Asia-Pacific Economic Cooperation

APEC REGIONAL DASHBOARD ON VACCINATION ACROSS THE LIFE-COURSE

2023-2024

APEC Health Working Group

Vaccines Task Force

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Acknowledgements

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Abbreviations

APEC: Asia-Pacific Economic Cooperation
AVSSR: ASEAN Vaccine Security and Self-Reliance
BeSD: Behavioral and Social Drivers of Vaccination
CAVEI: Comité Asesor de Vacunas y Estrategias de Inmunización (Advisory Committee on Vaccines and Immunization Strategies)
cMYP: Comprehensive Multi-Year Plan
CoE: Center of Excellence
DTP: Diphtheria, Tetanus, Pertussis
FVVA: Full Vaccine Value Assessment
GHSA: Global Health Security Agenda
HPV: Human Papillomavirus
HWG: Health Working Group
IA2030: Immunization Agenda 2030
IPD: Invasive Pneumococcal Disease
JRF: Joint Reporting Form
mAB: Monoclonal Antibody
NAIS: National Adult Immunisation Schedule
NITAG: National Immunization Technical Advisory Group
NPRA: National Pharmaceutical Regulatory Agency
NRA: National Regulatory Authority
PCV: Pneumococcal Conjugate Vaccine
PIC/S: Pharmaceutical Inspection Co-operation Scheme
PODD: Participatory One Health Digital Disease Detection
RA: Regulatory Authority
R&D: Research and Development
RHSC: Regulatory Harmonization Steering Committee
RSV: Respiratory Syncytial Virus
SKAI: Sharing Knowledge About Immunisation
SWGv: Sub-Working Group on Vaccination
VCI: Vaccine Confidence Index
VIS: Vaccine Investment Strategy
VMT: Vaccine Management Team
VPD: Vaccine-Preventable Disease
VPoW: Vaccination Program of Work
VTF: Vaccines Task Force
WHO: World Health Organization

About APEC

The Asia-Pacific Economic Cooperation (APEC) is a regional economic forum consisting of 21-member economies who aim to create greater prosperity for the people of the region by strengthening health systems in support of inclusive and sustainable economic growth. APEC operates as a cooperative, multilateral forum. Member economies participate on the basis of consensus and respect for the views of all participants. There are no binding commitments or treaty obligations within APEC. Commitments are undertaken on a voluntary basis and the principle of consensus and are implemented as appropriate based on the individual circumstances and conditions in each economy.

Capacity building programs play an important role in APEC as technical skills, resources, and capabilities vary considerably across the 21-member economies, which include Australia; Brunei Darussalam; Canada; Chile; People's Republic of China; Hong Kong, China; Indonesia; Japan; Republic of Korea; Malaysia; Mexico; New Zealand; Papua New Guinea; Peru; the Philippines; the Russian Federation; Singapore; Chinese Taipei; Thailand; the United States of America; and Viet Nam.

The *APEC Action Plan on Vaccination Across the Life Course* was developed in accordance with these fundamental principles and guidelines.

THE APEC HEALTH WORKING GROUP (HWG) AND VACCINATION

APEC Health Ministers agree that vaccination is one of the most important and cost-effective public health measures. By taking a life-course approach, APEC economies can better prevent infection and disease for all populations, foster a sustainable health system, improve economic and social inclusion, and enable economic growth.

The APEC Health Working Group (HWG) Sub-Working Group on Vaccination (SWGv), which was co-led by the United States and Canada from 2018-2024 and is now led by the United States, advances a coordinated approach for the HWG to address issues related to vaccination in the Asia-Pacific region. Under the SWGv, the vaccination program of work (VPoW) allows the HWG to coordinate and build on existing vaccination efforts and promote a cohesive, longer-term approach to related initiatives on vaccine supply (led by U.S.) and demand (led by Canada).

The APEC Vaccines Task Force (VTF) was established as a public-private initiative in 2020. The VTF operates under the APEC HWG SWGv and has organized initiatives with several economies. All economies are welcome to engage with the VTF.

The VTF facilitated the development of the *APEC Action Plan on Vaccination Across the Life-Course*, which was endorsed by APEC health ministers in 2021, and the *Regional Dashboard on Vaccination Across the Life-Course,* endorsed by the Health Working Group in 2022. The VTF has also organized policy dialogues, webinars, and workshops to promote implementation of the Action Plan and domestic immunization plans.

Introduction

APEC ACTION PLAN ON VACCINATION ACROSS THE LIFE-COURSE

Executive Summary

Vaccination is one of the world's most important and cost-effective public health measures. By taking a life-course approach to immunization, which entails strategies to maximize protection of populations across age groups and life circumstances, APEC economies can better prevent infection and disease for all populations, fortify themselves against unforeseen challenges, improve economic and social inclusion, and enable economic growth. Nevertheless, despite the compelling case for investing in immunization, there remains insufficient investment in this component of health systems.

Developed by the APEC Vaccines Task Force (VTF) and endorsed by the APEC Health Working Group (HWG), the APEC Action Plan on Vaccination Across the Life-Course is a comprehensive strategy for enhancing the resilience and sustainability of immunization programs in APEC member economies through the 2021-2030 decade.[1] Over a set of key pillars and policy targets, the action plan puts forth a vision that by 2030, all 21 APEC member economies will have implemented resilient and sustainable life-course immunization programs to protect the health and wellbeing of all populations. This work builds on previous international cooperation on vaccination within APEC as well as the World Health Organization (WHO) and aims to support APEC economies in achieving the WHO Immunization Agenda 2030 (IA2030).[2]

THE PRESENT MOMENT PROVIDES A CRITICAL OPPORTUNITY TO GALVANIZE DECISION-MAKERS AND COHERE THE ASIA-PACIFIC REGION'S APPROACH TO DEVELOPING RESILIENT AND SUSTAINABLE LIFE-COURSE IMMUNIZATION PROGRAMS.

The measures that APEC economies introduce now to foster strong life-course immunization programs will help the region recover from the COVID-19 pandemic, in addition to improving health systems and pandemic preparedness in the longer-term. The Action Plan's seven pillars can support economies in doing so:

1. Promote recognition of the value of vaccination and vaccine innovation
2. Prioritize access to and uptake of vaccination across the life-course
3. Build whole-of-government capacity in health security and pandemic preparedness
4. Strengthen confidence in vaccination and build resilient immunization programs
5. Enable investment and innovation in vaccine R&D, manufacturing, and delivery
6. Accelerate regulatory harmonization for vaccines across APEC economies
7. Establish prove and innovative mechanism for sustainable immunization financing

SCOPE OF THE DASHBOARD

Overview

The APEC Regional Dashboard on Vaccination Across the Life-Course ('Dashboard') is an initiative to provide a snapshot of the status of vaccination programs in APEC, using the goals, policy targets, and key indicators set forth in the APEC Action Plan on Vaccination Across the Life-Course 2021-2030 ('Action Plan'). The Dashboard aims to measure the progress of immunization programs throughout the region.

In November 2022, the APEC Health Working Group's Vaccines Task Force published the APEC Regional Dashboard on Vaccination Across the Life-Course, which provides a snapshot of APEC's progress towards sustainable life-course immunization programs. Under a life-course approach, vaccination strategies are designed to maximize individuals' ability to protect themselves from infection and maintain good health over the course of their lives and circumstances.

The Dashboard is based on the goals, policy targets, and key indicators set forth in the APEC Action Plan on Vaccination Across the Life-Course 2021-2030. The Dashboard presents data on a regional basis, although economy-specific information has been collected and can be used to develop specific capacity-building activities.

The Dashboard is organized by Action Plan Pillar. Each Pillar contains measures related to the relevant goals, indicators, and/or actions. Spotlights from APEC economies share existing practices that can support progress towards meeting the goals of the Pillar, and the Action Plan more broadly. Methodology, sources, and findings by APEC economy may be found in the appendix.

General Methodology

The APEC VTF created the regional dashboard using a mixed methodology to understand the current status of the Action Plan's key indicators in the APEC region. The VTF initially gathered relevant immunization data through a review of existing literature and data repositories, including the WHO/UNICEF Joint Reporting Form on Immunization (JRF),[3] which collects annual immunization data from member states using a standard questionnaire, in order to identify trends and gaps at the state, regional, and global level. Economy immunization program websites and relevant literature were incorporated as needed.

Informed by the initial research, the VTF then developed a survey focused on the Action Plan's targets and key indicators. The survey was disseminated to all 21 APEC member economies via email, 12 of which responded (57%).

To further supplement missing data for 2023, data from the 2022 Dashboard and 2022 (or earlier) supplementary data was included for measures which were unlikely to have changed significantly. Additionally, some data from the 2022 Dashboard was recalibrated to be consistent with the measures used in the 2023 survey and to account for additional data provided for 2022 to the WHO/UNICEF Joint Reporting Form after the release of the 2022 Dashboard.

Survey results were collected from the following APEC member economies ("Reporting Economies"): Brunei Darussalam; Canada; Chile; Hong Kong – China; Indonesia; Republic of Korea; Malaysia; Peru; Russian Federation; Singapore; the United States of America; Chinese Taipei

Supplemental research was used for the following economies: Australia; Japan; People's Republic of China; Mexico; Papua New Guinea; New Zealand; the Philippines; Thailand; Viet Nam

Additional information on methodology can be found in the Appendix.

Regional Progress by Action Plan Pillar

PILLAR 1 | PROMOTE RECOGNITION OF THE VALUE OF VACCINATION AND VACCINE INNOVATION BY POLICYMAKERS AND KEY DECISION-MAKERS

A wide array of considerations is important for health policymakers' decision-making, from the pursuit of social justice and health equity to practical concerns around public perception of vaccines and the realities of vaccination program management. However, one of the most essential elements that should inform decision-making is recognition of the value of vaccination and preventive care. Vaccination has a variety of positive impacts that accrue across the life-course, making immunization a wise investment in terms of health benefits, social welfare, and economic development.

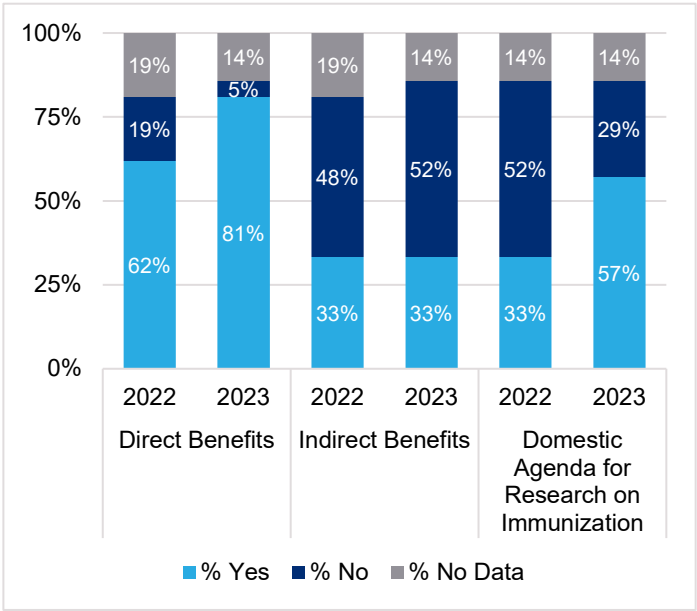
> "Adult vaccines can return up to 19 times their initial investment to society, when their significant benefits beyond the healthcare system are monetised. This is the equivalent of billions of dollars in net monetary benefits to society, or more concretely, up to $4637 for one individual's full vaccination course."
> Office of Health Economics, 2024

Targets

1. By 2030, all APEC member economies have introduced standardized systems, based on the respective needs and priorities of economies, to generate data on direct and indirect benefits of vaccination that meet quality standards, including the full societal value, to drive policy decisions and prioritization
2. By 2030, all APEC member economies have introduced value assessment frameworks, taking into account both the direct and indirect economic and societal value of vaccination, to help drive policy and decision-making processes in conjunction with other policymaking priorities
3. By 2030, all APEC economies commit to incorporating the latest knowledge and data on the value of vaccination as part of the decision-making processes of leaders in conjunction with other policymaking priorities

Measure 1.1: *% of APEC economies that have in place a facility to generate data on direct and/or indirect benefits of vaccination or have a [domestic] agenda for research on immunization*

From 2022 to 2023, the Dashboard captured additional economies that generate data on direct benefits of vaccination (e.g., reduction in burden of disease) and have domestic research agendas in place.* Measuring indirect benefits of vaccination, such as increased productivity, should be part of a broader effort by Ministries of Health to monitor and evaluate the full impact and value of vaccination programs, which should in turn inform decision-making. Establishing a research agenda can further inform priorities for immunization and vaccine research. Economies which do not have research facilities or agendas should, if not yet doing so, consider partnering with thought leaders, research institutions, and vaccine producers to identify priority data needs and establish research plans moving forward.

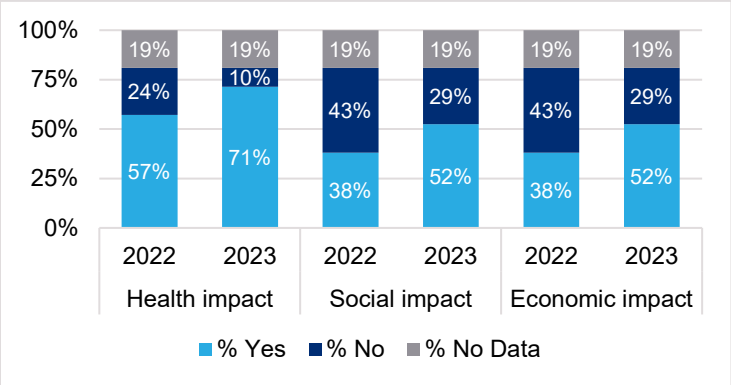


* Due to lower survey response rates in 2023 compared to 2022, data was supplemented based on results from 2022; this process may have attributed to the increase in economies with facilities to generate data on Direct Benefits.

