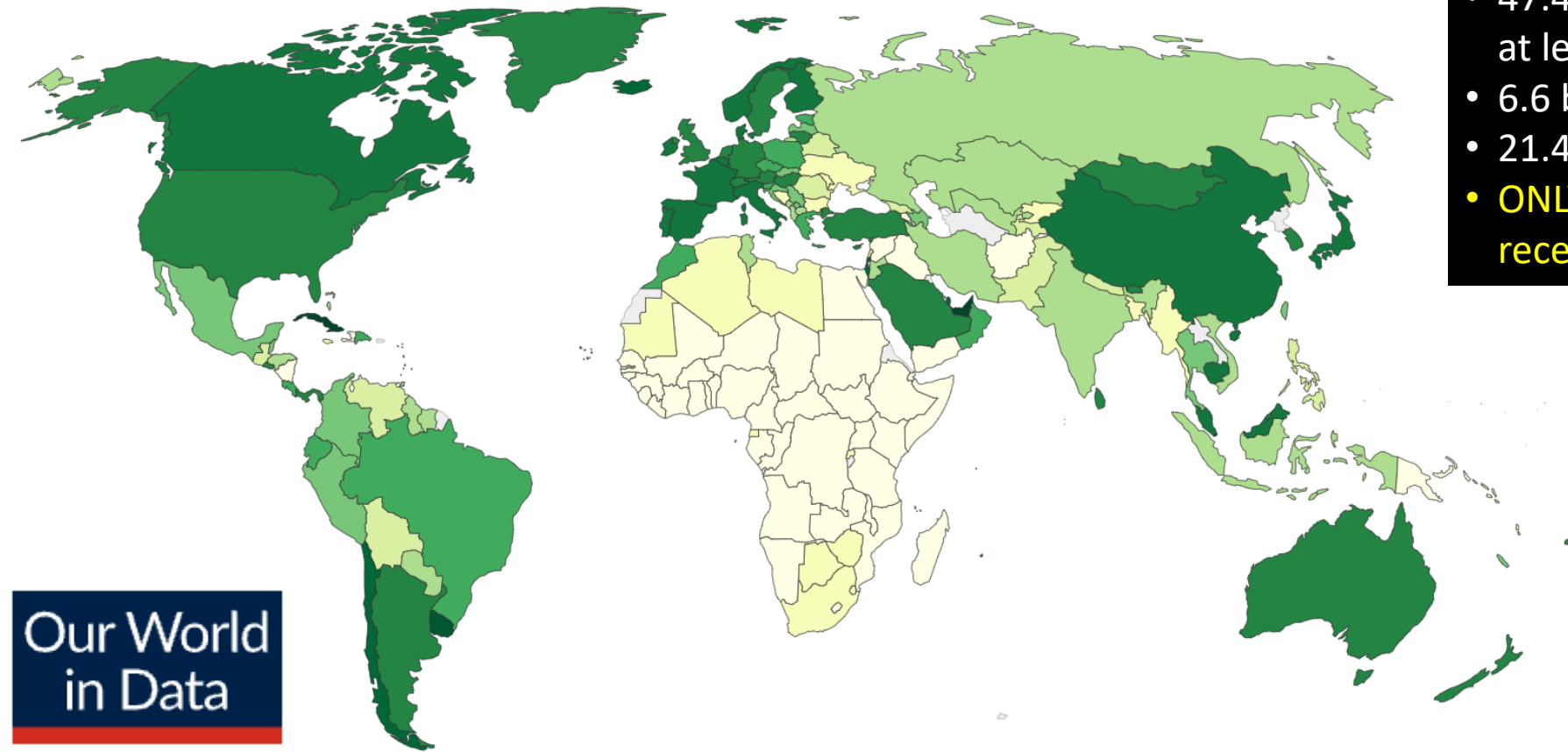
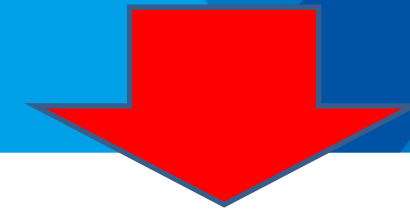
'WHO PQ Experience' encompasses reported production capacities from developers who have at least one other in addition to having been licensed, has been prequalified by the [World Health Organization](#)

