

APEC Regional Dashboard on Vaccination Across the Life-Course

APEC Health Working Group
Sub-Working Group on Vaccination
Vaccines Task Force
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Acknowledgements

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This document was modified in March 2023 to incorporate additional data from APEC member economies and add additional clarity to measures related to immunization coverage.

Abbreviations

APEC: Asia-Pacific Economic Cooperation
ASEAN: Association of Southeast Asian Nations
ACCSQ: ASEAN Consultative Committee for Standards and Quality
ACIP: Advisory Committee on Immunization Practices
ACTD: ASEAN Common Technical Dossier and Requirements
ACTR: ASEAN Common Technical Requirements
AIR: The Australian Immunisation Register
AMED: Agency for Medical Research and Development
CIP: Childhood Immunisation Programme
CMG: Crisis Management Group
DIP: Domestic Immunization Program
DORSCON: Disease Outbreak Response System Condition
EtR: Evidence to Recommendation
GRADE: Grading of Recommendations, Assessment, Development and Evaluation
HCMS: Homefront Crisis Management System
HCEG: Homefront Crisis Executive Group
HWG: Health Working Group
JRF: Joint Reporting Form on Immunization
JACG: Joint Assessments Coordinating Group
MIMVP: Māori Influenza and Measles Vaccination Programme
MIVP: Māori Influenza Vaccination Programme
MTF: Multi-Ministry Taskforce
MHLW: Ministry of Health, Labor and Welfare
PHPCs: Public Health Preparedness Clinics
PANDRH: Pan American Network for Drug Regulatory Harmonization
PPWG: Pharmaceutical Product Working Group
PMAS: Post-marketing Alert System
PBF: Performance-Based Financing
SAGE: Strategic Advisory Group of Experts
SARS: Severe Acute Respiratory Syndrome
SCVPD: Scientific Committee on Vaccine Preventable Diseases
SCARDA: Strategic Center of Biomedical Advanced Research and Development for Preparedness and Response
UNICEF: United Nations Children's Emergency Fund
VTF: Vaccines Task Force
WHO: World Health Organization

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Introduction

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 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.

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

APEC membership includes: 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; Viet Nam



**Asia-Pacific
Economic Cooperation**

Introduction

APEC Action Plan on Vaccination Across the Life-Course: Executive Summary

Action Plan on Vaccination

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.



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 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.

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 measures that APEC economies introduce now to foster strong life-course immunization programs will help the region face the ongoing COVID-19 pandemic, in addition to improving health systems and pandemic preparedness in the longer-term. Key measures include promoting recognition of the value of vaccination and vaccine innovation; prioritizing access to and uptake of vaccination across the life-course; building whole-of-government capacity in health security and pandemic preparedness; strengthening confidence in vaccination; enabling investment and innovation; accelerating regulatory harmonization; and establishing mechanisms for sustainable immunization financing.

Introduction

Scope of the Dashboard | Methodology

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.

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.



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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. The WHO/UNICEF JRF was supplemented using economy immunization program websites and relevant literature.

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, 16 of which responded (76%).

Survey results were collected from the following APEC member economies ("Reporting Economies"): Australia; Brunei Darussalam; Canada; Hong Kong, China; Japan; Republic of Korea; Malaysia; New Zealand; Peru; the Philippines; the Russian Federation; Singapore; Chinese Taipei; Thailand; the United States of America; Viet Nam

Supplemental research was used for the following economies: Chile; People's Republic of China; Indonesia; Mexico; Papua New Guinea

Additional information on methodology can be found in Appendix 1.

7 Pillars Identified by the Action Plan

		# of Targets	# of Measures
1	Promote recognition of the value of vaccination and vaccine innovation by policymakers and key decision-makers	3	2
2	Prioritize access to and uptake of vaccination across the life-course for all individuals	3	3
3	Build whole-of-government capacity in health security and pandemic preparedness	3	2
4	Strengthen confidence in vaccination and build resilient immunization programs	4	3
5	Enable investment and innovation in vaccine R&D, manufacturing, and delivery	2	2
6	Accelerate regulatory harmonization for vaccines across APEC economies	3	2
7	Establish proven and innovative mechanisms for sustainable immunization financing	3	2

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 are 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 important 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.

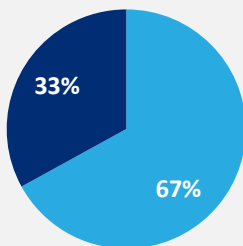
Immunization prevents 4-5 million deaths every year in all age groups. 1.5 million additional deaths could be avoided by increasing global vaccination coverage.⁴

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

% 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 (n=21)



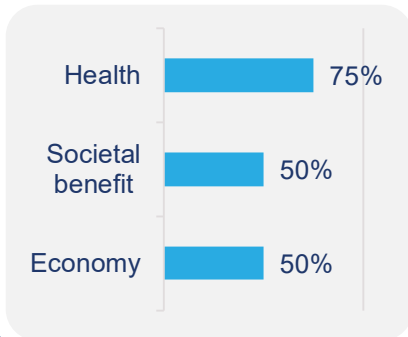
■ Yes ■ No

At least 33% of economies (44% of reporting economies (n=16)) have in place facilities to generate data on *both* direct and indirect benefits of vaccination. Some economies only evaluate direct benefits of vaccination (e.g., reduction in burden of disease). 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. Economies which do not have research facilities or agendas should, if not doing so already, consider partnering with thought leaders, research institutions, and vaccine producers to identify priority data needs and establish research plans moving forward.

Pillar 1

Measure 2

% of APEC economies that utilize comprehensive value assessment frameworks to evaluate immunization programs' health, social, and economic impact (n=16)



Existing value assessment frameworks in half of reporting APEC economies include health, societal (e.g., improved social equity), and economic benefits of vaccination. Ministries of Health can engage key stakeholders to develop frameworks that clearly establish the link between vaccination and health, societal, and economic value benefits. Implementing value assessment frameworks can support Ministries of Health in clearly and effectively communicating the full societal value of vaccination to stakeholders and positively influence decisions on public immunization programs.

Vaccine-preventable diseases, like measles and rubella, can be successfully controlled through high, sustained coverage of relevant vaccines. The overall value and success of immunization programs can be tracked through well-performing surveillance systems and comprehensive research.

In **Hong Kong, China**, the Scientific Committee on Vaccine Preventable Diseases (SCVPD), under the Centre for Health Protection of the Department of Health (DH), closely monitors and reviews changes in the global and local epidemiology of vaccine preventable diseases, scientific developments and application of new vaccines, vaccine formulations and cost-effectiveness, and WHO and overseas recommendations.⁵ The SCVPD holds regular meetings and gives science-based advice and recommendations to the DH regarding immunization matters, including incorporation of vaccines into the Childhood Immunisation Programme (CIP) and their schedules, in order to provide science-based advice on vaccine use at the population level. The SCVPD will continue to review and develop from time to time public health strategies for vaccine preventable diseases in the light of changing epidemiology and the development of vaccines.

For example, the SCVPD prioritizes influenza vaccination of healthcare workers to (1) minimize work-loss from influenza infection and disruptions to the workforce; (2) limit spread of influenza from healthcare workers to patients; and (3) reduce overall burden on the health system.⁶

In the **United States**, the Advisory Committee on Immunization Practices (ACIP) uses the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) approach to make evidence-based recommendations for vaccines to be included in the immunization schedule.⁷ ACIP considers several key factors beyond clinical impact when developing recommendations, including the balance of benefits and harms, values and preferences of the people affected, health economic analyses, impact on health equity, and feasibility of implementation; these factors are summarized using the Evidence to Recommendation (EtR) framework.⁸

For example, in 2022 the ACIP expanded its hepatitis B vaccine recommendation to include universal vaccination of adults. In this decision, ACIP considered factors that could be improved by this recommendation, including long-term health benefits (impact on *health*), racial and ethnic disparities (impact on *society*), and economic burden of hepatitis B-related hospitalizations (impact on *economy*).⁹⁻¹⁰ The latter is estimated at over \$1 billion, excluding indirect costs such as poor quality of life, reduced economic productivity, long-term disability, and premature death.¹¹

Pillar 1

In addition to measuring the value of vaccines themselves, economies can also implement and assess immunization programs and initiatives, in order to build capacity and elevate health equity. In **New Zealand**, for example, the Ministry of Health oversaw the 2020 Māori Influenza Vaccination Programme (MVIP), the 2021 Māori Influenza and Measles Vaccination Programme (MIMVP), and funded provider initiatives to increase Māori access to and uptake of influenza and measles vaccines (12). The programme was evaluated to assess the contributions of the MIMVP to:

- Increasing Māori influenza vaccination and equity rates;
- Identify which initiatives worked, and why they worked;
- Identify how COVID-19 delivery could be leveraged for other vaccines, with the overall goal of supporting practical vaccination approaches and sharing insights and recommendations with policymakers and health sector leaders.

Figure 1. Examples of the Health, Social, and Economic Impact of Vaccines

Health	Social	Economic
<ul style="list-style-type: none"> • Reduce infectious disease morbidity and mortality • Induce herd immunity • Prevent antibiotic resistance • Reduce diseases that complicate vaccine-preventable diseases • Prevent cancer • Eradicate infectious diseases 	<ul style="list-style-type: none"> • Empowerment of women • Impact of life expectancy and opportunity • Strengthen health and social care infrastructure • Equity of healthcare 	<ul style="list-style-type: none"> • Productivity gains • Minimize the impact on family • Establish programs for vaccine development • Cost-effectiveness • Preparedness for outbreaks • Cost savings

Adapted from Rodrigues, C.M.C, Plotkin, SA.: Impact of Vaccines; Health, Economic and Social Perspectives.¹³

Next Steps

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., policy-makers, key decision-makers, funders, and legislators) to demonstrate how vaccination aligns with their priorities; 88% of reporting APEC economies (n=16) have established such a communications plan to make data and analysis of the value of vaccination accessible to these stakeholders and decision-makers. Doing so not only supports advocacy and education efforts, but also can support new vaccine introduction, expansion of eligible cohorts, transitions to new products (e.g., combination vaccines), and funding and procurement decisions.

Pillar 2

Prioritize access to & uptake of vaccination across the life-course

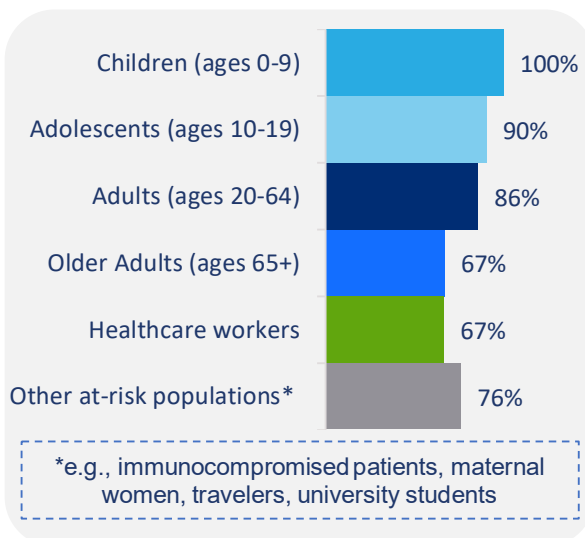
Under a life-course approach, vaccination strategies are designed to maximize individuals' ability to protect themselves from infection and maintain good health over the course of their lives and circumstances. The individual protection provided by vaccination may also in turn provide immunity for the wider population if coverage reaches a certain threshold.