Comprehensive value assessment frameworks

A comprehensive value assessment framework, such as the Full Vaccine Value Assessment (FVVA), aims to shift economies from traditional value assessments that focus on direct individual health benefits/risk, to understanding the full public value of vaccination.[4] The FVVA takes a holistic approach, incorporating broader and less direct impacts and the entire vaccine development-to-uptake continuum (Figure 5), with the goal of reducing uncertainty, promoting more equitable and sustainable vaccine introduction and development, and informing prioritization and investment decisions in vaccine development and distribution. The FVVA provides a framework to evaluate and communicate the worth of vaccines for decision-making through assessment methods, such as vaccine impact modelling studies, cost-effectiveness analyses, cost of illness studies, optimization modelling, and fiscal impact modeling.[5]

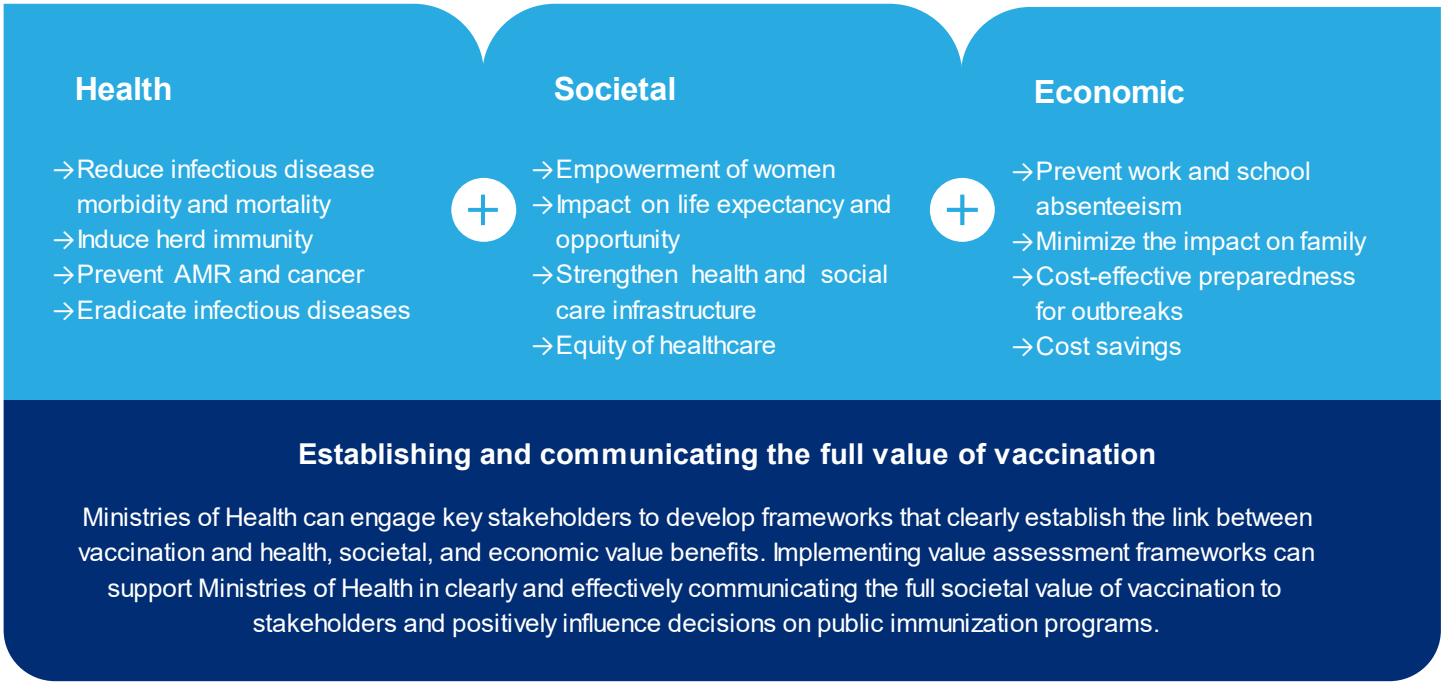
Measure 1.2: *% of APEC economies that utilize comprehensive value assessment frameworks to evaluate immunization programs' health, social, and economic impact*



Existing value assessment frameworks in at least 10 APEC economies include health, societal (e.g., improved social equity), *and* economic benefits of vaccination (see Figure 1).

At least **9** APEC economies have conducted studies or assessments to understand challenges in promoting the full value of vaccination to the general public,* a process which is essential to ensure high uptake of both new and existing vaccines.

Figure 1. The Full Value of Vaccines



Adapted from Rodrigues, C.M.C, Plotkin, SA., 'Impact of Vaccines; Health, Economic and Social Perspectives.'[6]

* Measured using 2023 Dashboard survey data only

Strategic Implementation of Pillar 1: Cultivating Recognition for the Value of Vaccination and Vaccine Innovation

The COVID-19 pandemic has shifted immunization dynamics by raising awareness of the benefits of vaccination, particularly for adults. Establishing evidence on the direct, indirect, and long-term impacts of vaccination can further support awareness and education efforts. Ministries of Health, in partnership with thought leaders, leading research institutions, and vaccine producers, should identify priority data needs along the product development and vaccine introduction continuum. Ministries of Health and Finance should clearly and effectively capture and communicate the full societal value of vaccination to stakeholders (e.g., policymakers, key decision-makers, funders, and legislators) to demonstrate how vaccination aligns with their priorities. To do this, immunization programs can leverage resources such as a comprehensive value assessment framework, like the FVVA, to assist in evaluating the value of vaccines and immunization programs, considering health, economic, and societal impacts, in turn informing equitable, sustainable, and economically sound decisions in vaccine development, introduction, and distribution.

Economies can leverage existing evidence repositories, frameworks, and reports to support broad value assessments, for example:

The Value of Immunization Compendium of Evidence (VoICE): VoICE is a searchable database of peer-reviewed, scientific evidence on the broader value of immunization, including health, equity, economics, health system strengthening, education, and global issues. [7] Each primary topic provides evidence for key concepts, such as health & health system strengthening:

- ***Seasonal flu programs help [economies] prepare for pandemics and reduce the burden of flu:*** "Seasonal influenza programs can be cornerstones to pandemic preparedness and response. Using the 2009 WHO Vaccine Deployment Initiative as a case study, eligible [economies] with a seasonal influenza vaccine program were more ready to receive and use donated vaccines than those without a program. These findings suggest that robust seasonal influenza vaccine programs allow [economies] to test crucial regulatory and delivery systems that enhance pandemic preparedness…[and reduce] burden of seasonal influenza."[8-9]
- ***Adding dTpa vaccination for pregnant women in Australia would prevent thousands of pertussis hospitalizations each year:*** "A study in Australia estimated that adding dTpa* vaccination for pregnant women to the current pertussis immunization program for children would prevent an additional 8,800 symptomatic pertussis cases (mostly unreported) and 146 hospitalizations each year in all ages, including infants and their mothers, as well as one death every 22 months. The study found maternal pertussis vaccination to be cost-effective."[10-11]

Asia Pacific Immunization Coalition (APIC) Report on Older Adult Immunization and Healthy Aging: APIC's report on *Reporting older adults' immunization: A pathway to healthy aging in the Asia Pacific*[12] outlines specific actions that economies can take to support adult immunization, outlining the advantages of adult immunization, including several economic benefits:

1. Cost-effectiveness studies suggest that for influenza and pneumococcal vaccinations, **cost savings can be as high as USD 50,000** per quality-adjusted life year gained in economies such as the United States.[13]
2. An analysis of data from the Netherlands considered the wider benefits of vaccination of people aged 50 years and older, such as reduced mortality, workdays gained, increased tax returns and healthcare costs saved, and **found an approximately fourfold return on investment**.[14]

* Note: The formulation used in this study is abbreviated dTpa.

PILLAR 2 | PRIORITIZE ACCESS TO & UPTAKE OF VACCINATION ACROSS THE LIFE-COURSE

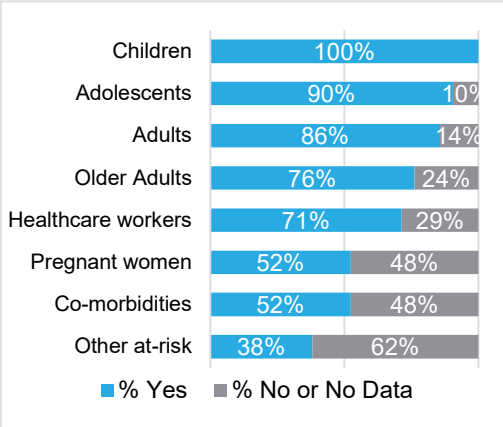
Under a life-course approach, immunization strategies are designed to maximize individuals' ability to protect themselves and maintain good health over their lives and circumstances. Individual protection from vaccination may also in turn provide immunity for immediate contacts and the wider population if coverage reaches a certain threshold. Expanding routine immunization programs to include all ages and risk groups, and to incorporate innovative immunization solutions (e.g., prophylactic monoclonal antibodies), is critical for pandemic preparedness and health security, by providing additional protection against waning immunity, stemming the rise in mortality from VPDs during adulthood, and preparing immunization systems for vaccination of all populations against new and emerging threats.

Vaccines that are administered to non-pediatric populations can confer significant benefits:

1. **Tetanus, pertussis (whooping cough), respiratory syncytial virus (RSV), and seasonal influenza vaccines** can be administered to pregnant women, protecting both them and highly sensitive infants who are too young to be vaccinated, at a time when both are at increased risk of severe disease.[15]
2. **The human papillomavirus (HPV) vaccine** can protect teenagers and adults from infection and subsequent progression to cervical cancer and several other types of cancers.[16]
3. **Hepatitis B, seasonal influenza, and pneumococcal vaccines** protect healthcare personnel, who are at elevated risk for contracting vaccine-preventable diseases and spreading outbreaks to susceptible patients.[17]
4. **Seasonal influenza, shingles, and pneumococcal vaccines** can protect the elderly, who are less able to fight off infections.[18]

Targets

1. By 2030, each APEC member economy has established comprehensive domestic immunization calendars and immunization programs that cover all stages of life (including all ages) to provide broad access to protection against vaccine-preventable diseases for all populations
2. By 2030, all APEC economies maximize vaccine coverage for all populations where appropriate – including foreign residents, migrant workers, refugees, and stateless persons – through immunization programs that ensure equitable access across the life-course
3. APEC economies regularly and creatively engage in impactful partnerships with stakeholders to encourage vaccination

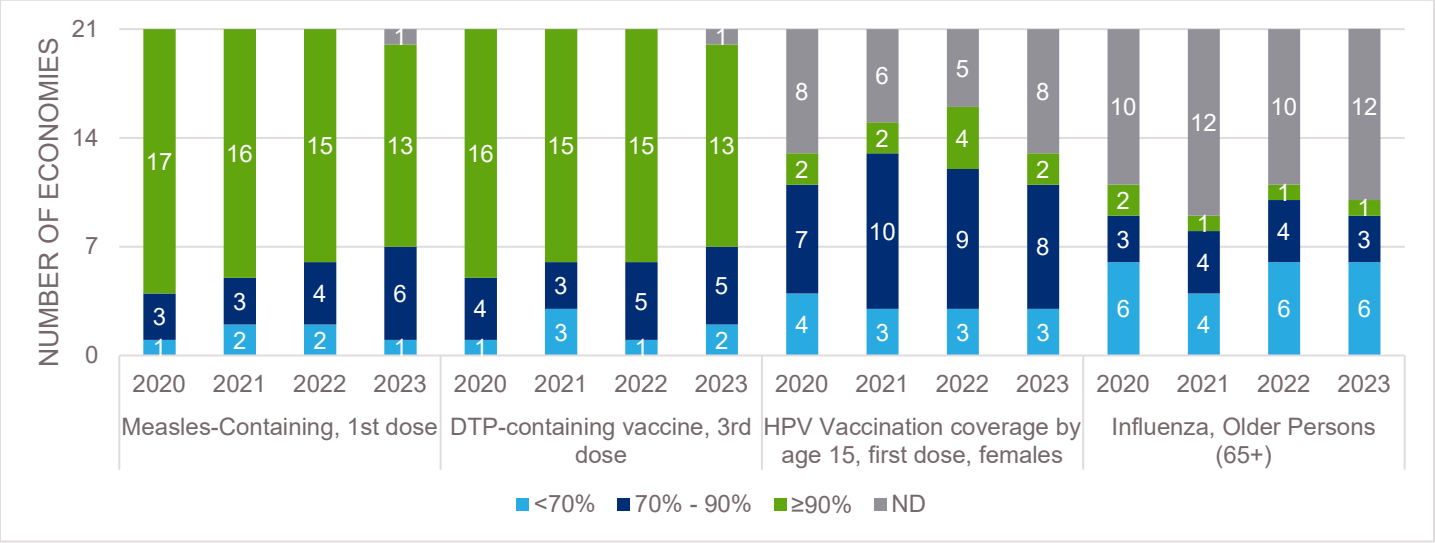


Measure 2.1: *% of APEC economies with immunization schedules that include life-course recommendations*[*]

While all economies include recommendations for children in their routine immunization schedules, **76%** include at least one recommendation for each age group in their immunization schedules, although not all are funded by domestic immunization programs.[†] The inclusion of vulnerable and high-risk sub-populations, such as healthcare workers, pregnant women, people with co-morbidities,[‡] older adults, and others,[§] can promote health equity and contribute to a more economically sustainable health system.

[*] Note: the 2022 survey included pregnant women and co-morbidities in at-risk populations; however, these populations were separated from the 'Other' category in the 2023 survey, and thus are not specifically included in the 2022 data.
[†] Age stratification: Children (0-9 years); Adolescents (10-19 years); Adults (19-64 years); Older Adults (65+)
[‡] *E.g.,* diabetes, cancer, immunocompromised patients
[§] *E.g.,* travelers and university students

Measure 2.2: *Distribution of life-course vaccination rates across APEC economies, 2020-2023*[*]



Globally, vaccination rates declined significantly in 2020 when the COVID-19 pandemic disrupted routine healthcare services. Across APEC economies, vaccines, and age groups, routine vaccination rates have continued to fluctuate, with 17 economies experiencing decreases in vaccination against one or more measured antigens. For pediatric vaccines, a decrease in the number of economies reaching 90% vaccination rates has steadily decreased, with only 8 economies reaching the 95% herd immunity threshold for measles vaccination in 2023. Additionally, despite noted inclusion of vaccines for adolescents and older adults in immunization schedules in 90% and 81% of economies (See Measure 2.1), respectively, several economies do not report data on immunization rates for HPV and influenza. While some decreases may not be statistically significant, any decrease should be monitored and addressed to protect populations from disease outbreaks.

Ensuring sustainable immunization coverage year-to-year will require additional investments in infrastructure and education, as well as establishment of domestic immunization programs that cover all stages of life. Decreases in routine vaccination rates, which could be attributed to a myriad of factors such as increases in vaccine hesitancy (see Pillar 4) and disruptions to supply chain, reiterates the need for continued advocacy to ensure vaccination rates increase, not decrease, moving forward.

Immunization prevents **4-5 million deaths** every year in all age groups. **1.5 million additional deaths** could be avoided by increasing global vaccination coverage. World Health Organization, 2019

Strategic Implementation of Pillar 2: Advancing Access and Uptake of Vaccination Throughout the Life-Course

The COVID-19 pandemic has redesigned how economies think about vaccination across the life-course. As a key policy initiative, APEC economies should prioritize vaccination for all people, based on their individual risks and characteristics. Sufficient funding and infrastructure can ensure strong, transparent [domestic] immunization technical advisory groups and decision-making processes, and robust data systems are needed to inform policies and programs (see Figure 2).[19] Additionally, economies can reduce missed opportunities by integrating vaccination services with other health and community activities. Offering immunization as part of antenatal and postpartum care or organizing vaccination clinics at routinely accessed locations beyond the primary care setting, such as schools, workplaces, and pharmacies, can remove certain access barriers (e.g., time off work) by meeting unvaccinated individuals where they are.[20]

[*] For both adolescent and elderly populations, reporting may be sparse as economies may have more limited tracking capabilities for non-pediatric vaccination, or do not include these vaccines in immunization programs.