Reported COVID-19 vaccine production capacity (doses)

Has WHO PQ experience ● No ● Yes

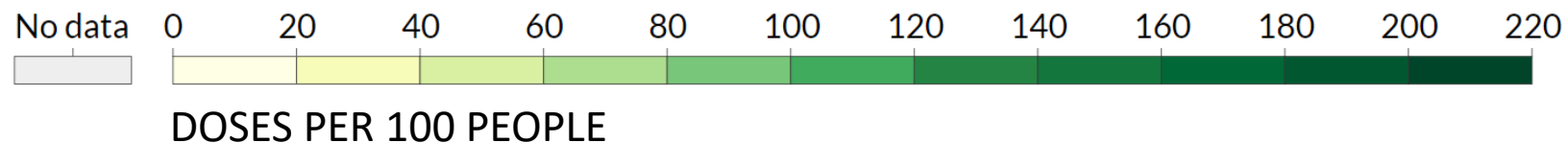


But, in October 2021, we are here



Our World
in Data

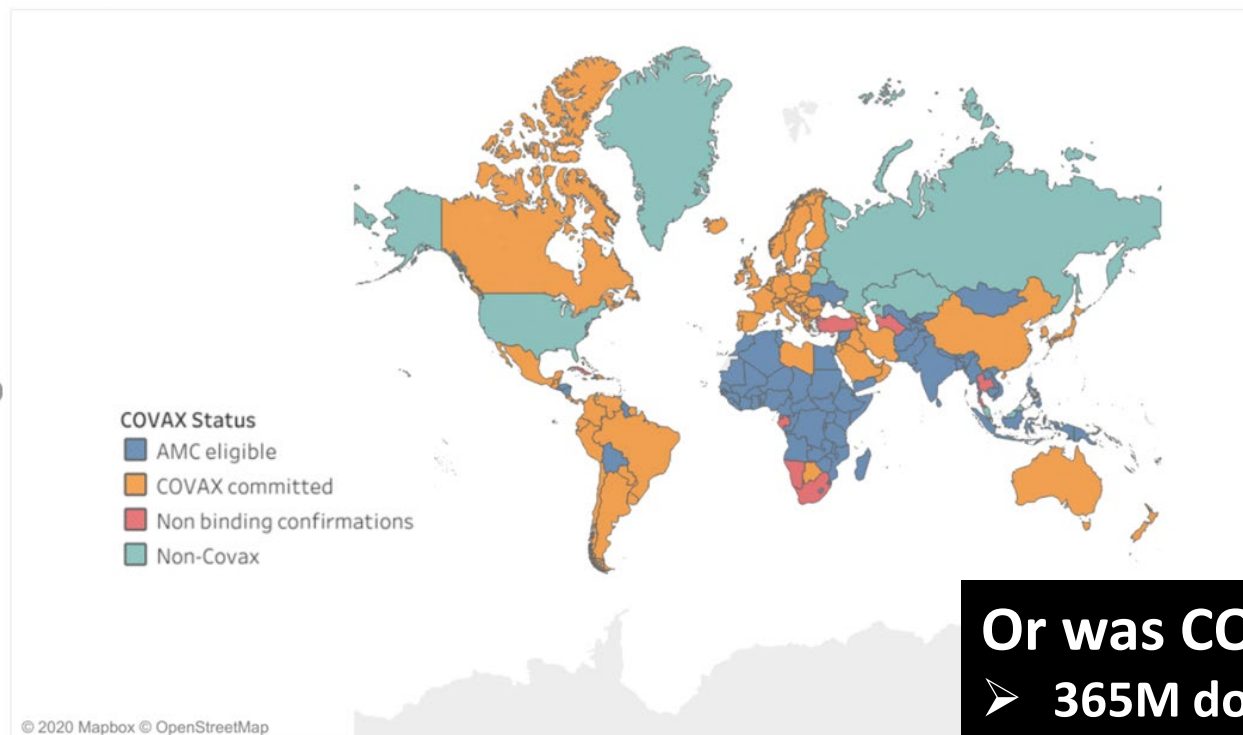
15 Oct 2021



- 47.4% of the world has received at least 1 dose
- 6.6 billion doses given
- 21.4 million doses/day given
- **ONLY 2.7% of people in LIC have received 1 dose**

COVAX: A bridge to near concurrent (if partial) access?

