



ASIA PACIFIC
PANDEMIC
PREPAREDNESS AND RESPONSE
REGIONAL FORUM



WORLD BANK GROUP



Ministry of Economy
and Finance

ASEAN VACCINE RESEARCH, DEVELOPMENT AND MANUFACTURING

ECONOMIC BENEFITS OF INVESTING IN ASEAN VACCINE DEVELOPMENT
DEVELOPMENT, AND REGULATORY CAPACITY

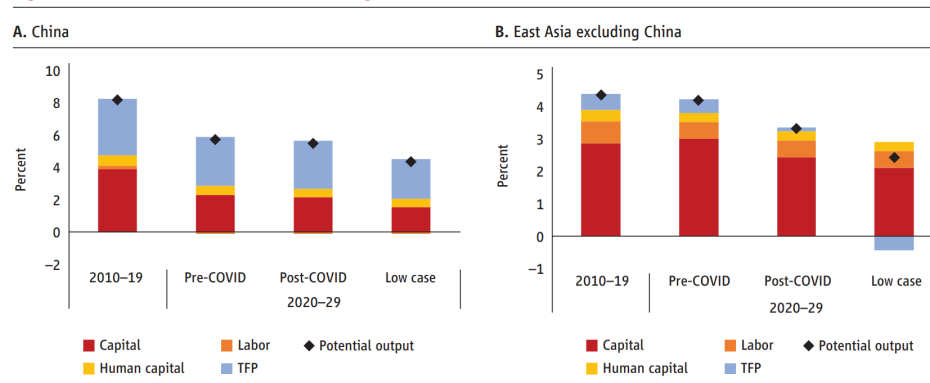
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Context. COVID-19 had huge impact on lives and livelihoods in the ASEAN region

- The ASEAN region bore the economic, human, and public health impacts of COVID-19
- COVID-19 exposed vulnerability and gaps across the vaccine value chain
- COVID scars could further retard economic growth in East Asia over the next decade



Sources: Penn World Tables; World Bank staff estimations.
Note: GDP-weighted averages of production function-based potential growth. TFP refers to total factor productivity growth.

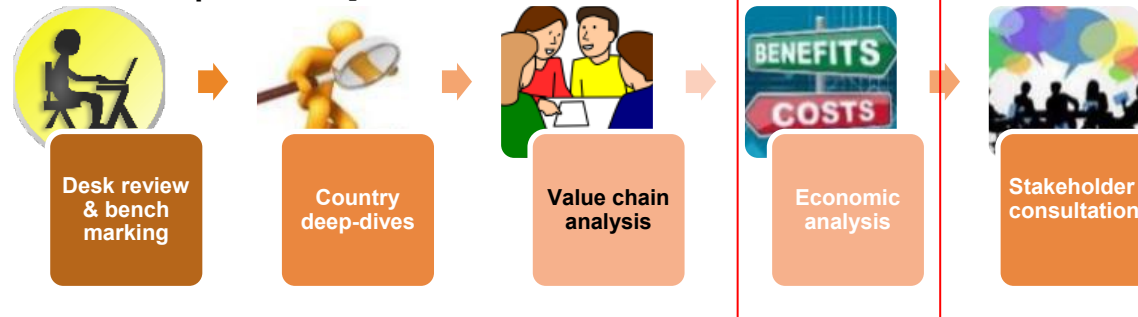
Scope and design of the Project

Scope:

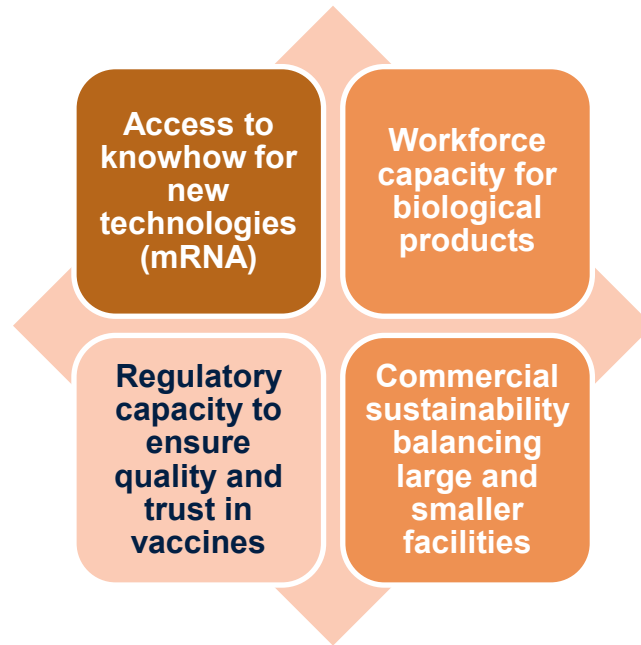
- Undertake a situation analysis of ASEAN member countries' efforts to achieve vaccine security (COVID-19 as an entry point) using a combination of analytic methods and tools
- Build on ASEAN baseline study 2018 & support implementation of the AVSSR Regional Strategic and Action Plan 2021-2025
- Identify viable options to achieve ASEAN regional vaccine security
- Identify opportunities for foreign direct investment and partnerships

Design:

- Five complementary streams of work

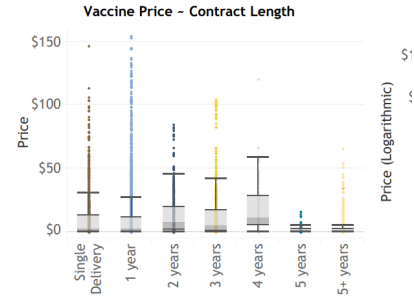
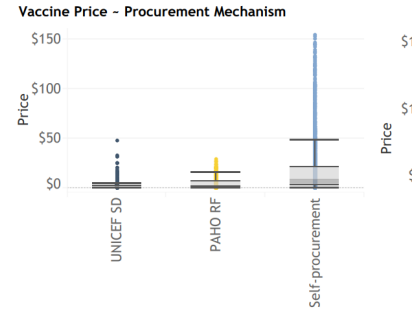