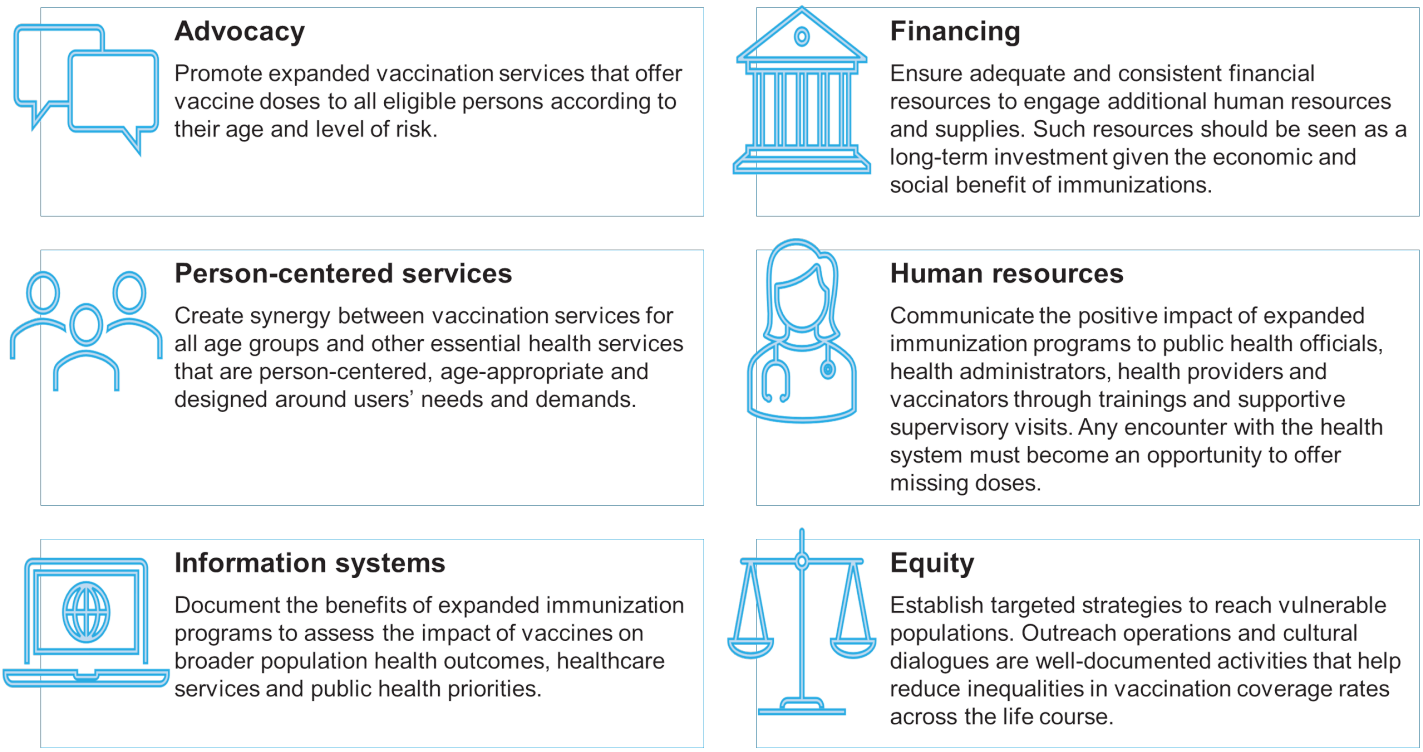
The availability of vaccines that protect a broader population across the life-course is expected to expand significantly over the next several years. By identifying existing barriers in immunization programs, particularly those which may impede access to vaccination of non-traditional target populations (e.g., adults & older adults), economies can better prepare their immunization programs for introduction of novel vaccines.[21]

Economies can leverage existing strategies as a framework for their implementation efforts, for example:

Indonesia: Piloting HPV Vaccination: The HPV immunization program in Indonesia was initially implemented in pilot stages. It was first introduced in 20 districts and cities between 2016 and 2021 and grew to an additional 112 districts and cities in 2022. The pilot programs achieved high HPV vaccination coverage (93.9% for the first dose and 90.3% for the second dose), indicating that the HPV vaccine was widely accepted. To accelerate the elimination of cervical cancer, the Ministry of Health expanded the HPV immunization Program to reach all Indonesians, officially launching in August 2023. Indonesia's Cervical Cancer Elimination Plan, also released in 2023, intends to expand HPV vaccine eligibility to boys and catch-up populations (up to age 26) by 2030, with female catch up cohorts commencing in 2024 and gender-neutral vaccination due to begin in 2028.[22]

Singapore: [Domestic] Adult Immunisation Schedule (NAIS): In Singapore, the NAIS was established in November 2017 to consolidate and provide guidance on vaccines recommended to protect persons aged 18 years or older against vaccine-preventable diseases.[23] Subsidies were extended to vaccines recommended in the NAIS in November 2020 for eligible adults to encourage uptake. [24] Starting in 2023, as part of Healthier SG, residents enrolled in a Healthy SG clinic can receive full subsidies for NAIS-vaccines, such as seasonal influenza, at their enrolled clinic.[25]

Figure 2. Key Components of Health Systems for Introducing a Life-Course Approach to Immunization



Adapted from PAHO, 'Immunization across the life course - Resource center'[26]

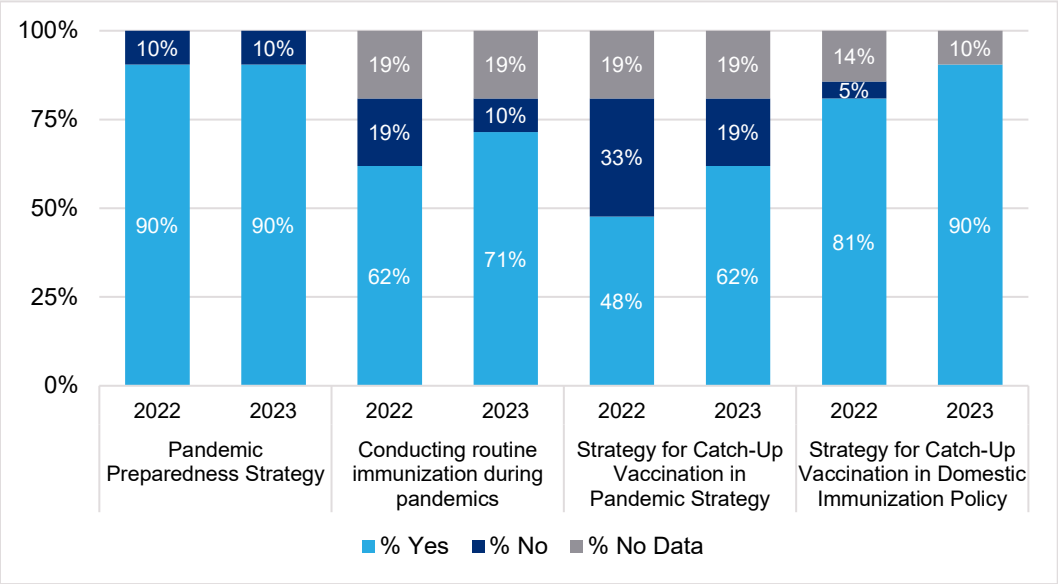
PILLAR 3 | BUILD WHOLE-OF-GOVERNMENT CAPACITY IN HEALTH SECURITY AND PANDEMIC PREPAREDNESS

The World Health Organization has identified epidemic preparedness as one of the 13 urgent health challenges for the next decade. APEC economies should continue efforts to track diseases, identify weak points in global response mechanisms, and take strides to combat the looming risk of pandemics. Outbreaks due to vaccine-preventable diseases can be avoided by robust disease surveillance programs, routine vaccination, and other preparedness measures. Early warning systems provide opportunities for early detection, action, and response to potential health crises. Because climate influences the transmission of many infectious diseases, variations in climatic conditions can imply higher rates of transmission for climate-sensitive health hazards.

Targets

1. By 2030, all APEC economies have established mechanisms to effectively mobilize resources in order to deliver vaccines during health emergencies
2. By 2030, all APEC economies have established recovery strategies for their immunization programs in the aftermath of acute health emergency situations and/or humanitarian crises
3. By 2030, all APEC economies have full surveillance and monitoring capacity to track any risk of health emergencies due to vaccine-preventable disease outbreaks, and to ensure progress towards vaccines uptake across the life-course

Measure 3.1: *% of APEC economies which have an established pandemic preparedness strategy or domestic emergency response plan for diseases with pandemic potential*



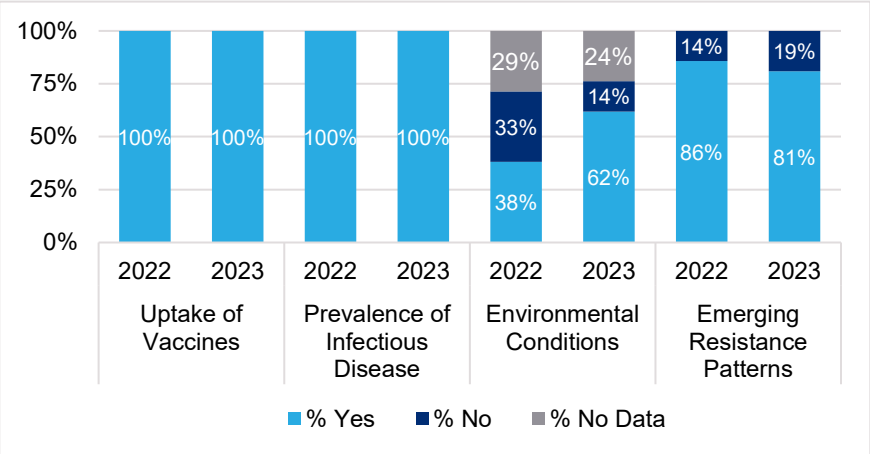
Most APEC economies have introduced pandemic preparedness strategies or emergency response plans, either prior to or in response to the COVID-19 pandemic; those that have not done so are in the process of developing such plans. Among economies that have introduced plans, some may be disease-specific (e.g., seasonal or pandemic influenza), rather than overarching.

Establishing comprehensive plans will support rapid access to vaccines and other countermeasures in future emergencies, outbreaks, and pandemics through proper coordination of global, regional, economy-wide, and community/local governance mechanisms. In addition, economies should include in their plans measures to facilitate delivery of routine health and vaccination services to avoid further disruptions.

Additionally, economies can consider including provisions for how to conduct routine immunization during outbreak situations, as well as immunization recovery plans that can facilitate “catch-up” vaccination following service disruptions. Incorporating catch-up strategies in routine immunization policy can further fortify vaccination rates by ensuring infrastructure is in place to reach unvaccinated individuals.

Measure 3.2: *% of APEC economies that have designed a comprehensive process for collecting and/or evaluating data related to vaccine-preventable diseases*

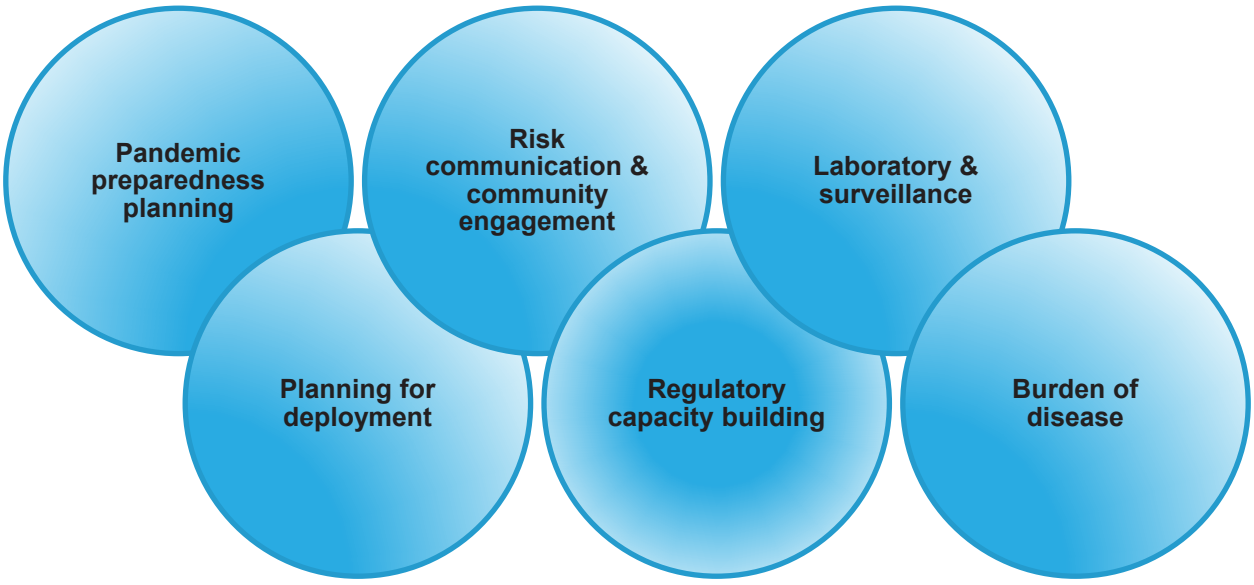
While all economies have processes for collecting and/or evaluating data directly related to vaccination (i.e., vaccine uptake and infectious disease prevalence), fewer collect data on environmental conditions, which influence the landscape of disease risk, and emerging resistance patterns (e.g., antimicrobial resistance), which are related to control of disease. Tracking this information can determine the performance of immunization systems and inform changes to coverage or approach.



Strategic Implementation of Pillar 3: Building Capacity with a Whole-of-Government Approach to Health Security and Pandemic Preparedness

The COVID-19 pandemic has highlighted the need for comprehensive pandemic and outbreak preparedness plans that provide key actions for economies to implement in preparation for and in response to outbreaks of infectious diseases. While many economies have implemented pandemic preparedness plans, ongoing strategic planning and program evaluation can ensure that strategies are consistent with global recommendations and the most up-to-date data and knowledge[27]. To guarantee adequate crisis response, APEC economies will need global and regional coordination, sustained local capacities, comprehensive emergency plans of action that are adjusted based on changing conditions, and robust surveillance of the health landscape.

Figure 3. Components of pandemic preparedness



Adapted from WHO, 'Mid-term review of the High-Level Implementation Plan II of the Pandemic Influenza Preparedness Framework'[28]

Economies can leverage existing strategies as a framework for their implementation efforts, for example:

Indonesia, Republic of Korea, Thailand, the United States, Viet Nam: The Global Health Security Agenda (GHSA): The GHSA is a global effort to strengthen the global community's ability to prevent, detect, and respond to infectious disease threats. The GHSA is comprised of 9 Action Packages, including on immunization, Workforce Development, Zoonotic Disease, and Sustainable Financing.[29] At the APEC HWG meeting in February 2023, the Republic of Korea noted in their presentation that "by strengthening Asia-Pacific region's Health Security Governance, the GHSA and GHSCO can support and prevent any obstacles due to infectious diseases to achieve sustainable economic growth and prosperity in the Asia-Pacific region and benchmark the APEC-GHSA model to other regions."[30]

The Immunization Action Package,[31] governed by the Republic of Korea, lays out the following strategic objectives:

1. Maintain high vaccination coverage rates and improve optimal vaccination rates where needed.
2. Strengthen systems for the safety management of adverse effects from vaccinations.
3. Identify and target immunization to populations at risk of epidemic-prone VPDs of domestic importance and create a priority list of high-risk regions and populations in order to provide vaccinations to VPD endemic areas.
4. Strengthen systems for VPD prevention and control, such as outbreak response immunization, case-based surveillance system, and access to a laboratory in a VPD laboratory network for diagnostic confirmation.
5. Conduct routine or supplementary immunization activities to address immunity gaps for measles.

Thailand: Participatory One Health Digital Disease Detection (PODD): PODD is a digital one-health approach to ensure a rapid and preventive response to both human and zoonotic disease outbreaks, as well as environmental health threats and food safety. The system is a community-owned participatory surveillance system that enables community members to report unusual disease events through smartphone and web applications, after which reports are triaged by PODD analysts and responded to by local public health and livestock offices.[32] Within the first 16 months of the program, 1,340 abnormal events were reported, with 36 verified incidents of dangerous zoonotic diseases.[33] A study by Yano et al. found that social impacts, including saving budgets for outbreak prevention, reducing animal loss from disease outbreaks, and maintaining food security, among other impacts, yielded a 2.46 social return on investment (SROI).*[34] The program has evolved to capture other threats, is scalable to large populations, and is being replicated in other economies, including Tanzania.[35]

Tracking environmental health threats will be increasingly important with the growing impact of climate change on infectious diseases, particularly vector-borne diseases such as dengue fever. Gavi, for example, plans to incorporate the impact of climate change into its five-yearly Vaccine Investment Strategy (VIS) to assess which vaccines will be included in its portfolio.[36,37]

Private Sector: Tracking Adult Vaccination: VaccineTrack, a partnership between GSK and IQVIA, is a platform that communicates data trends on adult vaccination across the United States[38] by tracking insurance claims data for routine vaccines in the adult population, with options to view uptake on a geographic level (U.S., vs. individual states), and by vaccine, age group, gender, ethnicity, and payer type. The platform encourages data transparency, trend monitoring and forecasting, and enhances visibility into vaccine equity. Through the project, economy-level analytics help federal and local decision-makers and stakeholders, as well as immunization partners, drive improved vaccination rates, public health outcomes, and health equity among populations.