COVAX/Country



189 countries have joined COVAX

- Organized by CEPI, GAVI, WHO
- 92 LMIC could be supported by the COVAX AMC
- 2 billion doses of WHO PQ'd vaccines by end of 2021
- 5 billion doses secured
- Roughly 20%- > 30% of need

Or was COVAX a bridge too far?

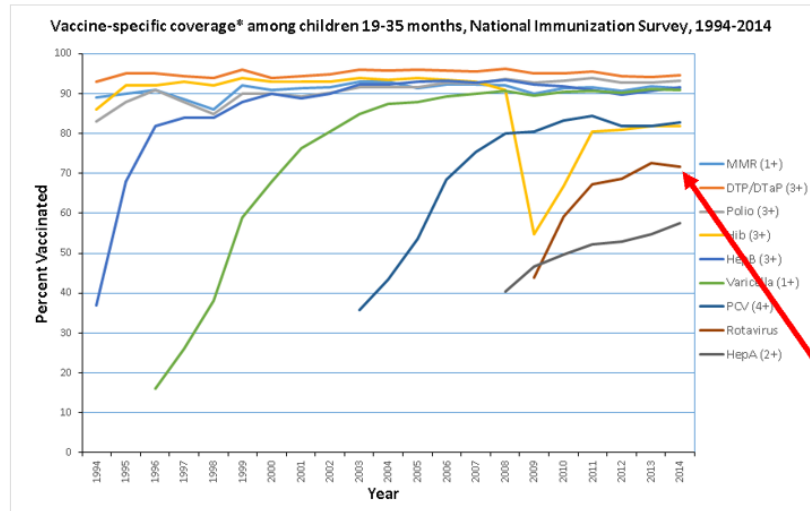
➤ **365M doses to 144 countries (Gavi, 17 Oct 21)**

- **But 85% of vaccine doses have been used by high and upper middle income countries**

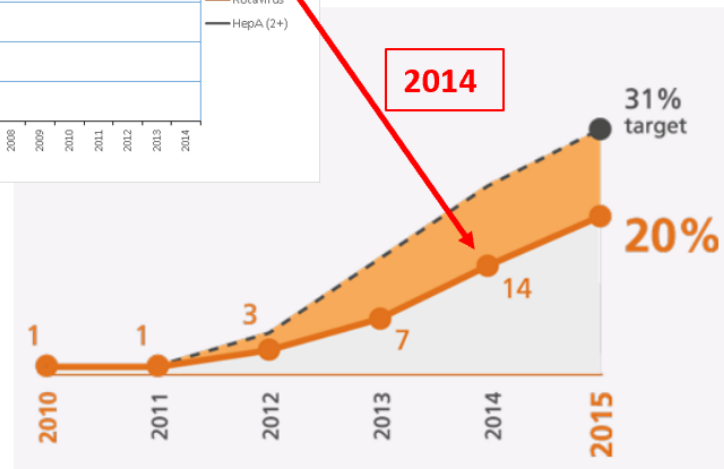
A FAILURE OF EQUITY AND ACCESS HAS 3 TERRIBLE CONSEQUENCES

- Humanitarian: Without equity in the first 2 billion doses global COVID-19 deaths will double
- Economic: Without equity, 49% of the global economic costs of the pandemic in 2021 (\$4-5 trillion) are borne by the advanced economies (2021: NBER, Brookings Institute, ONI)
- Biological: Failure to control pandemic generates mutants that will undermine the efficacy of vaccines