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 1a

% of APEC economies with immunization schedules that include recommendations for all stages of life (n=21)



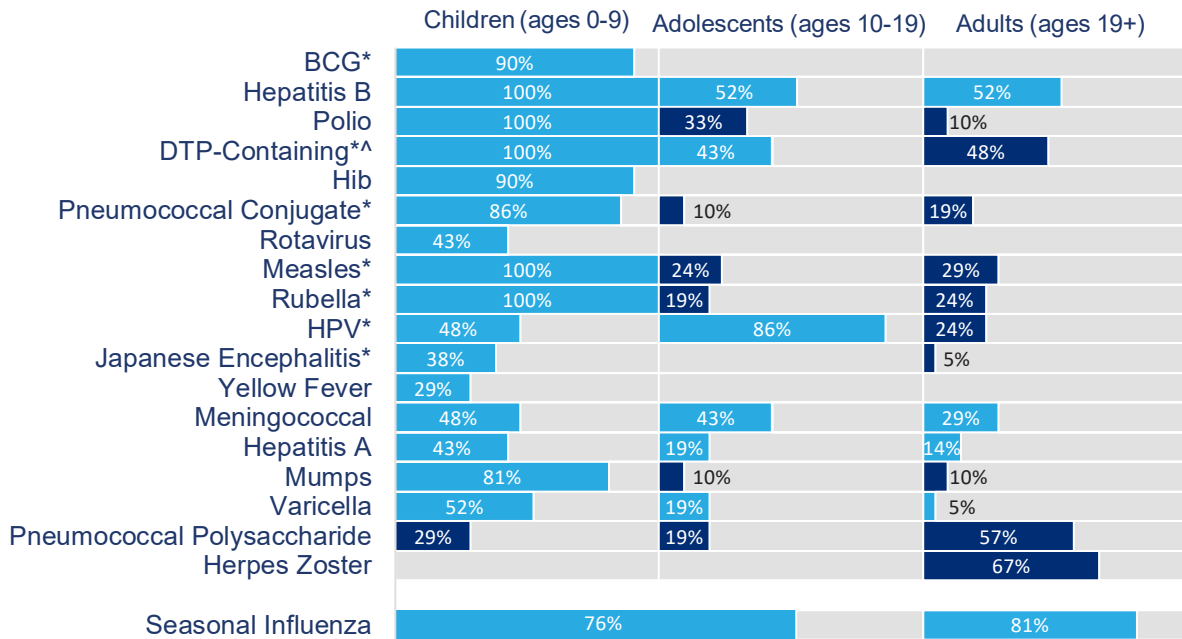
While all economies include recommendations for children in their routine immunization schedules, recommendations for key non-pediatric populations are more limited in the region. Several sub-populations, such as healthcare workers, maternal women, and older adults, are at high-risk for infection of vaccine-preventable diseases and/or related disease complications, and their inclusion in vaccine schedules can contribute to a more economically sustainable health system and promote health equity.

Only 67% of economies include recommendations for all listed age groups; 48% for all listed population types.

Pillar 2

Measure 1b

% of APEC economies with immunization schedules that include specific vaccines, across age groups (n=21)



■ Included in WHO Recommendations for Routine Immunization and in Economy Immunization Schedules

■ Included in Economy Immunization Schedules but not Recommended by WHO for Specific Populations

*Included in WHO recommendations for specific adult populations, such as maternal women or older adults

[^]Analysis excludes vaccines that do not contain pertussis

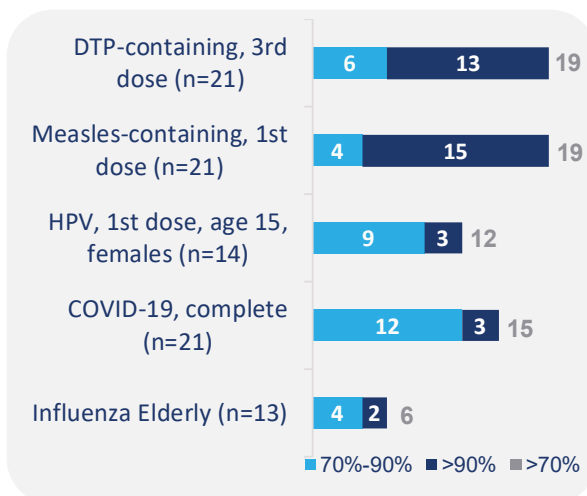
The World Health Organization develops and publishes vaccine position papers using recommendations of the WHO Strategic Advisory Group of Experts (SAGE) on immunization; position papers are intended for use by domestic public health officials, immunization program managers, key decision-makers, chairs and members of domestic advisory committees on immunization, and partner organizations (e.g., industry) to aid technical decisions and develop immunization schedules.¹⁴⁻¹⁵

Measure 1b examines the extent to which APEC economies have introduced WHO-recommended vaccines into domestic immunization programs, as well as the extent to which APEC economies deviate from WHO recommendations by implementing expanded indications (e.g., HPV vaccines for adults) and/or introducing additional vaccines. Notably, while there are several pediatric vaccines included in the immunization schedules of all economies (e.g., DTP, Measles), there are several gaps in coverage for vaccines recommended for adolescents and adults.

Pillar 2

Measure 2

of Economies with Vaccination Rates >70% and >90%, by Select Vaccine, 2020 or 2021



Global vaccination rates have declined significantly since 2020, when the COVID-19 pandemic disrupted routine healthcare services, including immunization, resulting in an estimated 25 million children missing key immunizations in 2021.¹⁶ While most APEC economies have reached at least 70% immunization coverage for DTP- and measles-containing vaccines, obtaining >90% coverage for pediatric, adolescent, and adult vaccines will require additional investments in infrastructure and education, as well as establishment of domestic immunization programs that cover all stages of life.

Developing and administering vaccines to confront crises like the COVID-19 pandemic requires consideration of the life-course, with specific considerations for adult and risk-based populations.

The **Republic of Korea**, for example, covers 17 vaccine preventable diseases in the Domestic Immunization Program and includes several sub-populations in its adult immunization schedule.¹⁷ The adult schedule offers vaccine recommendations based on age, medical or other indications (e.g., pregnancy, chronic diseases, HIV, infection), professions (e.g., healthcare personnel, soldiers), and for foreign travel.¹⁸

The Republic of Korea further encourages vaccination by minimizing copayments, implementing school-entry requirements, and developing a domestic registry with reminder/recall capabilities. Broad access to, and high uptake of, vaccines across the life-course will reduce the economic and public health impact of diseases like COVID-19, and requires commitments to pediatric, adolescent, and adult immunization infrastructure, such as domestic registries.

Australia has a comprehensive domestic immunisation program (DIP). Since the introduction of vaccination for children in Australia in 1932, deaths from vaccine-preventable diseases have fallen by 99 per cent, despite a threefold increase in the Australian population over that period. Many diseases – such as rubella, tetanus, diphtheria, Hib, and measles, are now extremely rare in Australia. However, maintaining high vaccination rates remains important due to the risk of importation of cases from overseas.

Australia's DIP aims to increase domestic immunization coverage to help reduce diseases that can be prevented by vaccination. The DIP is an established collaborative program between the Australian Government and State and Territory Governments and provides free essential vaccines to protect against 17 diseases.

Pillar 2

DIP eligibility broadly covers infants and children, adolescents, pregnant women, adults and seniors, First Nations people and people with certain medical conditions that puts them at greater risk of certain disease. The DIP also funds free catch-up vaccinations if they were missed in childhood for people aged less than 20 years of age and refugees and humanitarian entrants of any age. Further to the DIP, some Australian states and territories fund additional vaccination programs to address local level population needs.

The National Immunisation Strategy for Australia (2019-2024) builds on the success of a previous 5-year strategy (2013-2018), and comprises eight priority areas to complement and strengthen Australia's domestic immunisation program. The Strategy aims to prevent disease and severe outcomes of disease by maximizing immunisation coverage in people of all ages, ensuring secure vaccine supply and efficient use of vaccines in the DIP, enhancing vaccine safety monitoring systems, ensuring community confidence in the program, and strengthening immunisation register data and disease surveillance, among other activities.

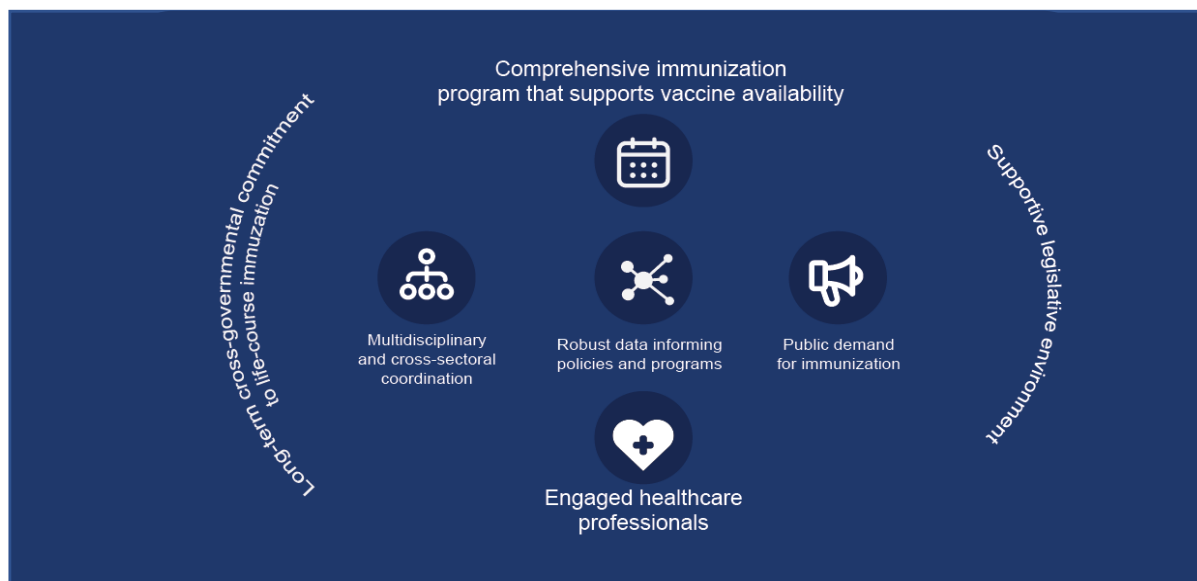
The Australian Immunisation Register (AIR) is a domestic register that records vaccines given to people of all ages in Australia.¹⁹ Under Australian legislation it is mandatory for all vaccination providers to report all COVID-19, influenza and DIP vaccinations administered in Australia to the AIR. AIR data assists the Australian Government to identify the effectiveness of vaccines and vaccination programs, including managing adverse events and disease outbreaks. For individuals, AIR data helps to keep track of their immunizations and ensures they can provide evidence of vaccination for education, employment, or travel purposes.

Lastly, Australia introduced 'No Jab, No Pay,' under which children must meet immunization requirements in order for families to receive tax benefits or child care subsidies. States have introduced additional legislation to further build upon this program, such as requiring vaccination to attend child care ('No Jab, No Play').²⁰

The introduction of the DIP precipitated a dramatic increase in childhood immunisation coverage: 94.2% of 1-year-olds, 92.6% of 2-year-olds and 94.5% of 5-year-olds were fully vaccinated as of June 2022.

Pillar 2

Figure 2. Key Components for Implementing a Life-Course Approach to Immunization



Adapted from: IFPMA Policy framework for implementing a life-course approach to immunization²¹

Next Steps

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. As demonstrated in Figure 2, ensuring access to vaccination across the life-course requires long-term commitments across governments, sectors, and stakeholders and a supportive legislative environment. Engaging healthcare providers supports demand among the general public, and robust data systems are needed to inform policies and programs.