* "[SROI] is a method that assesses social impact and transform to be financial capital…The concept of SROI is measuring social, environmental and economic outcomes and uses monetary values to represent them. SROI is used to evaluate the outcomes of intervention…and to predict the social value" [Source]

PILLAR 4 | STRENGTHEN CONFIDENCE IN VACCINATION AND BUILD RESILIENT IMMUNIZATION PROGRAMS

The COVID-19 pandemic has fundamentally shifted the global vaccine landscape by saturating the communications and media space with evolving messaging regarding vaccine development, safety, testing, recommendations, and eligibility, while at the same time competing with misinformation. Despite the broad societal benefits of vaccination, the success of immunization programs depends on public confidence. Confidence in vaccines, in turn, can only be achieved when there is public trust in the vaccination ecosystem, including in the safety and efficacy of vaccines, as well as confidence in the healthcare professionals and systems that administer vaccines.

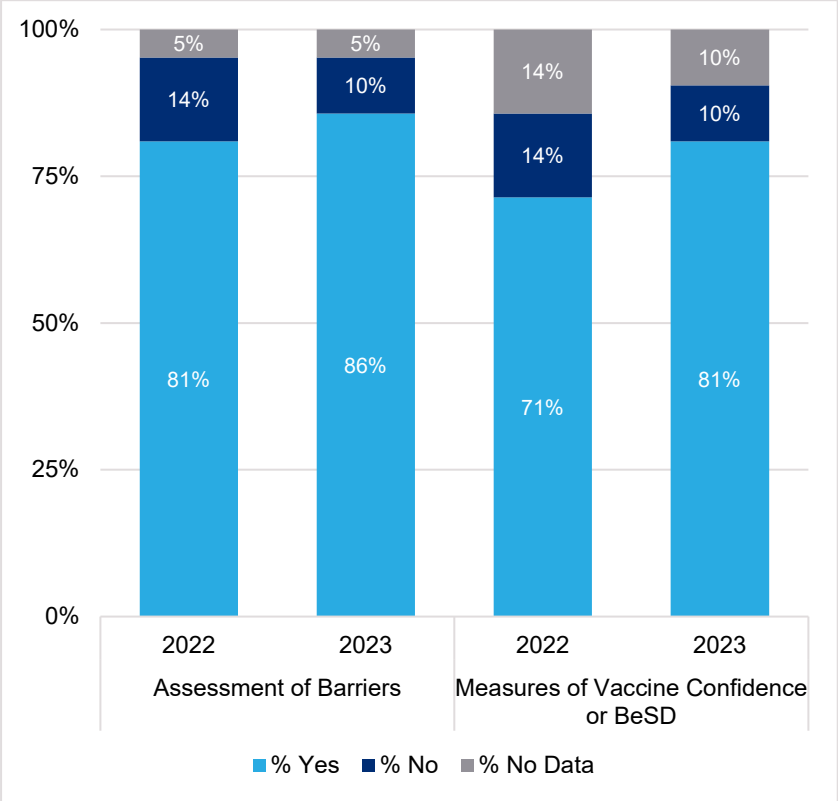
Targets

1. By 2030, all APEC economies have established rapid, agile, and responsive systems that can assess areas of systemic vulnerability, identify gaps, and mitigate the risk of threats to confidence.
2. By 2030, all APEC economies have full monitoring and response capacity to understand crises in vaccines confidence as well as the necessary strategies to address issues.
3. By 2030, all APEC economies have active and productive channels of engagement with healthcare professionals (HCPs) that help to educate and empower them to advocate for vaccination and provide reassurance to patients with doubts about vaccination
4. By 2030, all APEC economies maintain communications strategies – including digital strategies – to ensure the dissemination of clear, accessible, and accurate information about vaccination

Measure 4.1: *% of APEC economies which conducted assessments to understand barriers to vaccination or reasons for under-vaccination*

At least **86%** of APEC economies have reported conducting assessments to understand low uptake of vaccines in their populations. Understanding barriers and determinants of uptake can inform programmatic priorities and domestic, jurisdictional, and local activities to increase vaccine uptake. **81%** of economies have reported measuring vaccine confidence *and/or* behavioral and social drivers (BeSD) of vaccination, further enabling economies to understand and address the needs of their populations by understanding public trust.

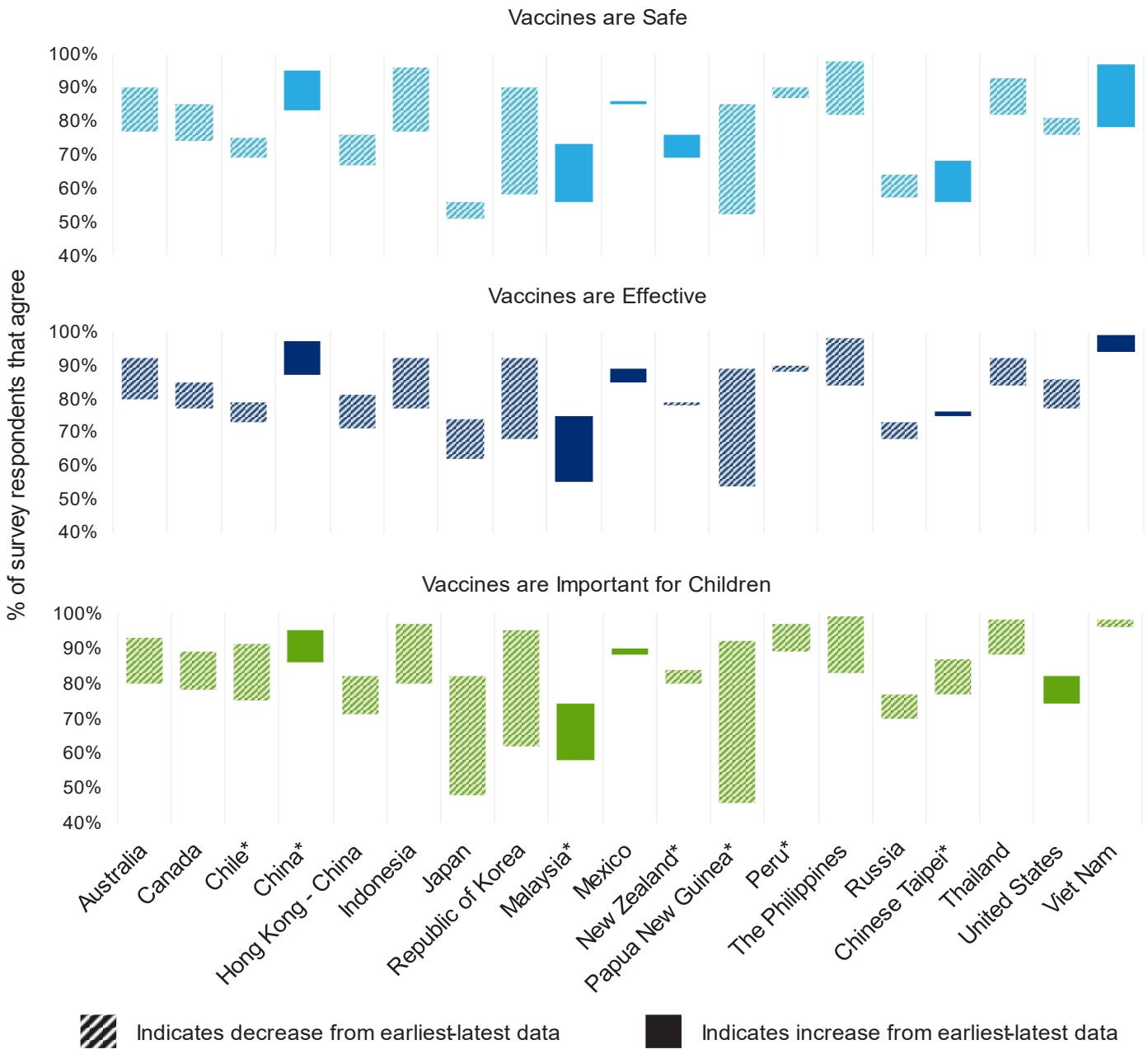
Additionally, in 2023 at least **71%** of economies had in place teams to identify and analyze system vulnerabilities impacting immunization and respond to emerging or potential threats to immunization access, up from 62% in 2022.



Measure 4.2: *Perceptions towards vaccine safety, effectiveness, and importance*

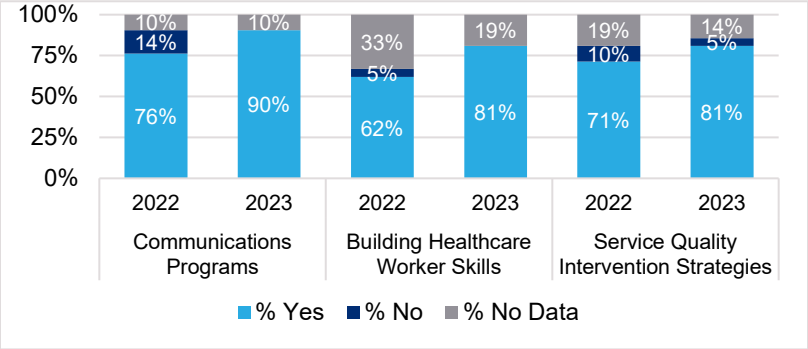
The Vaccine Confidence Index (VCI)[39] examines individuals' overall perceptions of the importance, safety, effectiveness, and compatibility of vaccines in over 140 economies, including 19 APEC members. Between the years of earliest and latest data collection, adults in at least **71%** of APEC economies increasingly disagreed with one or more measured statements 'Vaccines are safe,' 'Vaccines are effective,' and 'Vaccines are important for children.' The VCI further aggregates responses by gender, age, education level, and religion, which may support economies in tailoring confidence-building interventions to specific sub-populations.

The State of Vaccine Confidence, 2015-2023, by Economy*



* The data source does not include data for all economies for all years; for some economies, data was supplemented with the earliest or latest available results: Chile (2018-2023); China (2015-2021); Malaysia (2018-2023); New Zealand (2018-2023); Papua New Guinea (2015-2022); Peru (2015-2022); Chinese Taipei (2018-2023). Data are unavailable for Brunei Darussalam. Data for Singapore are only available for 2018 and can be found in the appendix on Page 34.

Measure 4.3: *% of APEC economies with communications programs to promote confidence in vaccination*



Introducing communications programs can support informed decision-making and vaccine uptake by strengthening confidence in vaccines through multiple channels. Programs should be:

- Driven by communities.
- Tailored to local experiences and needs.
- Informed by an economy's understanding of BeSD.

In 2022-2023, **90%** of APEC economies reported using public communications strategies to address under-vaccination in the general population in 2023, using the results of demand-related assessments, compared to 76% in 2022. Recognizing the importance of strong provider recommendations in influencing vaccine decision-making, **81%** of APEC economies have implemented communications programs to help healthcare workers build skills to manage patients who may be vaccine hesitant, and **81%** reported to WHO/UNICEF that they have implemented service quality interventions to address under-vaccination.

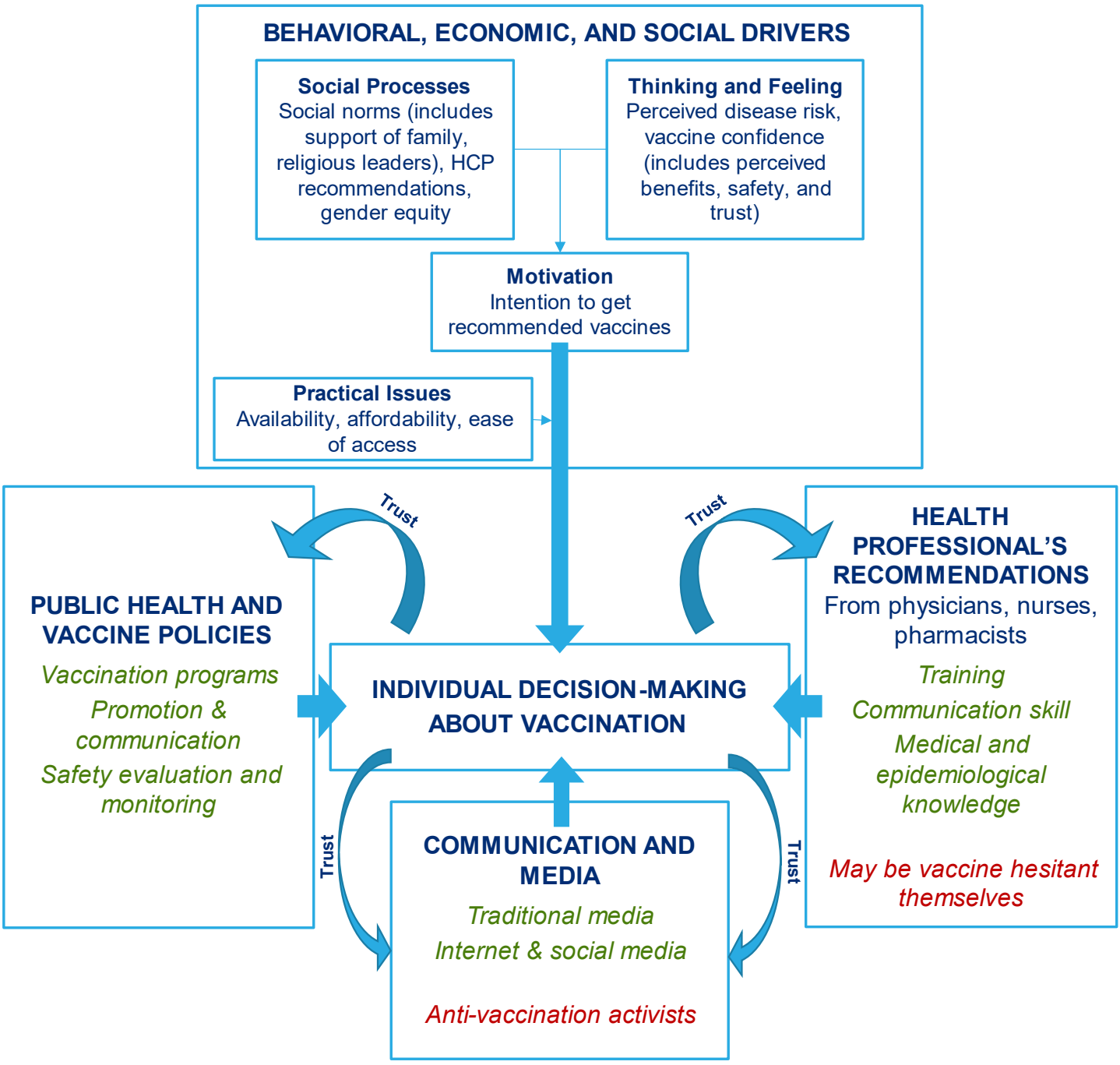
Strategic Implementation of Pillar 4: Strengthening Confidence through Resilient Immunization Programs and Enhanced Trust in Vaccination

Increasing vaccine confidence, particularly in the context of the COVID-19 pandemic, requires economies to proactively communicate the value of vaccination, engage healthcare workers, and introduce systematic monitoring and surveillance to better understand and promote drivers of vaccine uptake, such as those outlined in Figure 4. Once economies have a strong understanding of determinants of uptake in their populations, multi-stakeholder policies and strategies can be implemented to address existing and future challenges. In particular, locally tailored solutions for barriers to immunization, such as communications strategies for vaccine-hesitant populations, can improve immunization coverage and equity.[40]

Economies can leverage existing strategies as a framework for their implementation efforts. The APEC SWGv *Vaccine Spotlight Report*[41] shares successful policies and programs to increase vaccine confidence and uptake, including the following submissions:

1. In **Australia**, the Sharing Knowledge About Immunisation (SKAI) project and MumBubVax program used evidence-based tools, such as fact sheets and infographics, to improve conversations between patients and their health care providers about childhood and pregnancy vaccinations.[42] The intervention adapts the concept of clinical pathways to establish 'communication pathways' for professionals responding to vaccine hesitancy.
2. In **Hong Kong, China**, initiatives to enhance COVID-19 vaccination include a free of charge territory-wide vaccination program. With the support of professional bodies, territory-wide health education and promotion campaigns were implemented to provide up-to-date and accurate information on vaccination to increase vaccine uptake.
3. In the **Republic of the Philippines**, a COVID-19 communication campaign was mounted by the government with a mix of activities to support the spread of evidence-based information around vaccination. Social media and other distribution platforms were employed to amplify messages regarding vaccine safety and efficacy.
4. In **Singapore**, the National Vaccination Programme included public communication on vaccination via multiple platforms. It also targeted misinformation alongside increasing vaccine accessibility across the [economy], taking a multi-pronged approach to encourage vaccine uptake.