Vaccine access isn't fair, and it has never been fair



US NIS
CDC, 2015

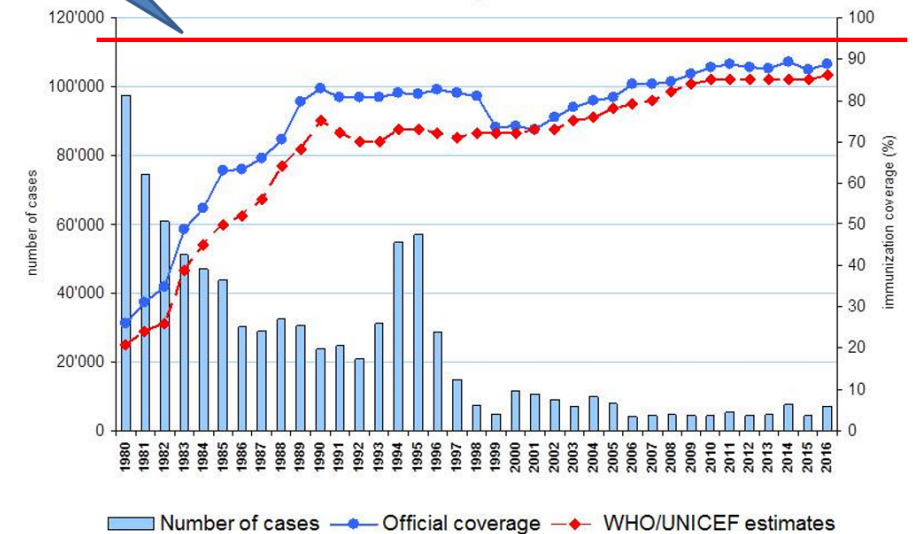


Worldwide
% Rotavirus 3 coverage
WHO/UNICEF 2016

ROTAVIRUS

US DTP3
coverage
1980 96%

Diphtheria global annual reported cases and
DTP3 coverage, 1980-2016



Source: WHO/IVB database, 2017
194 WHO Member States.
Data as of 19 July 2017

WHO, 2017



DTP3

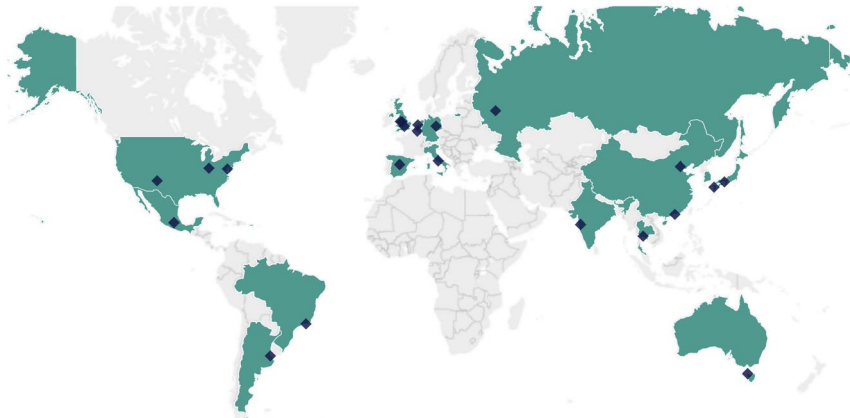
Decades pass before vaccination reaches those in need



Vaccine manufacturers are using other manufacturers

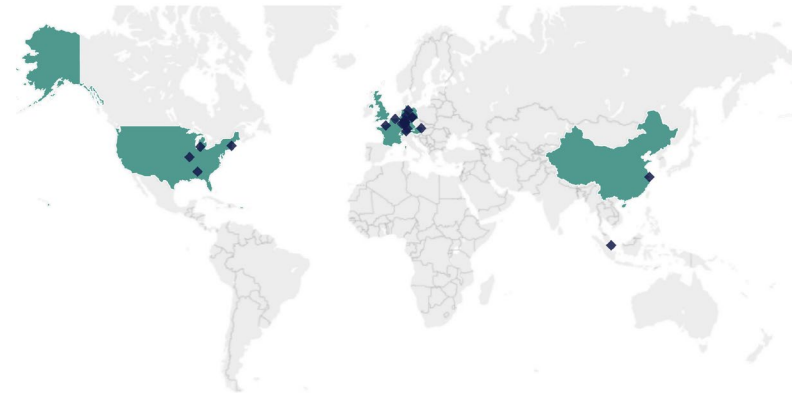
**Manufacturing Locations for
Oxford-AstraZeneca**