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.

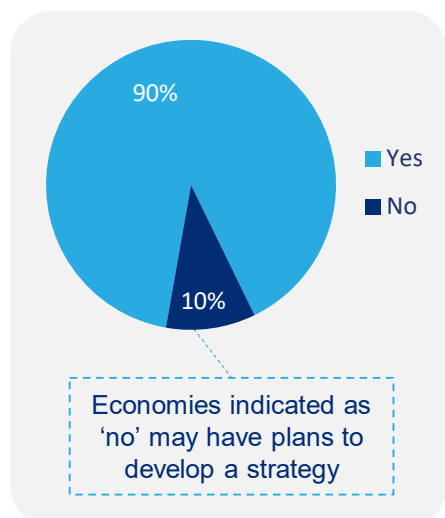
Targets

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

In 2021, 25 million children globally missed one or more doses of DTP – 6 million more than in 2019 – in part due to pandemic-related disruptions and increased misinformation.

Measure 1

% of APEC economies which have an established pandemic preparedness strategy or domestic emergency response plan for diseases with pandemic potential (n=21)

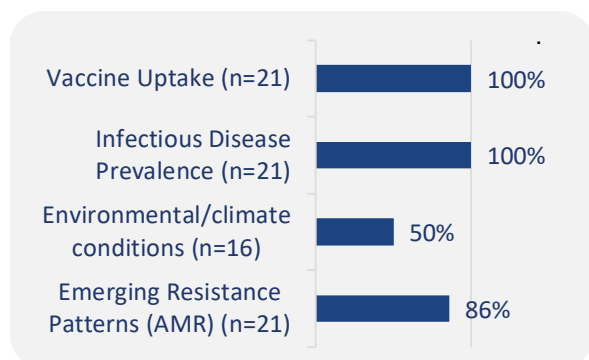


The World Health Organization has identified epidemic preparedness as one of the 13 urgent health challenges for the next decade.²² Most APEC economies have introduced pandemic preparedness strategies or emergency response plans, either prior to or in response to the COVID-19 pandemic. Among economies that have introduced plans, some may be disease-specific (e.g., 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.

Pillar 3

Measure 2

% of APEC economies that have designed a comprehensive process for collecting and/or evaluating data



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, which are related to control of disease. Tracking this information can determine the performance of immunization systems and inform changes to coverage or approach.

In order 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.

In **Singapore**, extensive pandemic preparedness following the 2003 severe acute respiratory syndrome (SARS) outbreak supported response to the COVID-19 pandemic.

The MOH introduced a Pandemic Readiness and Response Plan for Influenza and Other Acute Respiratory Diseases, which recommends appropriate public health measures and response actions in the event of a pandemic resulting from any acute respiratory pathogen.²³ The objective of the domestic strategy is to “sustain the [economy] through the first epidemic wave by minimizing mortality and morbidity through the use of measures that are proportional to the assessed public health impact, while ensuring preparedness for vaccination of the entire population when a vaccine becomes available.”

The plan establishes the National Command and Control Structure using the existing Homefront Crisis Management System (HCMS), supported by the Homefront Crisis Executive Group (HCEG) to enable rapid whole-of—government planning and response.

The MOH chairs the Crisis Management Group (CMG) for Health, which supports the HCEG and provides “timely situational updates to agencies and [coordinates] the initial interagency preparation for DORSCON (Disease Outbreak Response System Condition) activation.”

Singapore’s disease outbreak response, including vaccination, is based on the local disease situation in Singapore and the public health impact level, which is calculated using the DORSCON risk assessment framework. Vaccine procurement, distribution, and administration is based on the DORSCON level. CMG establishes a daily management cycle to coordinate medical and operational responses once DORSCON is elevated to yellow.

DORSCON Levels

DORSCON Level	Public Health Impact
GREEN	Negligible to low
YELLOW	Low to moderate
ORANGE	Moderate to high
RED	High

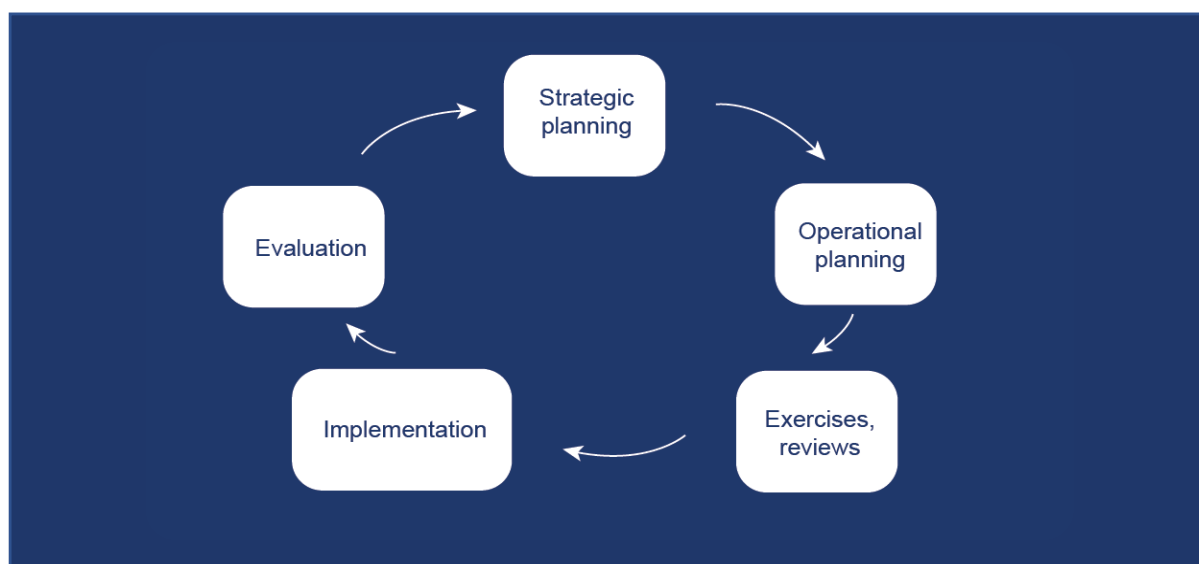
Pillar 3

Using the existing pandemic preparedness plan, in addition to separate preparations and advancements in communicable disease response, Singapore was able to rapidly respond to the COVID-19 pandemic.

One such preparation was the setting up of a Multi-Ministry Taskforce (MTF) to coordinate the domestic whole-of-government response to COVID-19 one day before the first imported case was detected. The MTF was co-chaired by the Minister for Health, Minister for Finance, and the Minister for Trade and Industry, the MTF also included ministerial representation from additional sectors such as manpower, education, transport, communications, and the environment.

Two weeks following the first reported local case, the DORSCON level was raised to orange, leading to contact tracing of all confirmed cases, preventive isolation of travelers based on their respective travel histories via a “Stay Home Notice”, and reactivation of public health preparedness clinics (PHPCs) to better detect and manage COVID-19 infections.

Figure 3. Pandemic Preparedness Cycle



Adapted from: ECDC Key Elements of the Pandemic Preparedness Cycle²⁴

Next Steps

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, as demonstrated in Figure 3, can ensure that strategies are consistent with global recommendations and the most up-to-date data and knowledge. Additionally, economies should 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, as included in 81% and 63% of reporting economies (n=16), respectively.

Pillar 4

Strengthen confidence in vaccination and build resilient immunization programs

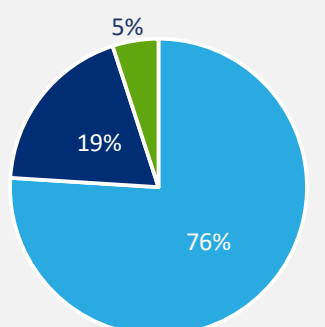
The COVID-19 pandemic has fundamentally shifted the global vaccine landscape by saturating the communications and media space with evolving messaging regarding vaccine development, safety, testing, recommendations, and eligibility, while at the same time competing with misinformation. Despite the broad 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 1

% of APEC economies which conducted assessments to understand barriers to vaccination or reasons for under-vaccination (n=21)



■ Yes ■ No ■ No Data

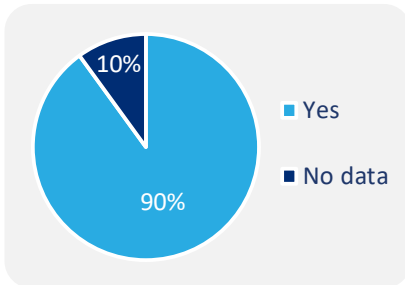
At least 76% of APEC economies have conducted assessments to understand low uptake of vaccines in their populations. Understanding barriers and determinants of uptake can inform programmatic priorities and domestic, jurisdictional, and local activities to increase vaccine uptake. Of the economies which conduct these assessments (n=16), 88% have included measures of vaccine confidence *and/or* behavioral and social drivers of vaccination, further enabling economies to address the needs of their populations by understanding public trust.

Additionally, at least 62% of economies (93% of reporting economies (n=16)) have in place teams to identify and analyze system vulnerabilities impacting immunization and respond to emerging or potential threats to immunization access.

Pillar 4

Measure 2

% of APEC economies with communications programs to promote confidence in vaccination (n=21)



90% of APEC economies have implemented programs which promote confidence in vaccination among healthcare workers and/or public communications strategies to address under-vaccination. Introducing such programs, particularly those that are driven by communities and are tailored to local experiences and needs, support informed decision-making and vaccine uptake by strengthening confidence in vaccines through multiple channels, including healthcare providers.

Effective health campaigns foster public trust and bolster vaccine confidence. In order to increase vaccine uptake, economies must understand the primary drivers behind vaccine hesitancy and follow best practices for consistent communication and local engagement. Ensuring that resources are widely accessible to the public through multiple channels can support informed decision-making.

In order to build public confidence in the safety and efficacy of vaccines, the Government of **Canada** has implemented several initiatives to build capacity of vaccinators and evidence-based vaccination communication and support community-based vaccine education, promotion, and outreach. The Public Health Agency of Canada (PHAC) regularly supports community-based efforts related to vaccine acceptance and uptake, tailored to the specific needs of target communities, such as people with disabilities, newcomers, indigenous youth, healthcare providers, and rural populations.

Through PHAC's Immunization Partnership Fund (IPF), established in 2016, the Government of Canada is helping to close the gap among populations with lower vaccine uptake by enabling informed vaccination choices and equity-based approaches.²⁵ The Fund supports community-based initiatives that encourage vaccine confidence and uptake through activities that focus on building capacity for health care providers, support for community-based COVID-19 education, and building capacity for evidence-based vaccination communication.

Similarly, through PHAC's Vaccine Community Innovation Challenge, a program that has effectively sunset in 2022, the Government of Canada funded community-driven initiatives that helped promote vaccine confidence, many of which target vulnerable populations and included comprehensive and accessible programming in multiple languages.²⁶ The Challenge empowered trusted community leaders to share credible information on the safety and effectiveness of COVID-19 vaccines, and encouraged their community members to get informed and take action to protect themselves and others by getting vaccinated.

During the COVID-19 pandemic, **Malaysia** leveraged proactive communication and multi-stakeholder engagement in order to mitigate misinformation and encourage informed decision-making.²⁷ Frequent and aligned statements from the Prime Minister and Minister of Health reinforce positive messaging centered on community efforts to stop the spread of COVID-19. Live updates and statistics disseminated across media channels, primarily through infographics and videos, inspire broader confidence and underpin the economy's risk management strategy.