Figure 4. Behavioral, Economic, Social, and Policy Drivers of Vaccination



Adapted from Dubé et al. *Conceptual model of Vaccine Hesitancy*[43] and WHO Report on Tools to Measure Behavioral and Social Drivers of Vaccination[44-45]

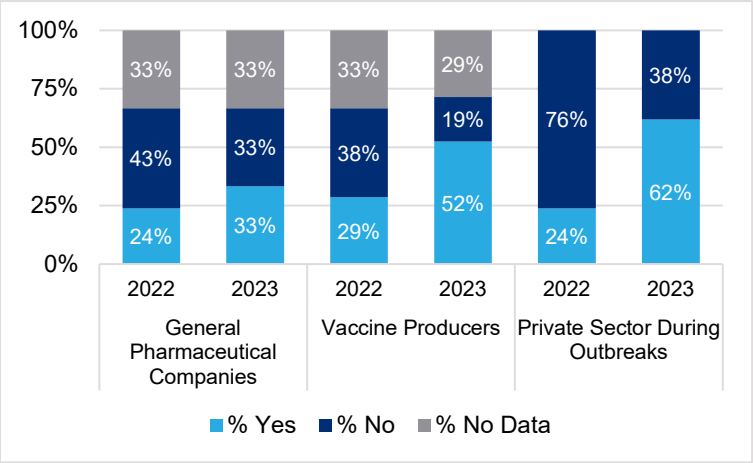
PILLAR 5 | ENABLE INVESTMENT AND INNOVATION IN VACCINE RESEARCH & DEVELOPMENT (R&D), MANUFACTURING, AND DELIVERY

Historically, the vaccine industry has been one of high growth. Nevertheless, there are signs that the pace of vaccine innovation is on the decline, such as slowing revenue growth, a flattening development pipeline, declining numbers of vaccine candidates that reach clinical studies, and remaining unmet needs. To continue advancing innovation and R&D, steps should be taken to incentivize investment in vaccines and other immunization options (such as monoclonal antibodies), possibly through tackling the rising costs and commercial uncertainty that contribute to slowing innovation.

Targets

1. By 2030, all APEC economies establish policies and procedures that foster public-private dialogue between vaccine producers and governments in order to chart an optimal course for encouraging investment in innovation
2. By 2030, all APEC economies maintain mechanisms to enhance producers' understanding of local demand and health needs, in order to inform R&D and reduce the commercial uncertainty of new investments

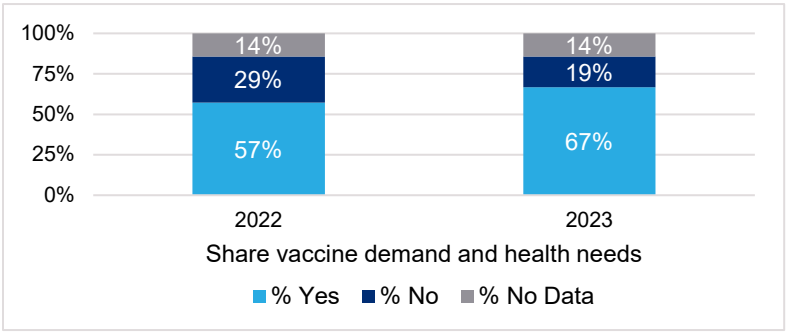
Measure 5.1: *% of APEC economies with a private sector engagement strategy or mechanism*[*]



Other than in outbreak scenarios, fewer than half of economies have implemented private sector engagement strategies or mechanisms, for either general engagement with vaccine or pharmaceutical producers or more specifically for use in outbreak preparedness/response. Introducing public-private partnerships and engagement strategies can support multi-stakeholder efforts to expand domestic vaccine research, development, and manufacturing, as well as understand current market demands, forecast future demand, and identify targets for investment.

Measure 5.2: *% of economies with a process in place for sharing data on vaccines demand and health needs among key stakeholders*[†]

In 2023, an estimated **67%** of economies have implemented a process to share data on vaccines demand and health needs, enabling vaccine producers and other stakeholders to understand market demands, forecast future demand, and identify targets for investment, as outlined in more detail in Figure 6 on Page 21.

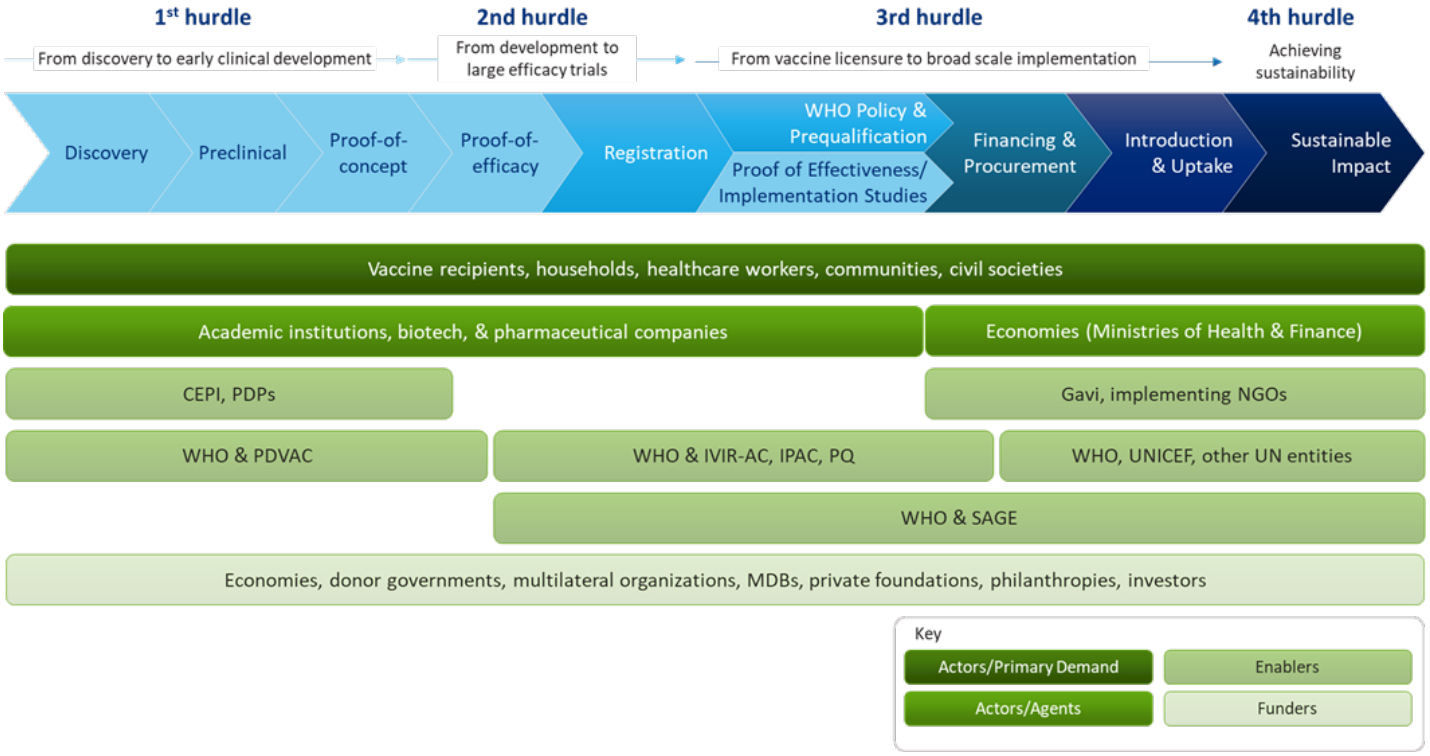


[*] Collection of data identifying strategies to engage general pharmaceutical producers and vaccine producers is dependent on survey responses from 2022 and 2023; data collection for non-government partners began in 2023. Collection of data to identify outbreak-related strategies is supplemented by the Global Health Security Index.
[†] Data collection is dependent on survey responses.

Strategic Implementation of Pillar 5: Empowering Innovation through Investment and Advancements in Vaccine R&D, Manufacturing, and Delivery

Throughout the COVID-19 pandemic, economies partnered with multi-sector stakeholders to advance development of and access to safe and effective countermeasures, including vaccines, in an unprecedented manner. Economies can continue to leverage existing partnerships and mechanisms to further advance research, development, and general infrastructure for both traditional and innovative vaccines, particularly those for unmet needs, through strategies such as data sharing, demand forecasting, and public-private partnerships. Progressing a new vaccine from the discovery period until introduction, uptake, and sustainable impacts requires coordinated investments across a multitude of stakeholders throughout the approval pathway (see Figure 5).

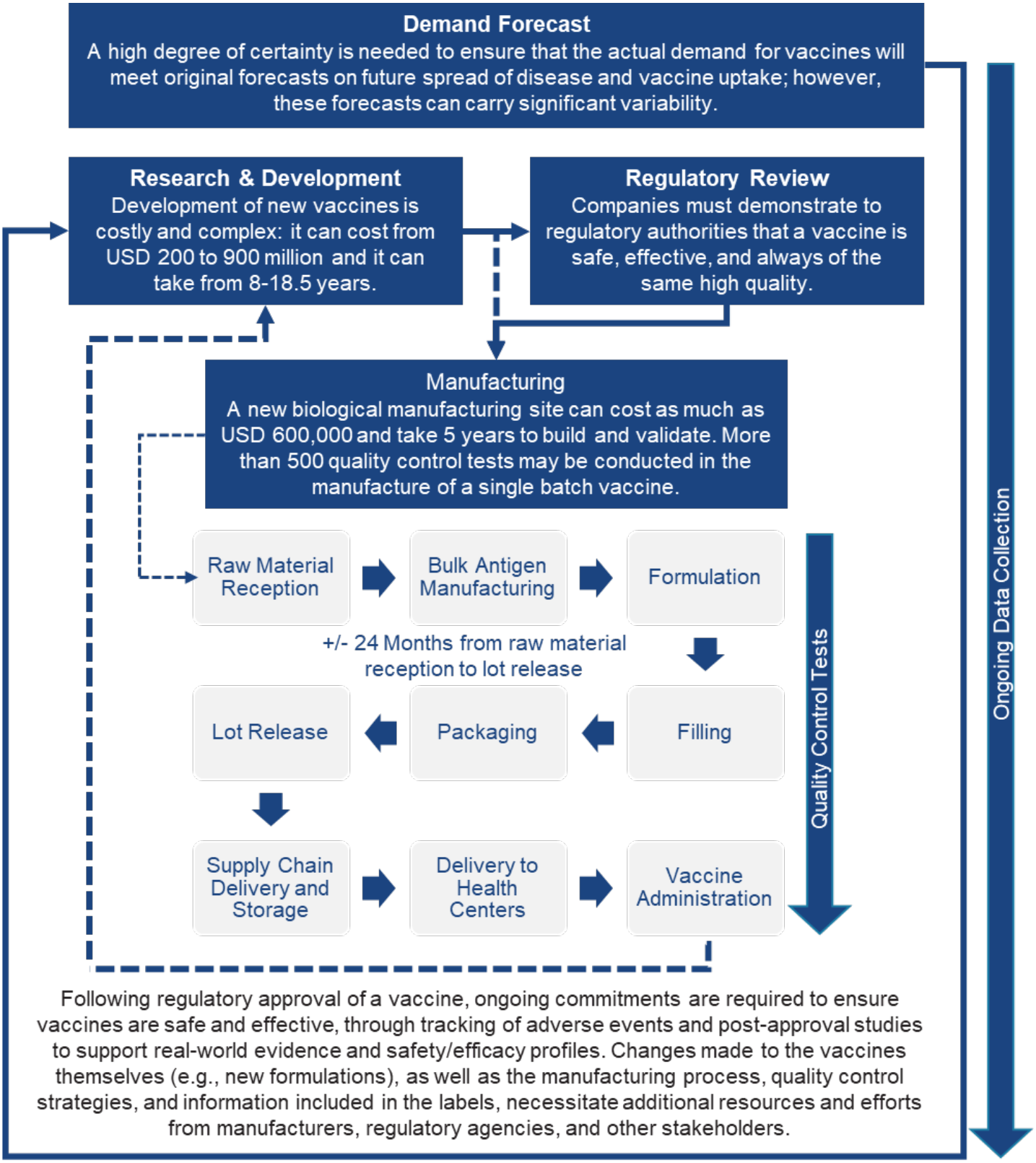
Figure 5. Pathway, hurdles, and stakeholders, from vaccine development through program sustainability



Adapted from Hutubessy et al. (2023)[46]

Economies can leverage existing strategies as a framework for their implementation efforts, for example:
Chile: Introducing immunization solutions for RSV: To curb the high burden of respiratory syncytial virus (RSV) in infants, Chile recently introduced a prophylactic monoclonal antibody into its domestic immunization program, implementing a winter immunization campaign for all infants under six months of age. The use of innovative immunization solutions – such as monoclonal antibodies – can support efforts to reduce illness and hospitalization caused by RSV and other lower respiratory tract infections. The recommendation by CAVEI – Chile's immunization technical advisory group – followed positive experiences in other economies (e.g., the U.S., France, and Spain), and considered evidence such as a cost-effectiveness study that estimated that implementation of the mAB in 2023 could have nearly halved the number of hospital beds needed for children under 2 hospitalized with RSV.[47] The inclusion of mAB further strengthens Chile's comprehensive immunization system by providing an additional layer of protection for the most vulnerable age group.

Figure 6. Components of the Vaccine Journey



Adapted from IFPMA & DCVMN, 'The development and manufacture of vaccines to protect global health'[48], and IFPMA, 'The pharmaceutical innovation journey'[49]

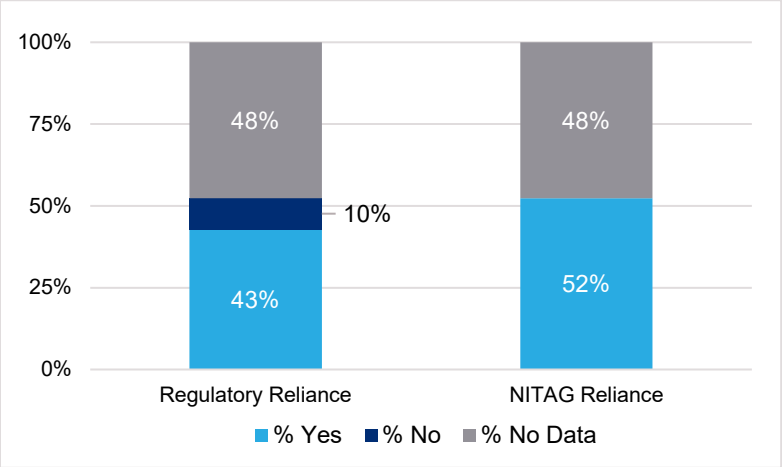
PILLAR 6 | ACCELERATE REGULATORY HARMONIZATION FOR VACCINES ACROSS APEC ECONOMIES

Regulatory harmonization is the process of aligning regulatory requirements across economies or regions over time through the adoption of internationally recognized standards and practices. Regulatory harmonization enables both regulatory authorities and industry to pursue a shared commitment to protect public health. Rather than lowering standards, harmonization yields benefits across regulatory authorities (RAs), vaccine producers, and patients by enabling more efficient processes and more rapid access to quality medicines without negatively impacting public health.