Choose Vaccine
Oxford-AstraZeneca



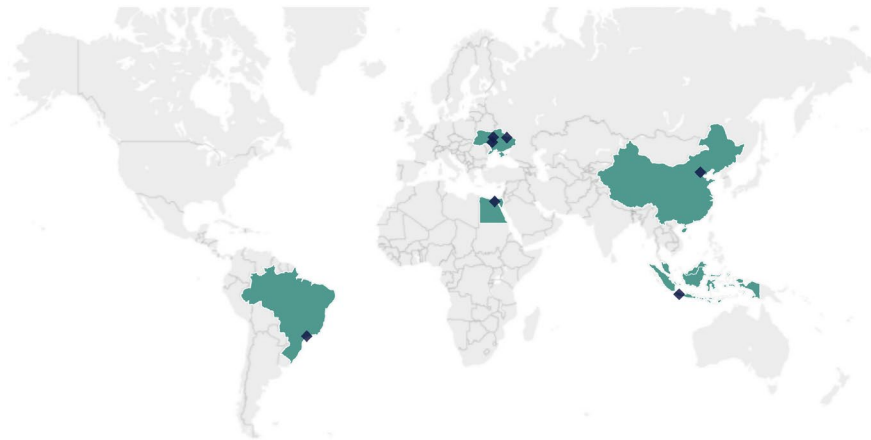
**Manufacturing Locations for
Pfizer-BioNTech**

Choose Vaccine
Pfizer-BioNTech



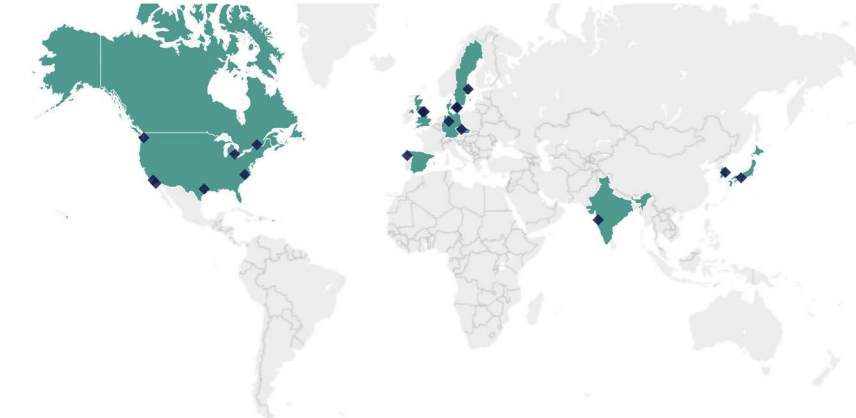
**Manufacturing Locations for
Sinovac (Coronavac)**

Choose Vaccine
Sinovac (Coronavac)



**Manufacturing Locations for
Novavax**

Choose Vaccine
Novavax



**Contracting/licensing agreements make billions of doses:
current production ~1.5 billion doses per month**

As we think about building back better

- Manufacturers have contracted or licensed out hundreds of millions of doses – to other manufacturers capable of making high quality vaccines
 - Regulatory authority ML3 or “functional” – timelines?
 - Local/regional manufacturing – timelines, sustainability?
 - Technology transfer?
 - Global supply chain bottlenecks?
 - IP issues?
- Implementation of vaccination
- Vaccine adverse events reporting systems

We might in 2022 be able to count >70% globally who are fully vaccinated

- But is that enough?
- What about booster doses?
- What about the next Variant of Concern – or the next coronavirus of concern?

Have we done enough today to be ready for a long pandemic?

Or have we learned enough to prevent the next pandemic?

IVI is an International Organization dedicated to Global Health



Global Vaccine Research Institute

- HQ and labs at Seoul National University
- Field programs in 28+ countries: Asia, Africa, Latin America
- 23 nationalities in workforce of 190

OECD-recognized International Organization (not for profit)

- UNDP initiative
- First international organization in Korea (1997)
- 36 countries and WHO as state parties (Madagascar, Argentina, UAE, Colombia, and Spain pending final submission to UN)



Pending
submission of
paperwork to UN
SG office

Thank you for your attention!