Pillar 4

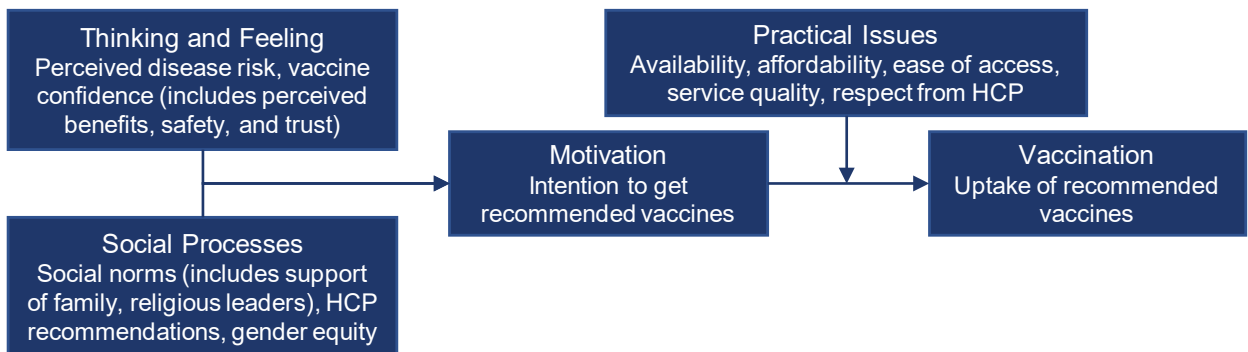
Additionally, Malaysia adopts the WHO's guidance to emphasize clear and timely communication as a cornerstone of risk management. The MoH has developed distinct communication initiatives for each phase of the pandemic: preparation, early containment, late containment, and recovery. Proactive messaging guides behavior and ensures ample preparation prior to the emergence of new variants and pandemic waves.

Strategic collaboration at the domestic and local level further alleviate community concerns. Government leaders and health workers co-opt civil society to target vaccine confidence:

- Community and religious leaders convey messages that challenge vaccine hesitancy, including at places of worship;

- Media, including broadcast stations, disseminate messages and information on COVID-19 immunization;
- The religious department issued a fatwa that COVID-19 vaccination is not prohibited but instead encouraged to protect life;
- Health workers convene townhall meetings to share accurate information with reporters;
- Experts from various agencies deliver talk shows, media briefings, and webinars, among other communications;
- Various government agencies, NGOs and community groups are involved in disseminating correct and updated COVID-19 and vaccine information.

Figure 4. Behavioral and Social Drivers of Vaccine Decision-Making



Adapted from WHO Report on Tools to Measure Behavioral and Social Drivers of Vaccination ²⁸⁻²⁹

Next Steps

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.³⁰ Economies can model communications strategies off of existing resources, such as Australia's Sharing Knowledge About Immunization project, which provides online training for health professionals and resources to support all parents, including those with questions or those who might delay or refuse vaccination.³¹

Pillar 5

Enable investment and innovation in vaccine research & development (R&D), manufacturing, and delivery

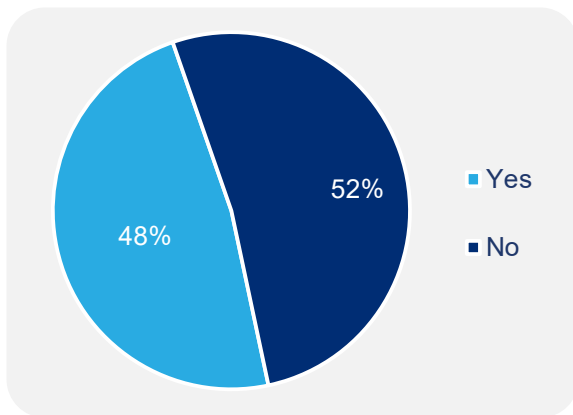
Historically, the vaccine industry has been one of high-growth. Nevertheless, there are signs that the pace of vaccine innovation is on the decline, such as slowing revenue growth, a flattening development pipeline, declining numbers of vaccine candidates that reach clinical studies, and remaining unmet needs. In order to continue advancing innovation and R&D, steps should be taken to incentivize investment in vaccines, possibly through tackling the rising costs and commercial uncertainty that contribute 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 1

% of APEC economies with a private sector engagement strategy or mechanism (n=21)

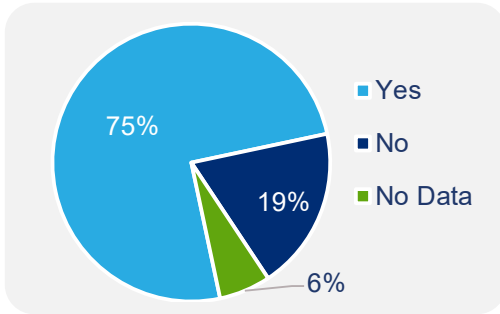


Few economies have implemented private sector engagement strategies or mechanisms, for either general engagement with vaccine or pharmaceutical producers or more specifically for use in outbreak preparedness/response. Introducing public-private partnerships and engagement strategies can support multi-stakeholder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

Pillar 5

Measure 2

% of economies with a process in place for sharing data on vaccines demand and health needs among key stakeholders (n=16)



75% of reporting economies (n=16) 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 demonstrated in Figure 5.

Securing strategic funding for R&D is critical for future pandemic preparedness. Economies' commitments to innovation with respect to new modalities and vaccine production for priority infectious diseases will improve access and foster greater resilience.

The Strategic Center of Biomedical Advanced Research and Development for Preparedness and Response (SCARDA) is a newly established funding unit by the government of **Japan** within the Japan Agency for Medical Research and Development (AMED) in March 2022 to mitigate delays in future vaccine development and strengthen the ability to respond to local and global demand.³²

SCARDA, preparing for public health crisis, focuses on long-term research and development of vaccines for priority infectious diseases which are designated by the Ministry of Health, Labor and Welfare (MHLW) with various modalities, by participants including the pharmaceutical industry, academia, and biotech.

In the event of an emergency, SCARDA will expedite vaccine production under the government's direction.

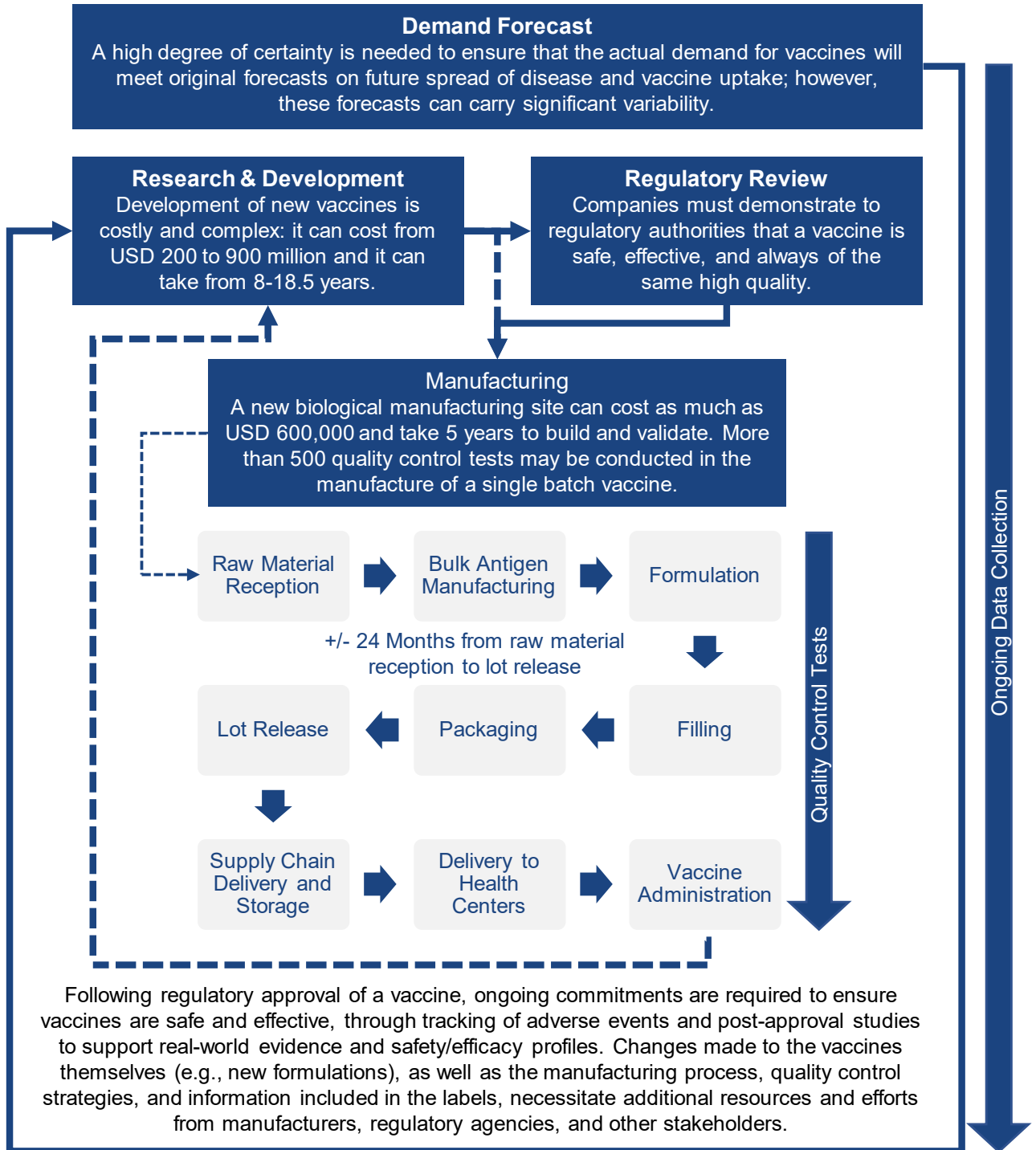
Taking lessons from the COVID-19 pandemic, SCARDA aims to develop vaccines that are safe, effective and convenient in terms of supply chain and administration.

Next Steps

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.

Pillar 5

Figure 5. Components of the Vaccine Journey



Adapted from IFPMA, 'The Complex Journey of a Vaccine' (Part I and Part II) and IFPMA and BIO, 'Innovative Vaccines Companies and the Decade of Vaccines.'³³⁻³⁵

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.

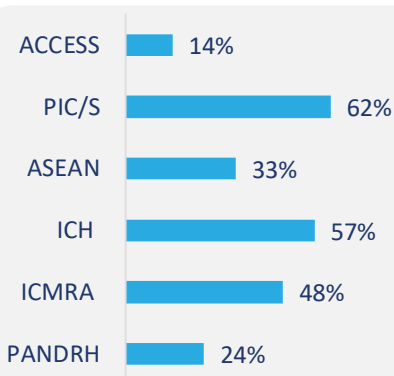
Targets

1. APEC-wide endorsement of and adherence to a set of agreed regulatory practices including adherence to globally recognized regulatory harmonization recommendations and guidelines, in order 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

The APEC Regulatory Harmonization Steering Committee (RHSC) has helped align regulatory requirements for the approval of medical products and delivered training programs on key regulatory issues including highlighting opportunities for convergence and harmonization of regulatory requirements for clinical trials, and regulatory alignment on post-approval change management of vaccines.³⁶

Measure 1

% of APEC economies involved in regulatory harmonization and reliance initiatives (n=21)



Participation in regulatory harmonization initiatives can support APEC economies in streamlining regulatory approval of medical products, including vaccines. As of 2022, 95% of APEC economies are involved in at least one initiative.