Targets

1. APEC-wide endorsement of and adherence to a set of agreed regulatory practices including adherence to globally recognized regulatory harmonization recommendations and guidelines, to ensure effective supply chains and sufficient inventory
2. By 2030, all APEC economies have undertaken capacity building initiatives to accelerate adoption of globally recognized recommendations and guidance on regulatory harmonization for vaccines
3. Continuing multisectoral collaboration within and across APEC economies to ensure robust supply chain and access to vaccines across the globe

Measure 6.1: *% of APEC economies which consider decisions by other economies in regulatory and programmatic decision-making, 2023*[*]



APEC economies may approve or recommend vaccines based on existing recommendations and/or evidence reviews completed by other economies (APEC or otherwise), the World Health Organization, WHO Listed Authorities (WLA),[50] and Regional Immunization Technical Advisory Groups. The benefits of collaborating in this way include expedited decision-making for regulatory and NITAG reviews, and additional resources to reference to aide in technical decisions and the development of immunization schedules.

Participation in regulatory harmonization initiatives can support APEC economies in streamlining regulatory approval of medical products, including vaccines. In 2022, 95% of APEC economies were involved in at least one harmonization initiative[†].

Measure 6.2: *% of APEC economies that have designed or initiated capacity-building trainings*

At least **67%** of APEC economies have designed or initiated capacity-building trainings to accelerate adoption of globally recognized recommendations and guidance on regulatory harmonization for vaccines, compared to at least **48%** reported in 2022.

[*] Data collection is dependent on survey responses collected in the 2023 survey. Data was not collected in the 2022 survey.

[†]Harmonization initiatives that were measured include: Access; Pharmaceutical Inspection Co-operation Scheme (PIC/S); Association of Southeast Asian Nations (ASEAN); International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use (ICH); International Coalition of Medicines Regulatory Authorities (ICMRA); and Pan American Network for Drug Regulatory Harmonization (PANDRH).

Strategic Implementation of Pillar 6: Advancing Regulatory Harmonization of Vaccines across APEC Economies

Engaging in regulatory harmonization initiatives by domestic regulatory authorities in APEC economies can range from standard, independent reviews, and decisions to mutual recognition, as demonstrated in Figure 7. Through the Action Plan, economies have committed to developing a set of agreed regulatory practices to ensure effective supply chains and sufficient inventory, as well as implementing globally recognized harmonization guidelines for vaccines. Global vaccine producers, local producers, and domestic regulators can advance harmonization efforts through capacity-building trainings, multisectoral dialogues, and reviews of policies.

Economies can leverage existing strategies as a framework for their implementation efforts, for example:
APEC Regulatory Harmonization Steering Committee (RHSC) of Medical Products: Since 2009, the RHSC has promoted a strategic, effective, and sustainable approach to regulatory convergence. Recognizing the importance of strong regulatory frameworks for advancing universal healthcare goals, especially in the face of challenges like the COVID-19 pandemic, the RHSC underscores the vital role of regulatory authorities (RAs) in ensuring timely access to safe and effective medical products. Regulatory convergence, facilitated by the RHSC's multistakeholder network of experts and champions, allows for quicker product approvals by avoiding duplicative reviews, saving public resources, and tapping into the expertise of high-performing regulators across the region. Through initiatives like the APEC Training Centers of Excellence for Regulatory Science (CoEs), the RHSC aims to build human capacity and strengthen political will for regulatory convergence and reliance, ultimately improving global public health.

Association of Southeast Asian Nations (ASEAN)[*] Joint Assessment and Vaccine Security: The ASEAN Joint Assessment Procedure facilitates regulatory approvals by establishing a formal procedure in which the same pharmaceutical marketing authorization application is simultaneously submitted to all participating National Medicines Regulatory Authorities (NRAs). Participating NRAs then assess and prepare a joint report for the application, with final decisions made by each individual NRA, allowing economies to leverage existing decision-making processes and apply domestically relevant considerations.

Implementation of ASEAN Joint Assessment Framework in Malaysia: The National Pharmaceutical Regulatory Agency (NPRA) recently made significant updates to its Guideline for Facilitated Registration Pathway and the registration pathway under ASEAN Joint Assessment that was approved on 5th November 2023 and enforced starting 1st January 2024. The purpose of these revisions is to enhance NPRA's current reliance mechanism, ensuring a more robust and streamlined regulatory framework on pharmaceutical products (including vaccines).

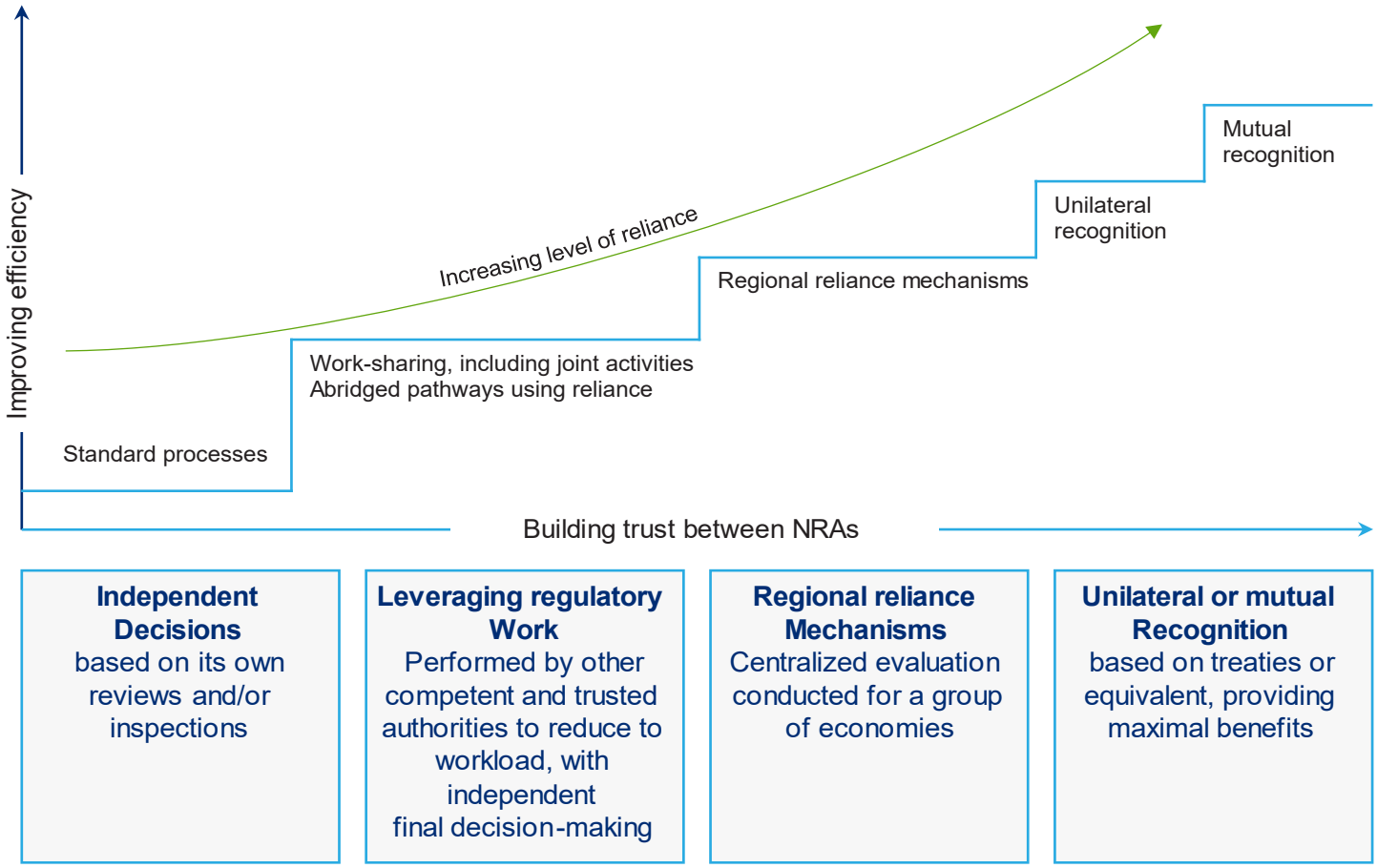
The *Regional Strategic and Action Plan for ASEAN Vaccine Security and Self-Reliance (AVSSR) 2021-2025*[51] is a comprehensive plan that aims to ensure timely, equitable access to affordable and high-quality vaccines. The AVSSR is intended to play a significant role in promoting regional cooperation among ASEAN member states, providing a framework to inform research and development, support effective procurement and stockpiling strategies, establish or strengthen information sharing platforms, and strengthen capacity of key stakeholders.

[*] APEC Members of ASEAN: Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore, Thailand, Viet Nam

In addition to joining regulatory initiatives, economies can introduce other regulatory harmonization practices throughout the vaccine development life cycle. Coordination between regulatory authorities and bodies (e.g., WHO) was a crucial element in facilitating introduction of COVID-19 countermeasures, including vaccines. Such practices included:

1. Adjusting requirements for local clinical trials before vaccine approval
2. Acceptance of global dossiers and provision of additional data (including real-world evidence) in post-approval commitments
3. Global collaboration to share insights, data, and technology related to pandemic response

Figure 7. Schematic Representation of Increasing Levels of Regulatory Reliance



Adapted from WHO 'COVID-19 Vaccines Safety Surveillance Manual: Regulatory Reliance and Work-sharing'[52]

PILLAR 7 | ESTABLISH PROVEN & INNOVATIVE MECHANISMS FOR SUSTAINABLE IMMUNIZATION FINANCING

Sustainable life-course immunization financing is vital to safeguard public health, boost economic resilience, and reduce long-term healthcare costs. As the Asia-Pacific faces diverse health challenges, including aging populations and rising non-communicable diseases, consistent investment in immunization across all populations is essential. Sustainable financing ensures vaccines remain accessible and affordable, preventing outbreaks and easing strains on healthcare systems. Leaders in health, finance, and related sectors must secure diverse and sustainable domestic financing for a variety of needs (see right)[53] to secure and expand immunization programs.

What needs to be financed?

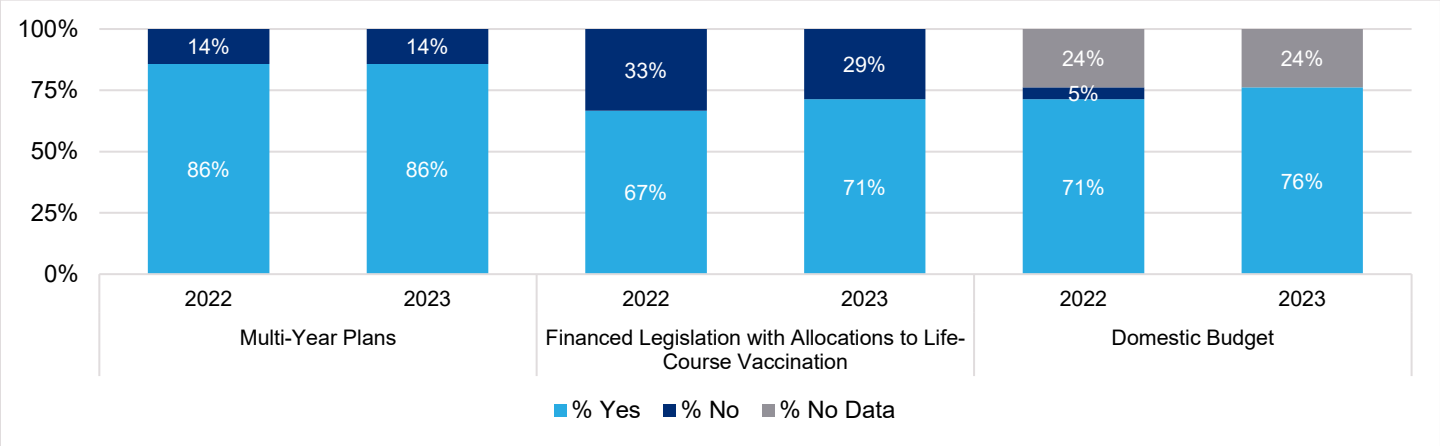
- Health personnel
- Vaccine procurement
- Safe injection & other ancillary supplies
- Cold chain equipment, maintenance, and training; Cold stores and facilities
- Recording and reporting tools
- Social and community mobilization
- Transportation and vehicles.

Targets

1. By 2030, all APEC economies make commitments on economy-wide immunization funding
2. Establishment of joint platforms within and across APEC economies in order to foster collaboration to identify and resolve financing challenges
3. Each APEC economy utilizes decentralized strategies to the extent necessary in its given context, to facilitate local alignment of funding and needs

Measure 7.1: *% of APEC economies with Multi-Year Economy-wide Immunization Plans with provisions for the life-course or concrete proposals for financing strategies*

Measure 7.2: *% of APEC economies with a vaccination law or other legislation that includes financing, with allocations to life-course vaccination*



While all APEC economies finance vaccination programs, the mechanisms for which they do so – such as funded multi-year plans, specific vaccination laws, or inclusion in domestic budgets – varies, particularly when accounting for the extent of financing (e.g., immunization of non-pediatric population may not be accounted for). Sustainable funding mechanisms should be supportive of all aspects of program delivery, from research, to supply chain infrastructure, to vaccine administration. Economies can explore a variety of funding mechanisms to protect immunization programs in the long-term, such as earmarked taxes, performance-based financing, and impact bonds.

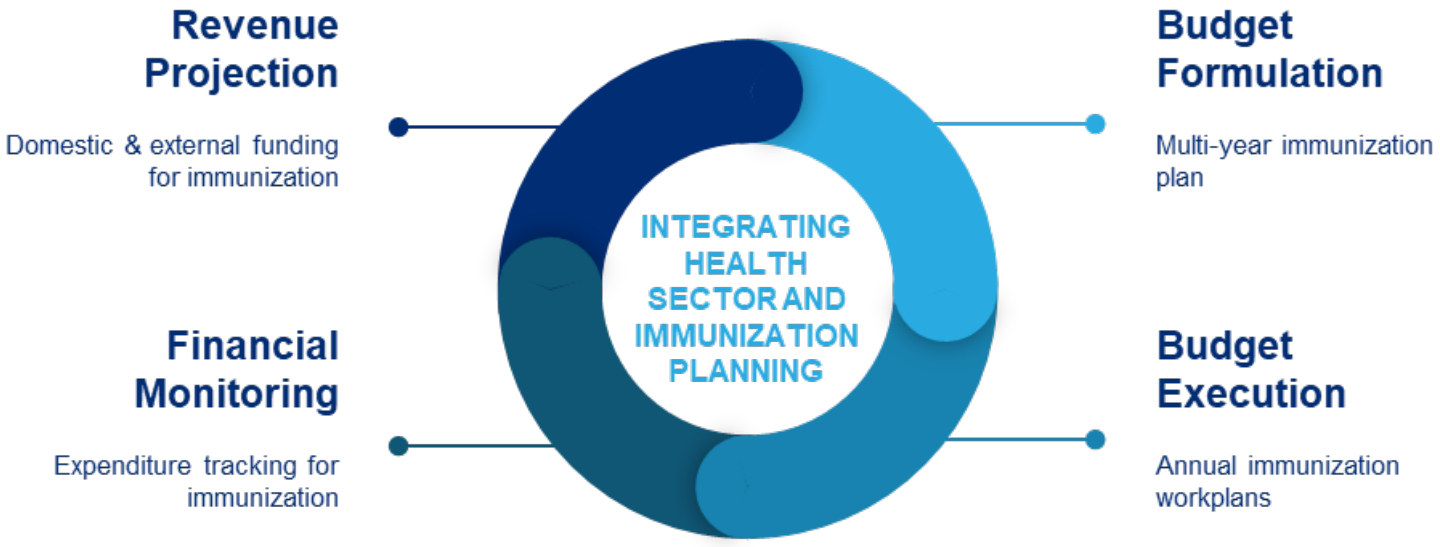
Measure 7.3: *The use of decentralized immunization strategies*

APEC economies employ decentralized immunization strategies, including those for financing (~29% of economies), immunization plans, and routine schedules, to support alignment of immunization programs and finances with local priorities. While decentralization might not be applicable in all economies, it can be particularly useful to reach populations in economies that are geographically dispersed and culturally diverse. Central oversight can ensure children, adolescents, and adults have access to needed vaccines, no matter their location within their economy.