Country deep dives reconfirm four key barriers for vaccine production in low- and middle-income countries identified by WHO



Desk Review - Procurement mechanism impacts price of vaccines

- Pooled procurement mechanisms lead to lower prices for 21 of 28 vaccines, compared to self-procurement
- Self procuring MICs pay 2x more than non GAVI MICs procuring through UNICEF and 1.5x more than PAHO RF procuring countries
- On average pooled procurement prices were 60% lower for MICs.
- Longer term contracts (5+ years) provide better value



Potential Benefits from Pooled Regional Procurement by ASEAN

Value Chain Analysis

- Global shortage of raw materials, manufacturing equipment and consumables
 - **API, Cell culture media, lipid nano particles, bioreactor bags, tangential flow meters, syringes, rubber for packing, glass vials etc**
- ASEAN countries are still heavily dependent on other larger Asian economies (China and India), and high-income countries for key ingredients
- Region requires more investments in logistics for storage and distribution
 - **manufacture of climate-friendly cold chain, packaging equipment, etc**
- Existing regional capacities mostly concentrated in State Owned Enterprises
- Acute shortage of human resources with hands-on experience and technical skills for vaccine manufacturing

Economic Analysis - Design of the study

Builds on 2022 Lancet study*

- Estimates both the **public health benefits and economic returns on investments** in the region to strengthen vaccine security
- Comprises **four different investment scenarios plus sensitivity analyses**, and shows benefits of regional investments vs. national investments
- Includes a list of **jointly prioritized diseases**: Dengue, HPV, malaria, pneumonia, tuberculosis, and COVID-19
- Provides **qualitative arguments** on the benefits of investing in vaccine security based on a literature review
- Applies a **societal perspective** measuring costs and benefits at the societal level

*Schäferhoff M, Zimmerman A et al. Investing in late-stage clinical trials and manufacturing of product candidates for five major infectious diseases: a modelling study of the benefits and costs of investment in three middle-income countries. Lancet Glob Health 2022; 10: e1045–52.

Economic Analysis: Key policy questions the study seeks to answer

- **How much health and economic benefit accrues to the ASEAN region for every dollar invested in vaccine trials, manufacturing capacity, and national regulation systems applying the model**
- **Estimate and document the benefits of a regional investment scenario compared to national approach focusing on domestic market**

Focus countries: Indonesia, Malaysia, Philippines, Thailand, and Vietnam, with spill-over effects to the other 5 ASEAN countries

Scenarios

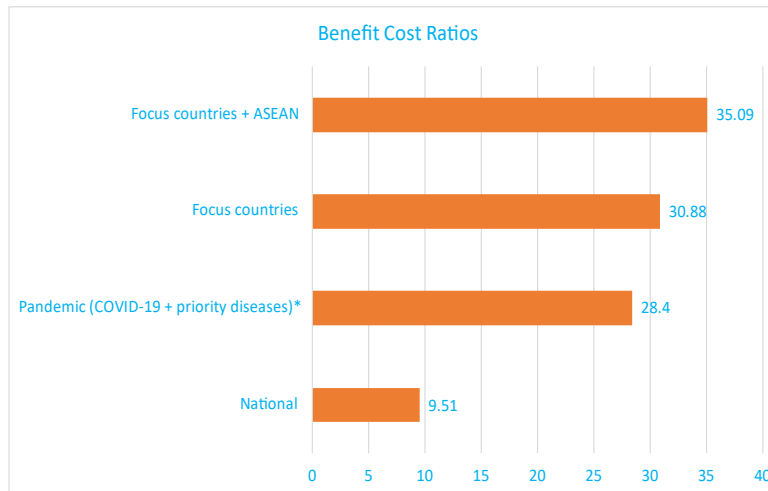
1. **Regional Investment** : Assumes that costs and benefits will be shared by 5 focus countries
2. **Regional pooled procurement**: Assumes that cost will be born by 5 focus countries which will sell vaccines to other countries as a part of ASEAN free trade agreement thus enhancing benefits.
3. **National Investment**: Assumes that costs (1 full fledged and 1 fill and finish manufacturing site) and benefits will be limited to one country with a population of 100 million
4. **Pandemic Outbreak**: Assumes a pandemic of COVID-19 (equal in magnitude to the 2021 pandemic) that subsequently becomes endemic:
 - a) Main analysis: assumes COVID-19 on top of priority diseases
 - b) Sub analysis: assumes COVID-19 specific costs and benefits only

Economic Analysis - Results

Cost overview*

Clinical trial costs (USD 2022)	
Phase I trial costs	\$4,582,524.27
Phase II trial costs	\$39,466,019.42
Phase III trial costs*	\$532,854,368.93
Clinical trial site operational costs	\$3,160,194.17
Manufacturing costs (USD 2022)	
Site construction costs	\$1,013,592,233.01
Site operational costs	\$612,878,740.00
Tech transfer costs	\$77,669,902.91
Regulation costs (USD 2022)	
IDP investments	\$380,656,416.12

*Costs for pandemic and national scenarios differ from the costs shown here.



*BCR increases to 62.08 if only COVID-19 specific costs and benefits are included.

Total investments are 0.3% of government health expenditures over the time horizon.

Key policy implications