In addition to regulatory harmonization initiatives, APEC economies may approve vaccines based on existing recommendations and/or evidence reviews completed by the World Health Organization, Stringent Regulatory Authorities, and Regional Immunization Technical Advisory Groups.

Pillar 6

Measure 2

% of APEC economies which have designed or initiated capacity-building trainings (n=16)

63% of reporting APEC economies (at least 48% of APEC economies) have designed or initiated capacity-building trainings to accelerate adoption of globally recognized recommendations and guidance on regulatory harmonization for vaccines.

Through endorsement of the **APEC Action Plan on Vaccination Across the Life-Course**, APEC economies have committed to implementing globally recognized regulatory harmonization guidelines for vaccines. APEC economies are engaged in a variety of global regulatory reliance, convergence, and harmonization initiatives that may inform development of such guidelines:

Pan American Network for Drug Regulatory Harmonization (PANDRH): *United States, Canada, Mexico, Chile, and Peru*

PANDRH is an initiative of regulatory authorities within the Americas.³⁷ Under the leadership of PAHO, PANDRH supports pharmaceutical regulatory harmonization, convergence, and systems strengthening in the region by providing a forum for exchanging of information and best practices, producing common proposals (e.g., joint activities, technical documents) to guide health technology regulation, and developing core competencies to support and strengthen regulatory practices.³⁸⁻³⁹ In 2016, for example, PANDRH released a Guidance Document on Harmonized Requirements for the Licensing of Vaccines and Guidelines for the Preparation of an Application.⁴⁰

Association of Southeast Asian Nations (ASEAN): *Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore, Thailand, Viet Nam*

The Pharmaceutical Product Working Group (PPWG), established by the ASEAN Consultative Committee for Standards and Quality (ACCSQ) in 1999, aims to develop harmonization of pharmaceutical regulations across ASEAN members. Since its inception, the PPWG has launched several initiatives and tools, including an ASEAN Common Technical Dossier (ACTD) and Requirements (ACTR), a post-marketing alert system (PMAS), guidelines on studies, and the Joint Assessments Coordinating Group (JACG). Notably, the JACG focuses on collaboration between ASEAN Regulatory Agencies, and has developed procedural documents to guide joint assessment of product registration applications.⁴¹

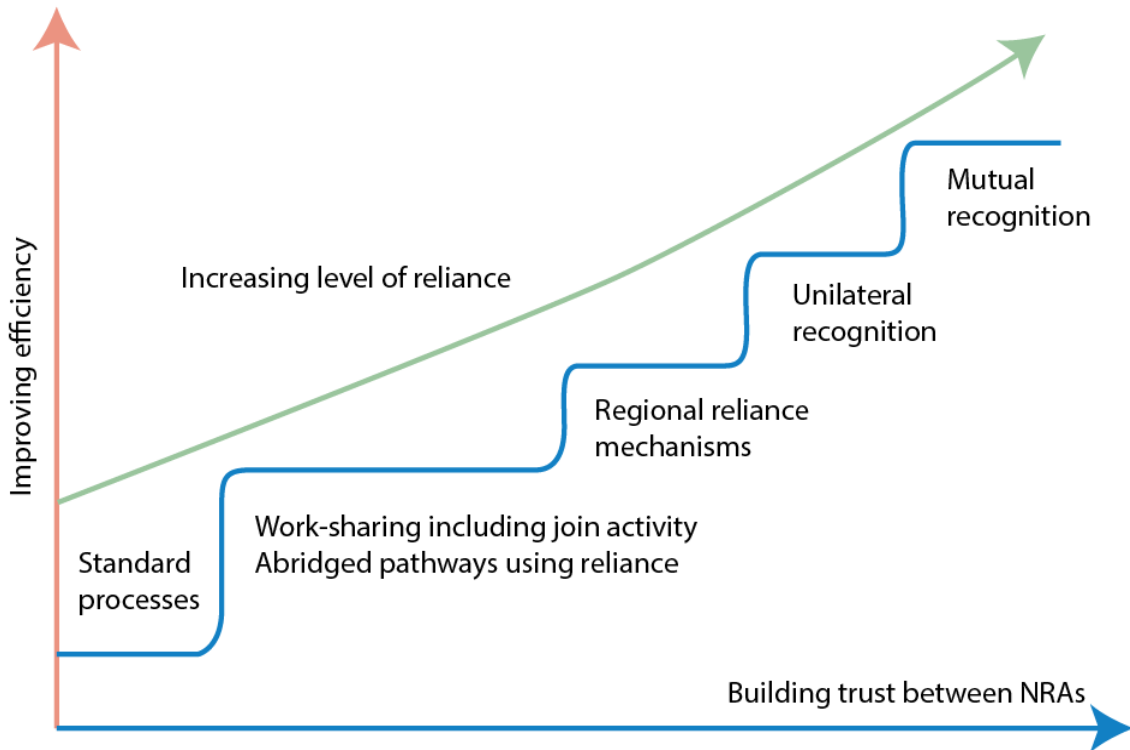
In addition to joining regulatory initiatives, economies can introduce other regulatory harmonization practices throughout the vaccine development life-cycle. Coordination between regulatory authorities and bodies (e.g., WHO) was a crucial element in facilitating introduction of COVID-19 countermeasures,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

Such practices included:

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

Pillar 6

Figure 6. Schematic Representation of Increasing Levels of Regulatory Reliance



Adapted from WHO Regulatory Reliance And Work-sharing⁴²

Next Steps

Engagement 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 6. 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.

Pillar 7

Establish proven & innovative mechanisms for sustainable immunization financing

Vaccine development is an intensive undertaking, requiring mastery of multiple technologies, funds for laboratory research, clinical trials and manufacturing facilities, sophisticated scale-up processes, and rigorous safety monitoring. More broadly, health costs across geographies are increasing as a function of expanding and aging populations; the rising burden of non-communicable diseases; and the rise of new technologies. There is an exigency for heads of state and health, finance, and related ministries to mobilize diverse and sustainable sources of domestic financing to immunize across the life-course.

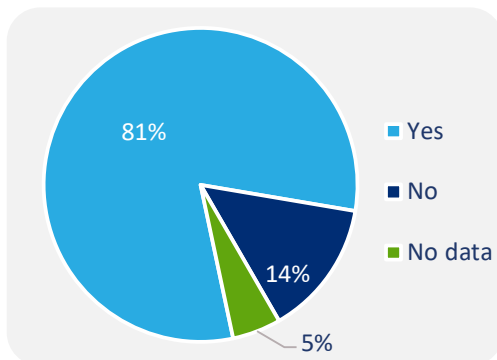
Targets

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, in order to facilitate local alignment of funding and needs

The healthcare financing initiative within APEC aims to assist governments in recognizing the importance of investing in their healthcare systems and the return on investment that can be achieved, as well as helping to identify solutions that more efficiently use the funds allocated.⁴³⁻⁴⁴

Measure 1

% of APEC economies with Economy-wide Immunization Plans (1) or vaccination law or other legislation that include financing (2) (n=21)



81% of APEC economies have in place immunization-related legislation or plans that either include provisions for the life-course and/or concrete proposals for financing or commit the government to financing all aspects of the immunization program. Sustainable funding mechanisms should be supportive of all aspects of program delivery, from research, to supply chain infrastructure, to vaccine administration. Economies should explore a variety of funding mechanisms to protect immunization programs in the long-term, such as earmarked taxes, performance-based financing, and impact bonds.

Pillar 7

Measure 2

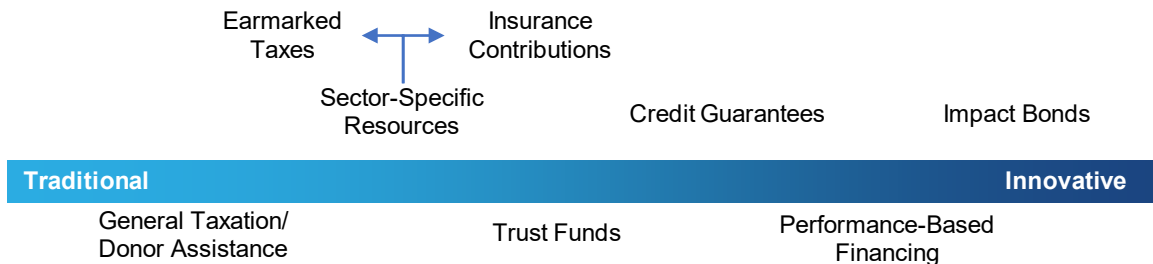
% of APEC economies with evidence of decentralization strategies (n=21)

71% of APEC economies utilize decentralization strategies, including those for financing, 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 is particularly useful to reach populations in economies that are geographically dispersed and culturally diverse. Central oversight may be required to ensure children, adolescents, and adults have access to needed vaccines, no matter their location within their economy.

APEC economies can leverage a wide range of financing mechanisms, for example:

- **Earmarked taxes:** While not a sustainable mechanism on its own, earmarked taxes, through which immunization programs are partially funded by taxes on specific sources of revenue, can supplement immunization program budgets. Earmarked taxes can include excise taxes, value-added taxes, import taxes, payroll taxes, and ‘sin’ taxes (e.g., taxes on goods such as tobacco and alcohol).
- **Performance-based financing (PBF):** Also referred to as “pay-for-performance” or “results-based financing,” PBF models incentivize healthcare providers to meet targets or perform specific services by measuring the quantity and quality of services rendered and paying providers accordingly.
- **Trust Funds:** Public trust funds, which are established by law and managed by a government body, pool funds for a particular purpose, such as immunization programs.⁴⁵ Following initial seed capitalization, these funds increase over time from diverse sources of funding, such as domestic taxes, donor funds, or cash or in-kind contributions from the private sector.

Figure 7. Immunization Financing Mechanisms Along the Innovative Spectrum



Adapted from: Thinkwell Global’s Mechanisms Along the Innovative Spectrum ⁴⁶

Next Steps

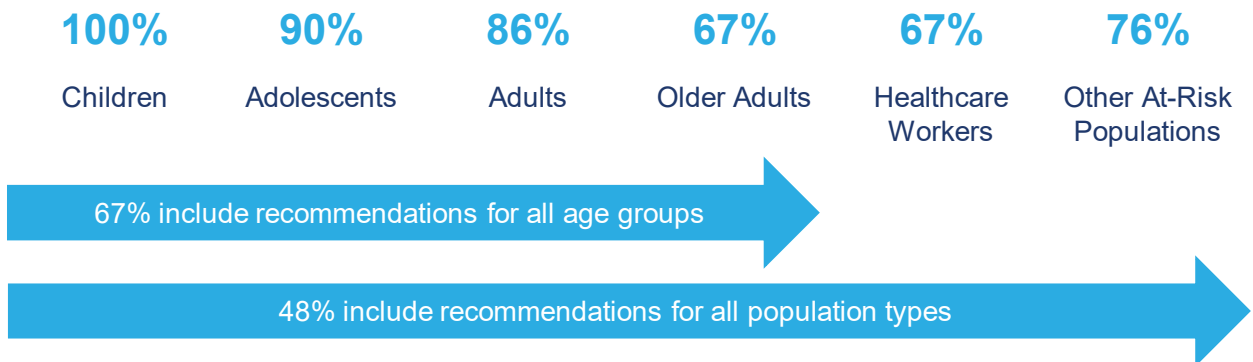
Across APEC economies, the use of traditional and innovative financing mechanisms is vital to ensure efficient use of limited resources to address both present and future needs. Multi-sectoral collaboration can identify financing challenges and support development of innovative solutions. Economies can leverage existing APEC resources and workstreams for healthcare financing, including the APEC Healthcare Financing Roadmap and the APEC Checklist of Enablers for Alternative Health Financing. ⁴⁷⁻⁴⁸

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 should leverage the *APEC Action Plan on Vaccination Across the Life-Course*, which lays out the specific actions to support immunization system strengthening, development of sustainable immunization policies, and cross-sector collaboration. The measures included in the Dashboard should be considered a foundation for improving immunization coverage within the region.