Strategic Implementation of Pillar 7: Establishing Financial Sustainability, Building Program Security, and Preparing for the Future

Immunization financing and prioritization has traditionally focused on pediatric populations, rather than the full life-course. While there is increasing understanding and acceptance of the value of life-course immunization programs, and some economies fund vaccines for adults, many immunization programs have not yet prioritized or fully funded life-course immunization. Throughout the COVID-19 pandemic, governments leveraged existing immunization systems to support vaccination of adults, demonstrating that systems can be successfully adapted for life-course immunization. Doing so for non-emergency vaccines requires strong and lasting political will to progress changes to existing legal frameworks and inclusion of life-course immunization in budgets. Depending on the comprehensiveness and scalability of existing immunization infrastructure, economies must assess their financing needs to support resource requirements now and in the future. Long-term budget planning – including comprehensive Multi-Year Plans (cMYPs) and multi-year procurement tenders, can support economies in ensuring sustainability in their immunization programs and related budgets (see Figure 8).

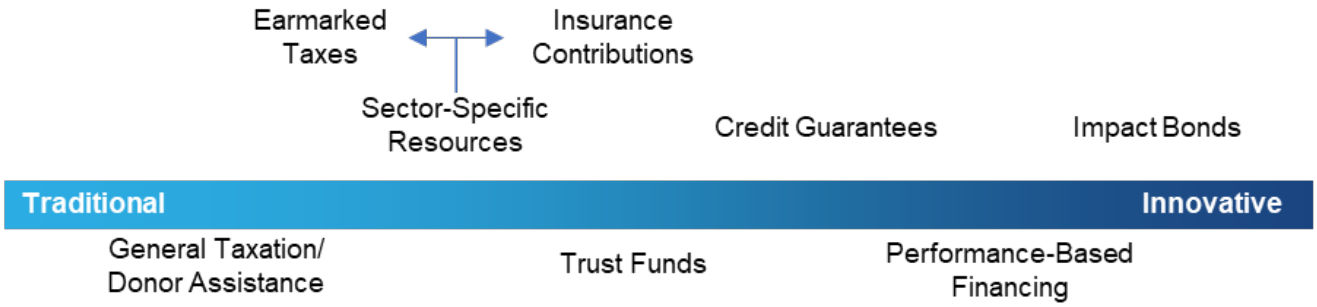
Figure 8. Integrating Health Sector and Immunization Planning



Adapted from UNICEF, 'Financing and budgeting'[54]

To supplement health budgets, APEC economies can leverage a wide range of financing mechanisms that are dedicated specifically to vaccines and vaccination services, such as:

Figure 9. Immunization Financing Mechanisms Along the Innovative Spectrum



Adapted from: Thinkwell Global Mechanisms Along the Innovative Spectrum[55]

Across APEC economies, the use of both traditional and innovative financing mechanisms (Figure 9) is vital to ensure efficient use of limited resources to address both present and future needs. Sustainable and stable immunization financing should be relevant to each economy's individual macroeconomic situation to prioritize the efficacy of immunization programs and emphasize efficiency in their delivery. Multi-sectoral collaboration can help to identify financing challenges and support the development of innovative solutions. Economies can leverage existing APEC resources and workstreams for healthcare financing, including the APEC Healthcare Financing Roadmap and APEC Checklist of Enablers for Alternative Health Financing.[56-57]

Case studies: Immunization Financing Practices in Select APEC Economies

Australia	Hong Kong, China	Republic of Korea	The Philippines	Malaysia
All vaccines listed on the NIP Schedule are free to eligible infants, children, adolescents, and adults. State and territorial health departments also fund additional vaccines that are not included in the NIP.[58]	The government funds multiple vaccination programs for older adults and covers influenza and pneumococcus vaccinations for staff and residents in elderly homes (65+), homes for persons with disabilities and other select populations.[59]	The NIP receives financial support from the government through general taxes.[60]	The NIP is funded through general tax revenue with supplemental funds from tax levies on tobacco and alcohol, raising 1.2 billion USD per year for healthcare.[61]	Malaysia awards multi-year contracts for the procurement of vaccines, allowing for long-term supply planning.[62]

Conclusion

The results of the *APEC Regional Dashboard on Vaccination Across the Life-Course* demonstrate success in meeting several measures related to the *Action Plan*. To continue progress towards the 7 pillars, economies can leverage the *APEC Action Plan on Vaccination Across the Life-Course*, which can be considered a foundation for improving immunization access and coverage within the region by informing the development of sustainable immunization policies and supporting intergovernmental and multi-sectoral information sharing.

Consistent with global trends, immunization programs in APEC economies continue to be strongest for pediatric populations, with all economies including recommendations for children in immunization schedules. However, downward trends in vaccine confidence and immunization coverage across age groups underscores the critical importance of a multifaceted approach to continuous monitoring and strengthening of immunization programs, as well as the need for adaptable and robust strategies that cater to the unique circumstances of each economy.

Furthermore, the adaptation of existing systems to accommodate life-course immunization, as demonstrated during the COVID-19 pandemic, requires scalability and flexibility within existing immunization programs to address the evolving needs of populations, particularly as APEC economies face demographic shifts and the challenges of aging populations. [63] Strategies and infrastructure for pediatric and adolescent populations, such as data collection and integration with routine health services, can inform expansion of adult and risk-based immunization programs, which are not as prominent in APEC economies but are growing. These programs also require innovative solutions to encourage vaccine uptake in target populations, for example, expansion of vaccination scope-of-practice for non-traditional providers (e.g., pharmacists, dentists) to ensure populations have multiple accessible vaccination access points.

Additionally, several gaps remain in measures related to data collection and analysis across the 7 pillars. Specifically, **35%** of reporting economies in 2022 and 2023 (n=17) do not include both societal and economic benefits of vaccination in existing value assessment frameworks, and fewer have facilities in place to generate data on the indirect benefits of vaccination, limiting the information that is available on the full value of vaccination. Conducting assessments related to barriers and benefits can help economies in crafting tailored, evidence-based communications and advocacy strategies at the community, jurisdictional, and economy level, supporting the sustainability of the health system in the long-term.

Lastly, building financial sustainability and program security is paramount. By leveraging a combination of traditional and innovative approaches, economies can ensure that immunization programs are not only sustainable but also resilient to future challenges and emergency situations. The integration of comprehensive Multi-Year Plans (cMYP), the use of innovative and sustainable financing models, and continuous planning for disease outbreaks and 'Black Swan' events[64] throughout the region can provide a structured framework that supports long-term planning and resource allocation.

Moving forward, APEC economies can use the goals in the *Action Plan* and findings from the *Dashboard* to inform resilient life-course immunization programs. By engaging diverse stakeholders and leveraging existing APEC resources and workstreams, such as the APEC Healthcare Financing Roadmap and the APEC Checklist of Enablers for Alternative Health Financing, economies can develop innovative solutions that enhance the efficiency and effectiveness of immunization programs.

By embracing the strategies outlined in the *Action Plan* and measured in the *Dashboard*, APEC economies can ensure that their immunization programs are well-equipped to meet current and future needs, ultimately contributing to the health and well-being of their populations.

Disclaimers

The research conducted in this study has some limitations. The primary limitation was receiving responses to the survey from only 12 of 21 APEC economies; given limited aggregated external data options for many measures and economies, results do not reflect the full status of the measured immunization strategies within the APEC region and individual economies. Data caveats have been added throughout the report to indicate where supplemental data is unavailable. Additionally, variances in which economies submitted surveys in 2022 and 2023 may explain differences in total counts (as in, an economy that did not submit the 2022 survey would be counted as 'No or No Data' for a given survey-only measure, but 'Yes' if the survey was submitted in 2023). Lastly, the report measured the extent to which measures have been introduced. Within each measure, the authors expect differences in scope (e.g., eligible populations, funding levels, jurisdictional vs. economy-wide) and status of implementation (e.g., pilot projects vs. ongoing legislation, newly introduced measures vs. comprehensive long-term programs) across APEC economies.

Appendix

APPENDIX 1 | DATA BY APEC ECONOMY

The following table distills economy-specific data for each measure. Methodology and sources for supplemental data may be found in Appendix 2 | Measures, Indicators, Descriptions, and Sources.

** 2022 Reporting Economy*
*** 2023 Reporting Economy*
(s): Supplemental data only
(d): 2023 Dashboard survey data only

	Australia*	Brunei Darussalam**	Canada**	Chile**	People's Republic of China	Hong Kong, China**	Indonesia**	Japan*	Republic of Korea**	Malaysia**	Mexico	New Zealand*	Papua New Guinea	Peru**	The Philippines*	The Russian Federation**	Singapore**	Chinese Taipei**	Thailand*	United States of America**	Viet Nam*	% Yes: 2023	% No: 2023	% ND: 2023	%Yes: 2022 (or earlier)
Pillar 1																									
Measure 1.1: % of APEC economies that have in place a facility to generate data on direct and/or indirect benefits of vaccination or have a [domestic] agenda for research on immunization																									
Direct benefits	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes		Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	**81%**	**5%**	**14%**	**62%**
Indirect benefits	No	No	Yes	No		Yes	No	No	No	No		Yes		No	No	Yes	No	No	Yes	Yes	Yes	**33%**	**52%**	**14%**	**33%**
[Domestic] agenda for research on Immunization *(s)*	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes			Yes		Yes	**62%**	**24%**	**14%**	**33%**
Measure 1.2: % of APEC economies that utilize comprehensive value assessment frameworks to evaluate immunization programs' health, social, and economic impact																									
Health impact	No	Yes	Yes	No		Yes	Yes		Yes	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**71%**	**10%**	**19%**	**57%**
Social impact	No	No	Yes	No		No	Yes		Yes	Yes		Yes		Yes	Yes	Yes	No	Yes	Yes	Yes	No	**52%**	**29%**	**19%**	**38%**
Economic impact	No	No	Yes	No		No	Yes		Yes	Yes		Yes		Yes	Yes	Yes	No	Yes	Yes	Yes	No	**52%**	**29%**	**19%**	**38%**
Measure 1.3: % of APEC economies that conduct studies or assessments to understand challenges in promoting the value of vaccination to the general public																									
Promoting Value of Vaccination *(d)*		No		Yes		Yes	Yes		Yes	Yes				Yes		Yes	Yes	Yes				**43%**	**5%**	**52%**	**N/A**

Pillar 2

	Australia*	Brunei Darussalam**	Canada**	Chile**	People's Republic of China	Hong Kong, China**	Indonesia**	Japan*	Republic of Korea**	Malaysia**	Mexico	New Zealand*	Papua New Guinea	Peru**	The Philippines*	The Russian Federation**	Singapore**	Chinese Taipei**	Thailand*	United States of America**	Viet Nam*	% Yes: 2023	% No: 2023	% ND: 2023	%Yes: 2022 (or earlier)
Measure 2.1: % of APEC economies with funded immunization schedules that include life-course recommendations																									
Children (0-9)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**100%**	**0%**	**0%**	**100%**
Adolescents (10-19)	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		**90%**	**0%**	**10%**	**90%**
Adults (20-64)	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes		**86%**	**5%**	**10%**	**86%**
Older Adults (>65)	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		No	Yes	Yes	Yes	Yes	Yes	Yes		**76%**	**5%**	**19%**	**67%**
Healthcare workers		Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		No	Yes	Yes	Yes	Yes	Yes	Yes		**71%**	**5%**	**24%**	**67%**
Pregnant women *(d)*		Yes	Yes	Yes		Yes	Yes		Yes	Yes				Yes		Yes	Yes	Yes				**52%**	**0%**	**48%**	**76%***
People with co-morbidities *(d)*		Yes	Yes	Yes		Yes	Yes		Yes	Yes				Yes		Yes	Yes	Yes				**52%**	**0%**	**48%**	
Other at-risk populations *(d)*		Yes	Yes	Yes		Yes	Yes		No	Yes				No		Yes	No	Yes				**38%**	**14%**	**48%**	
Measure 2.2: Distribution of life-course vaccination rates across APEC economies†																									
Measles-containing vaccine, 1st dose																						**<70%**	**70-90%**	**≥90%**	**ND**
2022	96	97	92	94	99	95	84	98	97	96	86	90	44	74	69	97	96	99	96	92	88	**2**	**4**	**15**	**0**
2023	91	97		94	97	95	82	94	97	96	76	89	52	84	81	97	97	99	93	92	82	**1**	**6**	**13**	**1**
DTP-containing vaccine, 3rd dose																									
2022	94	99	92	96	99	95	85	99	98	97	83	89	36	82	72	97	97	98	97	94	91	**1**	**5**	**15**	**0**
2023	94	99		96	97	95	83	98	98	97	85	88	35	84	89	97	98	98	92	94	65	**2**	**5**	**13**	**1**

* The 2022 Dashboard included pregnant women and co-morbidities in at-risk populations. Other at-risk populations include, for example, travelers and university students
† Canada's data is from the 2021 childhood National Immunization Coverage Survey. This survey is conducted every 2 years, and the latest data available is for 2021.

	Australia*	Brunei Darussalam**	Canada**	Chile**	People's Republic of China	Hong Kong, China**	Indonesia**	Japan*	Republic of Korea**	Malaysia**	Mexico	New Zealand*	Papua New Guinea	Peru**	The Philippines*	The Russian Federation**	Singapore**	Chinese Taipei**	Thailand*	United States of America**	Viet Nam*	% Yes: 2023	% No: 2023	% ND: 2023	%Yes: 2022 (or earlier)
HPV by age 15, 1st dose, females (responses may reflect alternate populations)																						<70%	70-90%	≥90%	ND
2022 (or earlier)	82	83	86	85		89	94	12	97	82	99	75		100	33		89	94	78	82		**2**	**9**	**5**	**5**
2023	86	87		91		94		31	88	78	99	87		84	27		89	92	30	80		**3**	**8**	**2**	**8**
Influenza, older persons																									
2022 (or earlier)			71	70		40			80		95	68		58	23	55		54	81	70		**6**	**5**	**1**	**9**
2023			74	65		48			81	82	95			46	23	66		54	43			**6**	**3**	**1**	**11**

Pillar 3

Measure 3.1: % of APEC economies with an established pandemic preparedness strategy or domestic emergency response plan for diseases with pandemic potential																									
Pandemic Preparedness Strategy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	**90%**	**10%**	**0%**	**90%**
Plan to conduct routine immunization in pandemics	No	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes		No		Yes		Yes	Yes	Yes	Yes	Yes	Yes	**71%**	**10%**	**19%**	**62%**
Catch-Up in Pandemic Strategy	No	Yes	No	Yes		Yes	Yes	Yes	Yes	Yes		No		Yes		Yes	Yes	Yes	Yes	No	Yes	**62%**	**19%**	**19%**	**48%**
Catch-Up in Domestic Immunization Policy *(s)*	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	**90%**	**0%**	**10%**	**81%**
Measure 3.2: % of APEC economies that have designed a comprehensive process for collecting and/or evaluating data related to vaccine-preventable diseases																									
Uptake of Vaccines	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**100%**	**0%**	**0%**	**100%**
Prevalence of Infectious Disease	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**100%**	**0%**	**0%**	**100%**

	Australia*	Brunei Darussalam**	Canada**	Chile**	People's Republic of China	Hong Kong, China**	Indonesia**	Japan*	Republic of Korea**	Malaysia**	Mexico	New Zealand*	Papua New Guinea	Peru**	The Philippines*	The Russian Federation**	Singapore**	Chinese Taipei**	Thailand*	United States of America**	Viet Nam*	% Yes: 2023	% No: 2023	% ND: 2023	%Yes: 2022 (or earlier)
Environmental Conditions	Yes	Yes	Yes	Yes		Yes	No		Yes	Yes		Yes		Yes	No	Yes	Yes	Yes	No	Yes		**62%**	**14%**	**24%**	**38%**
Emerging Resistance Patterns	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**81%**	**19%**	**0%**	**86%**

Pillar 4

Measure 4.1: % of APEC economies which conducted assessments to understand barriers to vaccination or reasons for under-vaccination																									
Conducted assessments	Yes	No	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**86%**	**10%**	**5%**	**81%**
Included BeSD	Yes	No	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes		Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	**81%**	**10%**	**10%**	**71%**
Teams to identify & analyze system vulnerabilities	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes		Yes		Yes	Yes	Yes	Yes	No	Yes	Yes		**71%**	**5%**	**24%**	**62%**
Measure 4.2: Perceptions towards vaccine safety, effectiveness, and importance (Vaccine Confidence Index), 2023 *% of respondents that agree with the statements that vaccines are (1) safe; (2) effective; (3) important for children to have.*																									
Vaccines are safe*(s)*	77	ND	74	69	95	67	77	51	58	73	86	76	52	87	82	57	62	68	82	76	97	Data is for 2023 or earlier years: Singapore: 2018 China: 2021 Papua New Guinea and Peru: 2022			
Vaccines are effective *(s)*	80	ND	77	73	97	71	77	62	68	75	89	78	54	88	84	68	63	76	84	77	99				
Vaccines are important *(s)*	80	ND	78	75	95	71	80	48	62	74	90	80	46	89	83	70	70	77	88	82	96				
Measure 4.3: % of APEC economies with communications programs to promote confidence in vaccination																									
General Public	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**90%**	**0%**	**10%**	**76%**
Building healthcare worker skills	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**81%**	**0%**	**19%**	**62%**
Service quality interventions *(s)*	Yes			Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes	**71%**	**10%**	**19%**	**71%**

	Australia*	Brunei Darussalam**	Canada**	Chile**	People's Republic of China	Hong Kong, China**	Indonesia**	Japan*	Republic of Korea**	Malaysia**	Mexico	New Zealand*	Papua New Guinea	Peru**	The Philippines*	The Russian Federation**	Singapore**	Chinese Taipei**	Thailand*	United States of America**	Viet Nam*	% Yes: 2023	% No: 2023	% ND: 2023	%Yes: 2022 (or earlier)
Pillar 5																									
Measure 5.1: % of APEC economies with a private sector engagement strategy or mechanism																									
Non-Government Partners *(d)*			No	Yes		Yes	Yes		Yes	Yes				No		Yes	Yes					**33%**	**14%**	**52%**	**N/A**
General Pharmaceutical Companies	Yes	Yes		No		No	Yes		Yes	Yes				No	No	Yes	Yes	Yes	No	No		**33%**	**33%**	**33%**	**24%**
Vaccine Producers	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes				No	No	Yes	Yes	Yes	Yes	No		**52%**	**19%**	**29%**	**29%**
Private Sector During Outbreaks	No	Yes	No	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No	**62%**	**38%**	**0%**	**24%**
Measure 5.2: % of economies with a process in place for sharing data on vaccines demand and health needs among key stakeholders																									
Share Vaccine Data	No	No	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes		No	No	Yes	Yes	Yes	Yes	Yes	Yes	**67%**	**19%**	**14%**	**57%**
Pillar 6																									
Measure 6.1: % of APEC economies which consider decisions by other economies in regulatory and programmatic decision-making																									
Regulatory Approval		Yes	No	Yes		Yes	Yes		Yes	Yes				No		Yes	Yes					**43%**	**10%**	**48%**	**N/A**
NITAG Recommendations		Yes	Yes	Yes		Yes	Yes		Yes	Yes				Yes		Yes	Yes	Yes				**52%**	**0%**	**48%**	**N/A**
Measure 6.2: % of APEC economies that have designed or initiated capacity-building trainings to accelerate adoption of globally recognized recommendations and guidance on regulatory harmonization for vaccines																									
Capacity-buildings trainings	Yes	Yes	Yes	No		Yes	Yes	Yes	No	Yes				Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	**67%**	**14%**	**19%**	**48%**

Pillar 7

	Australia*	Brunei Darussalam**	Canada**	Chile**	People's Republic of China	Hong Kong, China**	Indonesia**	Japan*	Republic of Korea**	Malaysia**	Mexico	New Zealand*	Papua New Guinea	Peru**	The Philippines*	The Russian Federation**	Singapore**	Chinese Taipei**	Thailand*	United States of America**	Viet Nam*	% Yes: 2023	% No: 2023	% ND: 2023	%Yes: 2022 (or earlier)
Measure 7.1: % of APEC economies with Multi-Year Economy-wide Immunization Plans with provisions for the life-course or concrete proposals for financing strategies																									
Multi-Year Plans	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	**86%**	**14%**	**0%**	**86%**
Measure 7.2: % of APEC economies with a vaccination law or other legislation that includes financing, with allocations to life-course vaccination																									
Financed Legislation with Allocations	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes	No	No	Yes	**71%**	**29%**	**0%**	**67%**
Vaccines Included in Domestic budget	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	**76%**	**0%**	**24%**	**71%**
Measure 7.3: % of APEC economies with decentralized immunization financing mechanisms																									
Decentralized Financing	Yes	No	Yes	No		No	Yes		No	No				Yes		Yes	No	Yes				**29%**	**29%**	**43%**	**24%**

** 2022 Reporting Economy*
*** 2023 Reporting Economy*
(s): Supplemental data only
(d): 2023 Dashboard survey data only

APPENDIX 2 | MEASURES, INDICATORS, DESCRIPTIONS, AND SOURCES

The following table provides additional information on the questions asked by the Dashboard Survey and Supplemental Sources.

PILLAR	MEASURE	INDICATOR	DESCRIPTION	SOURCES
Pillar 1	1.1	Direct Benefits	Is there a facility in place to generate data on: Direct benefits of vaccination (e.g., reduction in burden of disease)?	Dashboard Survey
		Indirect Benefits	Is there a facility in place to generate data on: Indirect benefits of vaccination (e.g., reduction in work-loss)?	Dashboard Survey
		Domestic Agenda for Research on Immunization	Does the economy have a [domestic] agenda for research on immunization?	WHO/UNICEF (Planning, Management,& Monitoring)
	1.2	Assess health impact	Are comprehensive value assessment frameworks utilized for the evaluation of immunization programs *health impact* to drive vaccine policy and decision-making	Dashboard Survey
		Assess social impact	Are comprehensive value assessment frameworks utilized for the evaluation of immunization programs' *social impact* to drive vaccine policy and decision-making	Dashboard Survey
		Assess economic impact	Are comprehensive value assessment frameworks utilized for the evaluation of immunization programs' *economic impact* to drive vaccine policy and decision-making	Dashboard Survey
		Promoting Value of Vaccination	Does your economy conduct studies or assessments to understand challenges in promoting the value of vaccination to the general public?	Dashboard Survey
Pillar 2	2.1*	Children (ages 0-9)	Does your economy's immunization program include funded, routine vaccination of children (ages 0-9)	Dashboard Survey
		Adolescents (ages 10-19)	Does your economy's immunization program include funded, routine vaccination of adolescents (ages 10-19)	Dashboard Survey
		Adults (ages 20-64)	Does your economy's immunization program include funded, routine vaccination of adults (ages 20-64)	Dashboard Survey
		Older Adults (ages 65+)	Does your economy's immunization program include funded, routine vaccination of older adults (ages 65+)	Dashboard Survey
		Healthcare workers	Does your economy's immunization program include funded, routine vaccination of healthcare workers	Dashboard Survey
		Pregnant women	Does your economy's immunization program include funded, routine vaccination of pregnant women	Dashboard Survey
		People with co-morbidities (e.g., diabetes, cancer)	Does your economy's immunization program include funded, routine vaccination of people with co-morbidities (e.g., diabetes, cancer)	Dashboard Survey

* The 2022 Dashboard requested data on inclusion in immunization schedules; the 2023 Survey requested both inclusion and coverage in domestic immunization programs. Additionally, the 2022 survey included pregnant women, people with co-morbidities, and other at-risk groups in a broader at-risk population category.

PILLAR	MEASURE	INDICATOR	DESCRIPTION	SOURCES
		Other at-risk populations (e.g., travelers, university students)	Does your economy's immunization program include funded, routine vaccination of other at-risk populations (e.g., travelers, university students)	Dashboard Survey
	2.2	Measles-containing vaccine, 1st dose	Please share 2022 vaccination rates (if 2022 rates are unavailable, please add the latest data and indicate years): Measles-containing vaccine, 1st dose	WHO/UNICEF Vaccination Coverage or Dashboard Survey
		DTP-containing vaccine, 3rd dose	Please share 2022 vaccination rates (if 2022 rates are unavailable, please add the latest data and indicate years): DTP-containing vaccine, 3rd dose	
		HPV by age 15, 1st dose, females	Please share 2022 vaccination rates (if 2022 rates are unavailable, please add the latest data and indicate years): HPV Vaccination coverage by age 15, first dose, females	
		Influenza, older persons	Please share 2022 vaccination rates (if 2022 rates are unavailable, please add the latest data and indicate years): Influenza Elderly/65+	
Pillar 3	3.1	Pandemic Preparedness Strategy	Does your economy have an established pandemic preparedness strategy or domestic emergency response plan for diseases with pandemic potential?	Dashboard Survey
		Conducting routine immunization during pandemics	If yes, does the strategy include provisions for how to conduct routine immunization during the pandemic (e.g., separate immunization centers to minimize risk of cross-infection)?	Dashboard Survey
		Strategy for Catch-Up Vaccination in Pandemic Strategy	If yes, does the strategy include immunization recovery plans to facilitate "catch-up" vaccination programmes in places where services have been disrupted due to health crisis?	Dashboard Survey
		Strategy for Catch-Up Vaccination in Domestic Immunization Policy	Is a strategy for catch-up vaccination (of unvaccinated individuals, or individuals with missed or delayed doses) addressed within the economy's [domestic] immunization policy?	WHO/UNICEF (Catch-Up Vaccination)
	3.2	Uptake of Vaccines	Is there a comprehensive process for collecting and/or evaluating data on: Uptake of vaccines	Dashboard Survey
		Prevalence of Infectious Disease	Is there a comprehensive process for collecting and/or evaluating data on: Prevalence of infectious diseases	Dashboard Survey
		Environmental Conditions	Is there a comprehensive process for collecting and/or evaluating data on: Changing environmental/climate conditions (e.g., Climate-informed health surveillance systems)	Dashboard Survey
		Emerging Resistance Patterns	Is there a comprehensive process for collecting and/or evaluating data on: Emerging resistance patterns (e.g., AMR)	Dashboard Survey
Pillar 4	4.1	Assessment of Barriers	Does your economy conduct in depth domestic- or economy-specific studies or assessments to understand barriers to vaccination?	Dashboard Survey
			Did the [economy] conduct any assessment of the demand-related reasons for under-vaccination?	WHO/UNICEF (Demand for Immunization)

PILLAR	MEASURE	INDICATOR	DESCRIPTION	SOURCES
		Measures of Vaccine Confidence or BeSD	If yes, do these studies include any measures of Behavioral and Social Drivers (BeSD) of vaccination using the globally validated tools, including priority indicators?	Dashboard Survey
			Did this assessment include any survey of Behavioural and Social Drivers (BeSD) of Vaccination using the globally validated tools, including priority indicators?	WHO/UNICEF (Demand for Immunization)
		System vulnerabilities impacting immunization	Is there a team in place with the necessary skills and/or process designated to identify and analyze system vulnerabilities impacting immunization and respond to emerging or potential threats to immunization access?	Dashboard Survey
	4.3	Communications Programs	Is there a process and/or strategy in place to: Address under vaccination in the general population, informed by the results of demand-related assessments	Dashboard Survey
			Did the [economy] implement public communications strategies to address under-vaccination which was informed by results of demand-related assessments?	WHO/UNICEF (Demand for Immunization)
		Building Healthcare Worker Skills	Is there a process and/or strategy in place to: Help healthcare workers build skills and tools to manage patients who may be vaccine hesitant and/or disprove mis- and dis-information about vaccination	Dashboard Survey
		Service Quality Intervention Strategies	Did the economy implement service quality intervention strategies to address under-vaccination which was informed by results of demand-related assessments?	WHO/UNICEF (Demand for Immunization)
Pillar 5	5.1	Strategy to engage general pharmaceutical producers	Does your economy have a strategy to guide engagements with: General pharmaceutical producers	Dashboard Survey
		Strategy to engage non-government partners	Does your economy have a strategy to guide engagements with: Other non-government stakeholders/partnerships	Dashboard Survey
		Strategy to engage vaccine producers	Does your economy have a strategy to guide engagements with: Vaccine producers	Dashboard Survey
		Strategy to engage private sector in outbreaks	Is there a mechanism to engage private sector in outbreak preparedness/response?	Dashboard Survey and Global Health Security Index (2021)
	5.2	Share vaccine demand and health needs	Is there a process in place for sharing data on vaccine demand and health needs among key stakeholders in the innovation and production pipeline?	Dashboard Survey
Pillar 6	6.1	Regulatory Approval	Does your economy consider decisions by other economies (APEC or otherwise) for: Regulatory approval of vaccines	Dashboard Survey
		NITAG Recommendations	Does your economy consider decisions by other economies (APEC or otherwise) for: NITAG recommendations/Inclusion of vaccines in domestic immunization programs	Dashboard Survey
	6.2	Capacity-buildings trainings	Has your economy designed or initiated capacity-buildings trainings to accelerate adoption of globally recognized recommendations and guidance on regulatory harmonization for vaccines?	Dashboard Survey
Pillar 7	7.1	Multi-Year Plans	Has your economy written and introduced a multi-year Economy-Wide Immunization Plan?	Dashboard Survey

PILLAR	MEASURE	INDICATOR	DESCRIPTION	SOURCES
			Does the [economy] have a [domestic] immunization plan such as [domestic] Immunization Strategy (NIS) or other multi-year plan (MYP)?	WHO/UNICEF (Planning, Management, & Monitoring)
		MYP with Financing	Does your existing or future Economy-Wide Immunization Plan include provisions for the life-course or concrete proposals for financing strategies?	Dashboard Survey
	7.2	Financed Legislation with Allocations to Life-Course Vaccination	Does your economy have a vaccination law or other legislation (e.g., health budget) that is supportive of immunization? If yes, does the law, or other mechanisms, commit the government to finance all aspects of the immunization programme at all levels?	Dashboard Survey
			Does the [economy] have a vaccination law or other legislation that is supportive of immunization and commits the government to finance all aspects of the immunization programme at all levels?	WHO/UNICEF (Legal Framework)
		Domestic Budget	Are there line items in the [domestic] government budget specifically for the purchase of vaccines used in routine immunizations?	WHO/UNICEF (Immunization Expenditure)
	7.3	Decentralized Financing	Is immunization financing decentralized?	Dashboard Survey

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