Consistent with global trends, immunization programs in APEC economies are strongest for pediatric populations, with all economies including recommendations for children in immunization schedules. 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 (Figure 8). 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.

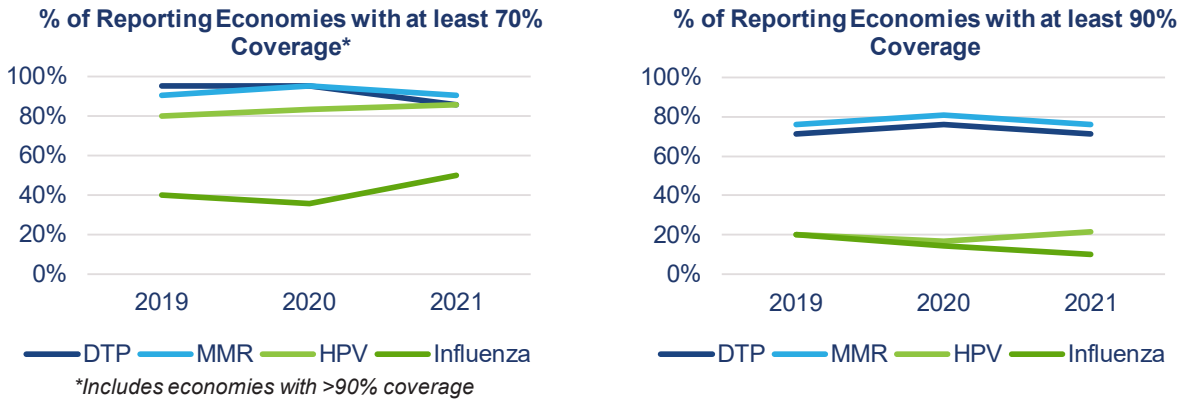
Figure 8. Percent of APEC economies with immunization schedules that include recommendations for all stages of life



Once economies expand immunization programs to include additional populations, it is essential to track uptake of vaccines across the life-course to identify gaps in coverage. While many economies met $\geq 70\%$ vaccination rates for DTP, MMR, and HPV vaccines between 2019-2021, additional efforts to strengthen vaccine access are needed to reach $>90\%$ coverage rates. Further, global decreases in vaccination rates throughout the COVID-19 pandemic were also experienced in APEC economies. Between 2019-2021, the number of reporting economies with $\geq 70\%$ coverage either did not change (MMR), decreased slightly (DTP), or increased (Influenza, HPV). Meanwhile, the number of economies reaching $\geq 90\%$ coverage for all antigens experienced minimal changes. Additionally, in 2021 only 62% and 67% of economies met herd immunity thresholds of 92% for measles-containing and DTP-containing vaccines, respectively.

Conclusion

Figure 9. % of Reporting APEC economies reaching >70% and >90% immunization rates, 2019-2021



The number of reporting economies varies by antigen. Data for all 21 APEC economies was collected for DTP and Measles-containing vaccines for all years. 10, 12, and 14 economies reported HPV vaccination rates in 2019, 2020, and 2021, respectively. 10, 13, and 10 economies reported influenza vaccination rates in 2019, 2020, and 2021, respectively.

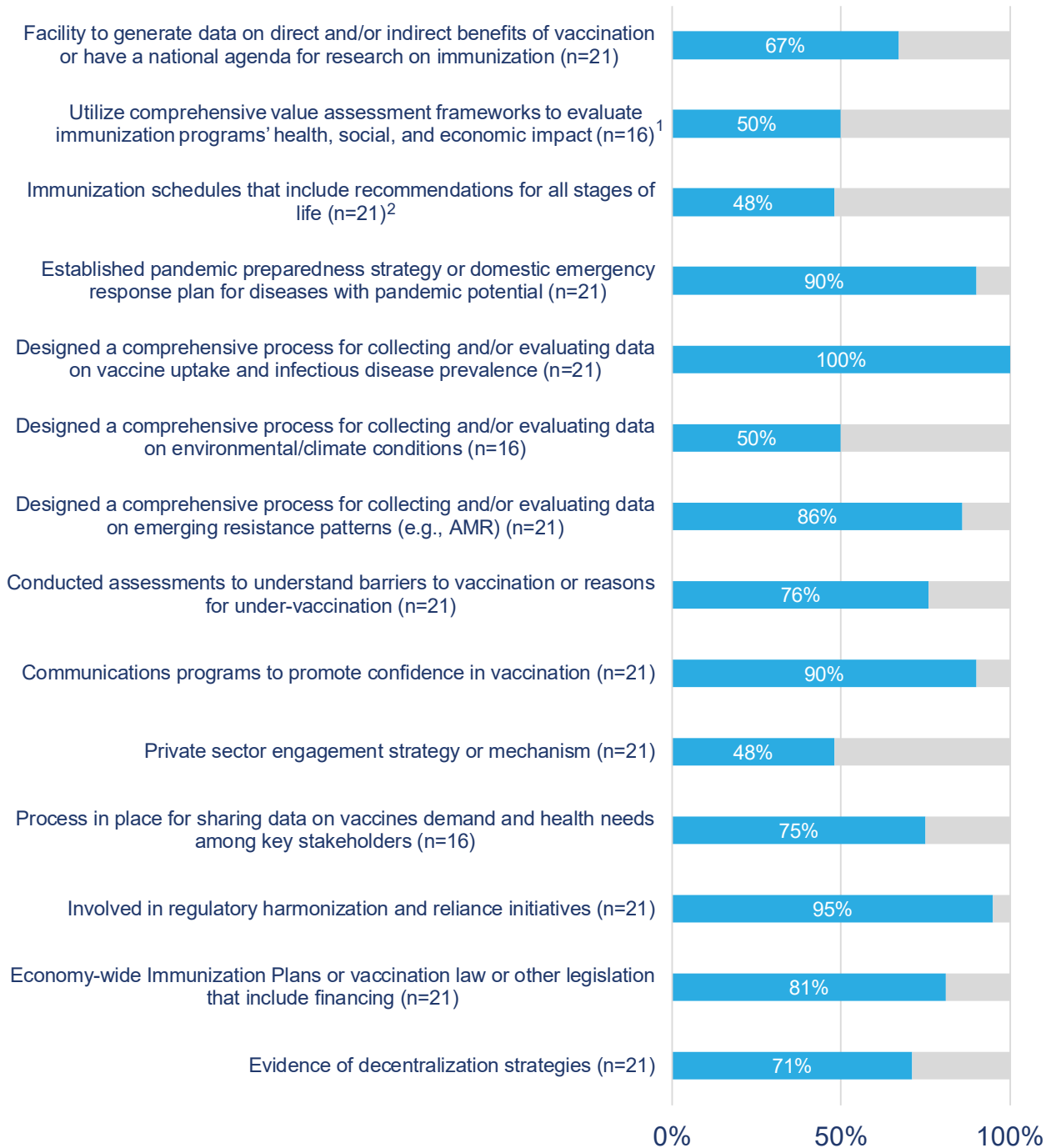
Most economies have conducted some level of pandemic preparedness planning, whether through an overarching pandemic preparedness & response strategy, ongoing development of a plan, and/or disease-specific (e.g., influenza) strategies. However, pandemic and crisis-fueled reductions in immunization rates are already threatening global health security by contributing to outbreaks of vaccine-preventable diseases, including measles and polio. To avoid future declines of routine immunization coverage, economies should incorporate learnings from the COVID-19 pandemic, including strategies to continue routine vaccination amidst mass disruption to medical services, into ongoing domestic and regional planning.

The impact of missed doses will become increasingly apparent over the coming years, as global health officials warn of a “perfect storm” for the spread of vaccine-preventable diseases and larger outbreaks.⁴⁹

Lastly, several gaps remain in measures related to data collection and analysis across the 7 pillars. Specifically, an estimated 19% of APEC economies have not conducted assessments to understand barriers to vaccination in their populations. Additionally, half of reporting economies do not include societal and economic benefits of vaccination in existing value assessment frameworks, 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.

Moving forward, APEC economies can use the goals in the *APEC Action Plan on Vaccination Across the Life-Course* and findings from the *APEC Regional Dashboard on Vaccination Across the Life-Course* to inform changes to life-course immunization programs.⁵⁰ APEC economies can also support progress towards the pillars through use of other APEC resources, such as the APEC Healthcare Financing Roadmap and the Regulatory Harmonization Steering Committee Vision 2030 and Strategic Framework.⁵¹⁻⁵²

Summary of Key Measures



1. Counted as “Yes” if value assessment frameworks include health, social, and economic impact. Counted as “No” if frameworks do not include all three measures.
2. Counted as “Yes” if immunization schedules include recommendations for children, adolescents, adults, older adults, healthcare workers, and other at-risk populations.

% of APEC Economies
■ Yes ■ No or No Data

Appendix

Appendix 1 | Methodology and Data by APEC Economy

Pillar 1

Measure 1: % of APEC economies that have in place a facility to generate data on the direct and/or indirect benefits of vaccination (1), or have a [domestic] agenda for research on immunization (2)

Methodology:

1. APEC Economy Survey: Is there a facility in place to generate data on (1) direct benefits of vaccination (e.g., reduction in burden of disease) and/or (2) indirect benefits of vaccination (e.g., reduction in work-loss)?
2. WHO Immunization Dashboard ('Planning, Management, and Monitoring'): Does the [economy] have a [domestic] agenda for research on immunization?⁵³

Measure 2: % of APEC economies that utilize comprehensive value assessment frameworks to evaluate immunization programs' health, social, and economic impact

Methodology:

1. APEC Economy Survey: Are comprehensive value assessment frameworks utilized for the evaluation of immunization programs' (1) health, (2) social, and/or (3) economic impact to drive vaccine policy and decision-making?

Source	Question	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	Russia	Singapore	Chinese Taipei	Thailand	The United States	Viet Nam
Measure 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																						
Survey	Is there a facility in place to generate data on the direct benefits of vaccination (e.g., reduction in burden of disease)?	Yes		Yes			Yes		Yes	Yes	Yes		Yes			Yes	Yes	Yes	No	Yes	Yes	Yes
Survey	Is there a facility in place to generate data on the indirect benefits of vaccination (e.g., reduction in work-loss)?	No		Yes			Yes		No	No	No		Yes			No	Yes	No	No	Yes	Yes	Yes
WHO	Does the [economy] have a national agenda for research on immunization?	Yes	No	Yes	Yes	Yes	No	No	ND	ND	No	No	No	No	No	No	Yes	ND	ND	ND	ND	No
Measure 2: % of APEC economies that utilize comprehensive value assessment frameworks to evaluate immunization programs' health, social, and economic impact																						
Survey	Are comprehensive value assessment frameworks utilized for the evaluation of your immunization programs' impact on:																					
	Health	No		Yes			Yes			Yes	Yes		Yes		No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Societal Benefit	No		Yes						Yes	No		Yes		No	Yes	Yes		Yes	Yes	Yes	No
	Economy	No		Yes						Yes	No		Yes		No	Yes	Yes		Yes	Yes	Yes	No

Appendix

Appendix 1 | Methodology and Data by APEC Economy

Pillar 2

Measure 3: # of Economies with Reported Vaccination Rates >70% and >90%, by Select Vaccine

Methodology:

Vaccines were selected based on WHO markers for immunization coverage.⁵⁷ COVID-19 and Influenza Elderly were added to provide data across the life-course:

1. DTP/Measles: WHO/UNICEF Estimates of [Domestic] Immunization Coverage - DTP-containing vaccine, 3rd dose; Measles-containing vaccine, 1st dose. WHO official coverage used for Hong Kong, China. CDC data used for Chinese Taipei.⁵⁸⁻⁵⁹
2. HPV: HPV Estimates - HPV Vaccination coverage by age 15, first dose, females.⁶⁰ Data for Singapore provided by the Ministry of Health.
3. COVID-19: OWID - Share of people with a complete initial protocol for COVID-19 vaccination.⁶¹
4. Influenza: WHO Administrative coverage - Influenza Elderly (2020 or 2021); OECD - Influenza vaccination rates total, % of population aged 65+, 2021 or latest available⁶²⁻⁶³

Source	Question	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	Russia	Singapore	Chinese Taipei	Thailand	The United States	Viet Nam
Measure 3: # of Economies with Reported Vaccination Rates >70%, by Select Vaccine, ** 2020 or 2021																						
WHO	Reported Vaccination Rates:																					
	DTP-containing vaccine, 3rd dose	95	99.95	92	95.11	99.39	95	77	96	98	95	77.92	89.82	37.07	81.5	56.62	96.73	96	98.5	82.78	93.7	83.22
	Measles-containing vaccine, 1st dose	93	99	90	92	99	95	72	98	98	96	99	91	38	78	57	97	95	98.9	96	91	89
	HPV Vaccination coverage by age 15, first dose, females	87	91	87	78			5			87	85	99	75		78	28		>90		80	78
WHO and OECD	Influenza Elderly/65+	61.9 (2021)		70.4 (2021)	72.19 (2021)		43.1 (2021)		66 (2020)	73 (2021)		94.75 (2021)	63.42 (2021)		69.03 (2021)	26.62 (2021)	73.14 (2021)			110.35 (2020)	69.8 (2020)	
OWID	COVID-19	84.02	99.86	82.74	90.67	89.11	88.93	62.32	82.49	86.20	81.92	63.10	80.55	2.91	83.63	63.88	52.90	91.77	84.96	74.66	67.76	86.03

Appendix

Appendix 1 | Methodology and Data by APEC Economy

Pillar 3

Measure 1: # of APEC economies which have an established pandemic preparedness strategy (Survey) or domestic emergency response plan (GHS)

Methodology:

1. APEC Economy Survey: Does your economy have an established pandemic preparedness strategy?
2. Global Health Security (GHS) Index: Measure 3.1.1a: [Domestic] emergency response plan for diseases with pandemic potential⁶⁴

Source	Question	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	Russia	Singapore	Chinese Taipei	Thailand	The United States	Viet Nam
Measure 1: # of APEC economies which have an established pandemic preparedness strategy or domestic emergency response plan for diseases with pandemic potential																						
Survey	Does your economy have an established pandemic preparedness strategy?	Yes	Yes	Yes			Yes		Yes	Yes	Yes		Yes		Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
GHS Index	[Domestic] emergency response plan for diseases with pandemic potential	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Survey	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)	No	Yes	Yes			Yes		Yes	Yes	Yes		No		Yes		Yes	Yes	Yes	Yes	Yes	Yes
Survey	Does the pandemic preparedness strategy include immunization recovery plans to facilitate "catch-up" vaccination programmes in places where services have been disrupted due to health crisis?	No	Yes	No			Yes		Yes	No	Yes		No		Yes		Yes	Yes	Yes	Yes	No	Yes

Appendix

Appendix 1 | Methodology and Data by APEC Economy

Pillar 3

Measure 2: % of APEC economies that have designed a comprehensive process for collecting and/or evaluating data (on vaccine uptake, status of infectious diseases, changing environmental conditions, and/or emerging resistance patterns)

Methodology:

1. APEC Economy Survey: Is there a comprehensive process for collecting and/or evaluating vaccine uptake, status of infectious diseases, changing environmental conditions, and/or emerging resistance patterns?
2. WHO Immunization Dashboard ('Vaccination Coverage,' 'Reported Cases and Incidence'): Counted as 'yes' if economy reported official estimates of vaccine uptake or infectious diseases to WUENIC⁶⁵
3. Global Database for the Tripartite Antimicrobial Resistance (AMR): Measure 7.4: [Domestic] surveillance system for antimicrobial resistance (AMR) in humans; counted as 'yes' if economy is rated 'D' or 'E' indicating presence of a standardized domestic AMR surveillance system⁶⁶

Source	Question	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	Russia	Singapore	Chinese Taipei	Thailand	The United States	Viet Nam
Measure 2: % of APEC economies that have designed a comprehensive process for collecting and/or evaluating data																						
Survey	Vaccine Uptake	Yes	Yes	Yes			Yes		NR	Yes	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
WHO		Yes	Yes		Yes	Yes		Yes	Yes			Yes	Yes	Yes	Yes					Yes	Yes	Yes
Survey	Prevalence of infectious disease	Yes	Yes	Yes			Yes		NR	Yes	Yes		Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes
WHO		Yes	Yes		Yes	Yes		Yes	Yes			Yes	Yes	Yes	Yes					Yes	Yes	Yes
Survey	Changing environmental/climate conditions	Yes		Yes							Yes		Yes		No	No	Yes	Yes	Yes	No	Yes	
Survey	Emerging resistance patterns (AMR)	Yes	Yes	Yes			Yes			Yes	Yes		No			Yes	Yes	Yes	Yes	No	Yes	
Global Database for the Tripartite AMR		Yes	No	No	Yes	Yes			Yes	Yes	Yes	No		No	Yes	Yes	Yes	Yes		Yes	Yes	Yes

Appendix

Appendix 1 | Methodology and Data by APEC Economy

Pillar 4

Measure 1a: % of APEC economies which conducted assessments to understand barriers to vaccination (Survey) or reasons for under- vaccination (WHO)

Methodology:

1. APEC Economy Survey: Does your economy conduct in depth domestic- or economy-specific studies to understand barriers to vaccination?
2. WHO Immunization Dashboard ('Demand'): Did the [economy] conduct any assessment of reasons for under- vaccination?⁶⁷

Measure 1b: % of the APEC economies who conducted assessments and included measures of vaccine confidence (Survey), or behavioural and social drivers of vaccination (WHO)

Methodology:

1. APEC Economy Survey: Do these studies include vaccine confidence?
2. WHO Immunization Dashboard ('Demand'): Did this assessment include any measures of behavioural and social drivers of vaccination?⁶⁸

Source	Question	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	Russia	Singapore	Chinese Taipei	Thailand	The United States	Viet Nam
Measure 1a: % of APEC economies which conducted assessments to understand barriers to vaccination or reasons for under-vaccination																						
Survey	Does your economy conduct in depth domestic- or economy-specific studies to understand barriers to vaccination?	Yes	ND	Yes			Yes			No	Yes		Yes		No	No	Yes	Yes	Yes	Yes	Yes	Yes
	Do these studies include vaccine confidence?	Yes		Yes			Yes				Yes		No					Yes	Yes	Yes	Yes	
WHO	Did the [economy] conduct any assessment of reasons for under-vaccination?	ND	No	Yes	Yes	Yes	Yes	Yes	ND	ND	No	Yes	Yes	No	No	Yes	Yes	ND	ND	No	Yes	Yes
	Did this assessment include any measures of behavioural and social drivers of vaccination?	ND	ND	Yes	No	Yes	No	Yes	ND	ND	ND	Yes	Yes	ND	ND	No	Yes	ND	ND	ND	Yes	Yes
Measure 1b: % of APEC economies with communications programs to promote confidence in vaccination																						
Survey	Is there is a communications team and/or process in place to:																					
	Help healthcare workers build skills to manage patients who may be vaccine hesitant and/or	Yes		Yes			Yes			Yes			Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Implement a communications program which promotes confidence in vaccination among healthcare workers?	Yes	Yes	Yes						Yes			Yes		No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
WHO	Did the [economy] implement public communications strategies to address under-vaccination?	ND	ND	Yes	Yes	ND	Yes	Yes	ND	ND	Yes	Yes	Yes	Yes	Yes	Yes	Yes	ND	ND	ND	Yes	Yes

Appendix

Appendix 1 | Methodology and Data by APEC Economy

Pillar 4

Measure 2: % of APEC economies with communications programs to promote confidence in vaccination, defined as programs which promote confidence in vaccination among healthcare workers (Survey), or with public communications strategies to address under- vaccination (WHO)

Methodology:

1. APEC Economy Survey: Is there a communications team and/or process in place to (1) Help healthcare workers build skills to manage patients who may be vaccine hesitant and/or (2) Implement a communications program which promotes confidence in vaccination among healthcare workers?
2. WHO Immunization Dashboard ('Demand'): Did the [economy] implement public communications strategies to address under-vaccination? ⁶⁹

Source	Question	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	Russia	Singapore	Chinese Taipei	Thailand	The United States	Viet Nam
Measure 2: % of APEC economies with a team in place designated to identify and analyze system vulnerabilities impacting immunization and respond to emerging or potential threats to immunization access																						
Survey	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?	Yes	Yes	Yes			Yes			Yes	Yes		Yes		Yes	Yes	Yes	Yes		Yes	Yes	

Appendix

Appendix 1 | Methodology and Data by APEC Economy

Pillar 5

Measure 1: % of APEC economies with a private sector engagement strategy (Survey) or mechanism (GHS)

Methodology:

1. APEC Economy Survey: Does your economy have a private sector strategy to guide engagements with (1) Vaccine producers and/or (2) General pharmaceutical producers?
2. Global Health Security (GHS) Index: 3.1.2a) Mechanism to engage private sector in outbreak preparedness/response⁷⁰

Measure 2: % of economies with a process in place for sharing data on vaccines demand and health needs among key stakeholders

Methodology:

1. APEC Economy Survey: Is there a process in place for sharing data on vaccines demand and health needs among key stakeholders?

Source	Question	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	Russia	Singapore	Chinese Taipei	Thailand	The United States	Viet Nam
Measure 1: % of APEC economies with a private sector engagement strategy or mechanism																						
Survey	Is there a process in place for sharing data on vaccines demand and health needs among key stakeholders?	No	ND	Yes			Yes		Yes	Yes			Yes		No	No	Yes	Yes	Yes	Yes	Yes	Yes
Measure 2: % of APEC economies with a private sector engagement strategy or mechanism																						
Survey	Please indicate if your economy has a private sector strategy to guide engagements with:																					
	Vaccine producers	Yes	No	Yes			No			Yes	Yes		NR		No	No		Yes		Yes	No	
	General pharmaceutical producers	Yes	Yes				No			Yes	Yes		NR		No	No		Yes		No	No	
GHS Index	Mechanism to engage private sector in outbreak preparedness/response	No	No	No	No	No	ND	No	No	Yes	No	No	Yes	No	Yes	No	No	No	ND	Yes	Yes	No

Appendix

Appendix 1 | Methodology and Data by APEC Economy

Pillar 6

Measure 1: % of APEC economies involved in regulatory harmonization and reliance initiatives

Methodology:

1. Review of publicly available member listings for ACCESS Consortium,⁷¹ PIC/S,⁷² ASEAN,⁷³ ICH Members and Observers,⁷⁴ ICMRA Members and Associate Members,⁷⁵ PANDRH⁷⁶

Measure 2: % of economies which have designed or initiated capacity-buildings trainings to accelerate adoption of globally recognized recommendations and guidance on regulatory harmonization for vaccines

Methodology:

1. APEC Economy Survey: Has your economy designed or initiated capacity-buildings trainings to accelerate adoption of globally recognized recommendations and guidance on regulatory harmonization for vaccines?

Source	Question	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	Russia	Singapore	Chinese Taipei	Thailand	The United States	Viet Nam
Measure 1: % of APEC economies involved in regulatory harmonization and reliance initiatives																						
	ACCESS	Yes		Yes														Yes				
	PIC/S	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes						Yes	Yes	Yes	Yes	
	ASEAN		Yes					Yes			Yes					Yes		Yes		Yes		Yes
	ICH Members and Observers	Yes		Yes		Yes		Yes	Yes	Yes	Yes	Yes					Yes	Yes	Yes		Yes	
	ICMRA Members and Associate Members	Yes		Yes		Yes			Yes	Yes	Yes		Yes				Yes	Yes			Yes	
	PANDRH			Yes	Yes							Yes			Yes						Yes	
	Total	4	1	5	1	2	1	3	3	3	4	3	2	0	1	1	2	5	2	2	4	1
Measure 2: % of economies which have designed or initiated capacity-buildings trainings to accelerate adoption of globally recognized recommendations and guidance on regulatory harmonization for vaccines																						
Survey	Has your economy designed or initiated capacity-buildings trainings to accelerate adoption of globally recognized recommendations and guidance on regulatory harmonization for vaccines?	Yes	Yes	Yes			No		Yes	No	No		ND		ND	Yes	Yes	Yes	No	Yes	Yes	Yes

Appendix

Appendix 1 | Methodology and Data by APEC Economy

Pillar 7

Measure 1: % of APEC economies with Economy-wide Immunization Plans (Survey) or vaccination law or other legislation that include financing (WHO)

Methodology:

1. APEC Economy Survey: Has your economy written and introduced an Economy-Wide Immunization Plan? Does your Economy-Wide Immunization Plan include provisions for the life-course or concrete proposals for financing strategies?
2. WHO Immunization Dashboard ('Legal Framework'): 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? ⁷⁷

Source	Question	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	Russia	Singapore	Chinese Taipei	Thailand	The United States	Viet Nam
Measure 1: % of APEC economies with Economy-wide Immunization Plans with concrete proposals for financing or vaccination law or other legislation that include financing																						
Survey	Has your economy written and introduced an Economy-Wide Immunization Plan?	Yes	No	Yes			No		Yes	Yes	No		No		Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
	Does your existing or future Economy-Wide Immunization Plan include provisions for the life-course and/or concrete proposals for financing strategies?	Yes	No	Yes			N/A		Yes	Yes	N/A		N/A		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
WHO	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?	Yes	Yes	ND	ND	Yes	No	Yes	ND	ND	No	Yes	Yes	No	ND	Yes	Yes	ND	ND	No	ND	Yes

Appendix

Appendix 1 | Methodology and Data by APEC Economy

Pillar 7

Measure 2: % of APEC economies with evidence of decentralization strategies

Methodology:

Decentralization strategies included in this analysis are immunization financing (Survey), district-level routine immunization micro-plans (WHO), and sub[domestic] schedules (WHO). Economies may implement additional decentralization schedules.

1. APEC Economy Survey: Is immunization financing decentralized?
2. WHO Immunization Dashboard ('Planning, Management, and Monitoring'): Reported as 'Yes' if economy responded to 'What is the number of districts with updated routine immunization micro-plans to raise immunization coverage?' with >1 ⁷⁸
3. WHO Immunization Dashboard ('Schedules'): Reported as 'Yes' if economy included sub[domestic] geographic areas for any vaccine included in schedules⁷⁹

Source	Question	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	Russia	Singapore	Chinese Taipei	Thailand	The United States	Viet Nam
Measure 2: % of APEC economies with evidence of decentralization strategies																						
Survey	Has your economy investigated the feasibility, benefits, and risks of introducing decentralized immunization financing strategies into your immunization plans?		No				No			No	No		No			Yes		No		No	No	N/A
	Is immunization financing decentralized?	Yes		Yes											Yes		Yes		Yes			N/A
WHO	Number of districts with updated routine immunization micro-plans to raise immunization coverage	Yes	No	Yes	ND	ND	Yes	ND		ND	Yes	ND	Yes	Yes	ND	Yes	Yes	ND		Yes	ND	ND
WHO	Sub[domestic] geographic areas for any vaccine included in schedules	Yes	No	Yes	Yes	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes	Yes	No	ND	No	No	Yes

Appendix

Appendix 1 | Methodology

Conclusion

Figure 8: % of APEC economies reaching >70% and >90% immunization rates, 2019-2021

Methodology:

WHO Immunization Dashboard ('Coverage'), OECD: Vaccines were selected based on WHO markers for immunization coverage. Influenza Elderly were added to provide data across the life-course.⁸⁰⁻⁸¹

1. Pediatric measures: WHO/UNICEF Estimates of [Domestic] Immunization Coverage - DTP- containing vaccine, 3rd dose; Measles-containing vaccine, 1st dose. Official coverage used for Hong Kong, China. CDC data used for Chinese Taipei.⁸²
2. Adolescent measure: HPV Estimates - HPV Vaccination coverage by age 15, first dose, females
3. Adult measures: WHO Administrative coverage - Influenza Elderly (2020 or 2021); OECD - Influenza vaccination rates total, % of population aged 65+, 2021 or latest available

# of Reporting Economies	DTP-containing vaccine, 3rd dose	Measles-containing vaccine, 1st dose	HPV by age 15, 1st dose	Influenza Elderly
2019	21	21	10	10
2020	21	21	12	14
2021	21	21	14	10

Appendix

Appendix 2 | APEC Action Plan on Vaccination Across the Life-Course: Summary of Pillars, Targets, and Indicators

Targets	Indicators
PILLAR 1: Promote recognition of the value of vaccination and vaccine innovation by policymakers and key decision-makers	
1.1 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	Percentage of APEC economies that have in place a facility to generate data on both the direct and indirect benefits of vaccination
1.2 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	Percentage of APEC economies that utilize comprehensive value assessment frameworks for the evaluation of immunization programs' health, social, and economic impact to drive vaccine policy and decision-making
1.3 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	Percentage of APEC economies that have established a communications plan to translate data and analysis of value of vaccination into policy recommendations accessible to stakeholders
PILLAR 2: Prioritize access to and uptake of vaccination across the life-course for all individuals	
2.1 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	Vaccine coverage rate for routine immunizations in each APEC economy, and across the region as a whole
2.2 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	Number of new vaccines, underutilized vaccines, and vaccines with expanded indications introduced into the public immunization programs of each APEC economy over the decade, including booster programs and travel-related vaccinations
2.3 APEC economies regularly and creatively engage in impactful partnerships with stakeholders to encourage vaccination	Percentage of APEC economies that have put in place a team and/or process dedicated to maintaining stakeholder partnerships to incentivize vaccines uptake

Appendix

Appendix 2 | APEC Action Plan on Vaccination Across the Life-Course: Summary of Pillars, Targets, and Indicators

Targets		Indicators
PILLAR 3: Build whole-of-government capacity in health security and pandemic preparedness		
3.1	By 2030, all APEC economies have established mechanisms to effectively mobilize resources in order to deliver vaccines during health emergencies	<ul style="list-style-type: none"> Establishment of cross-sector dialogue mechanisms or fora to develop strategy for emergency resource mobilization Regular participation by APEC economies in the mechanism
3.2	By 2030, all APEC economies have established recovery strategies for their immunization programs in the aftermath of acute health emergencies situations and/or humanitarian crises	Number of APEC economies that have established not only a pandemic preparedness strategy, but also pandemic recovery strategy with “catch-up” immunization embedded into this strategy
3.3	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	Percentage of economies that have designed a comprehensive process for collecting and evaluating data on the uptake of vaccines, the status of infectious diseases, changing environmental conditions, and any emerging resistance patterns
PILLAR 4: Strengthen confidence in vaccination and build resilient immunization programs		
4.1	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	Percentage of APEC economies that have put in place a team with the necessary skills and/or process designated to analyze system vulnerabilities and address emerging or potential threats to immunization
4.2	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	Percentage of APEC economies which conduct in depth domestic specific studies to understand barriers to vaccination
4.3	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	<ul style="list-style-type: none"> Percentage of economies that have put in place a communications team and/or process to build skills to manage patients who may be hesitant Percentage of APEC economies with well-defined scheduled for HCP vaccination
4.4	By 2030, all APEC economies maintain communications strategies – including digital strategies – to ensure the dissemination of clear, accessible, and accurate information about vaccination	Percentage of APEC economies that have put in place a communications team with the skills to implement a communications program which promotes confidence in vaccination among the public and HCPs

Appendix

Appendix 2 | APEC Action Plan on Vaccination Across the Life-Course: Summary of Pillars, Targets, and Indicators

Targets		Indicators
PILLAR 5: Enable investment and innovation in vaccine R&D, manufacturing, and delivery		
5.1	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	Percentage of APEC economies that have consolidated a private sector strategy to guide engagements with vaccine or broader pharmaceutical producers
5.2	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	Percentage of economies that have put in place a process for sharing data on vaccines demand and health needs among key stakeholders in the innovation and production pipeline
PILLAR 6: Accelerate regulatory harmonization for vaccines across APEC economies		
6.1	APEC-wide endorsement of and adherence to a set of agreed regulatory practices including adherence to globally recognized regulatory harmonization recommendations and guidelines, in order to ensure effective supply chains and sufficient inventory	<ul style="list-style-type: none"> APEC-wide endorsement and recommendation for members to implement globally recognized regulatory harmonization guidelines for vaccines APEC workshops and capacity building to support implementation
6.2	By 2030, all APEC economies have undertaken capacity building initiatives to accelerate adoption of globally recognized recommendations and guidance on regulatory harmonization for vaccines	Percentage of economies where capacity-building trainings have been designed and initiated, involving coordination between global vaccine producers, local producers, and regulators
6.3	Continuing multisectoral collaboration within and across APEC economies to ensure robust supply chain and access to vaccines across the globe	APEC endorsement of recommendations on global vaccine supply chain security and incentives for investment and expanded access
PILLAR 7: Establish proven & innovative mechanisms for sustainable immunization financing		
7.1	By 2030, all APEC economies make commitments on economy-wide immunization funding	Percentage of APEC economies that have written and introduced an Economy-wide Immunization Plan with provisions for the life-course and concrete proposals for financing strategies
7.2	Establishment of joint platforms within and across APEC economies in order to foster collaboration to identify and resolve financing challenges	Percentage of APEC economies with health or other officials participating in an APEC-wide dialogue on financing strategies for immunization programs
7.3	Each APEC economy utilizes decentralized strategies to the extent necessary in its given context, in order to facilitate local alignment of funding and needs	Percentage of APEC economies that have conducted an investigation of the feasibility, benefits, and risks of introducing decentralized strategies into their immunization plans

Appendix

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