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ABAC Roadmap for Smarter and Inclusive Healthcare

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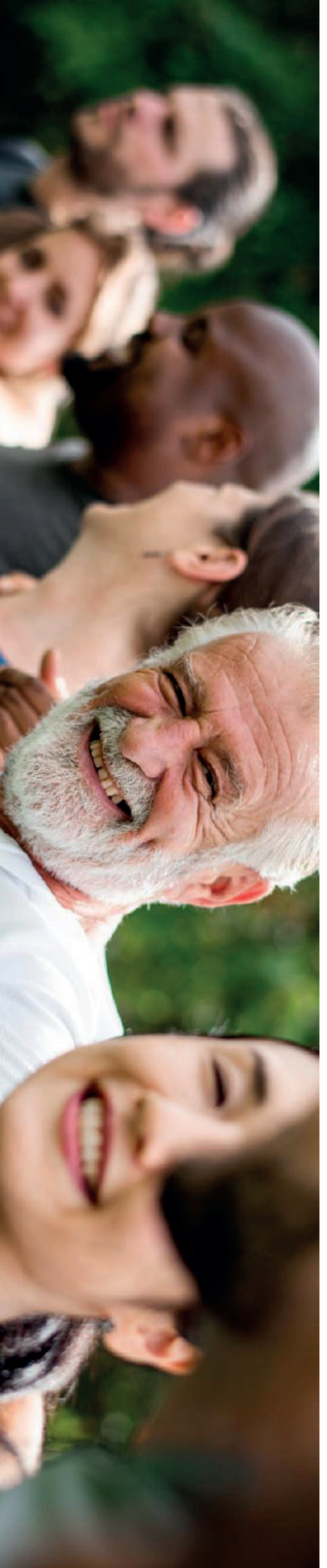


Foreword

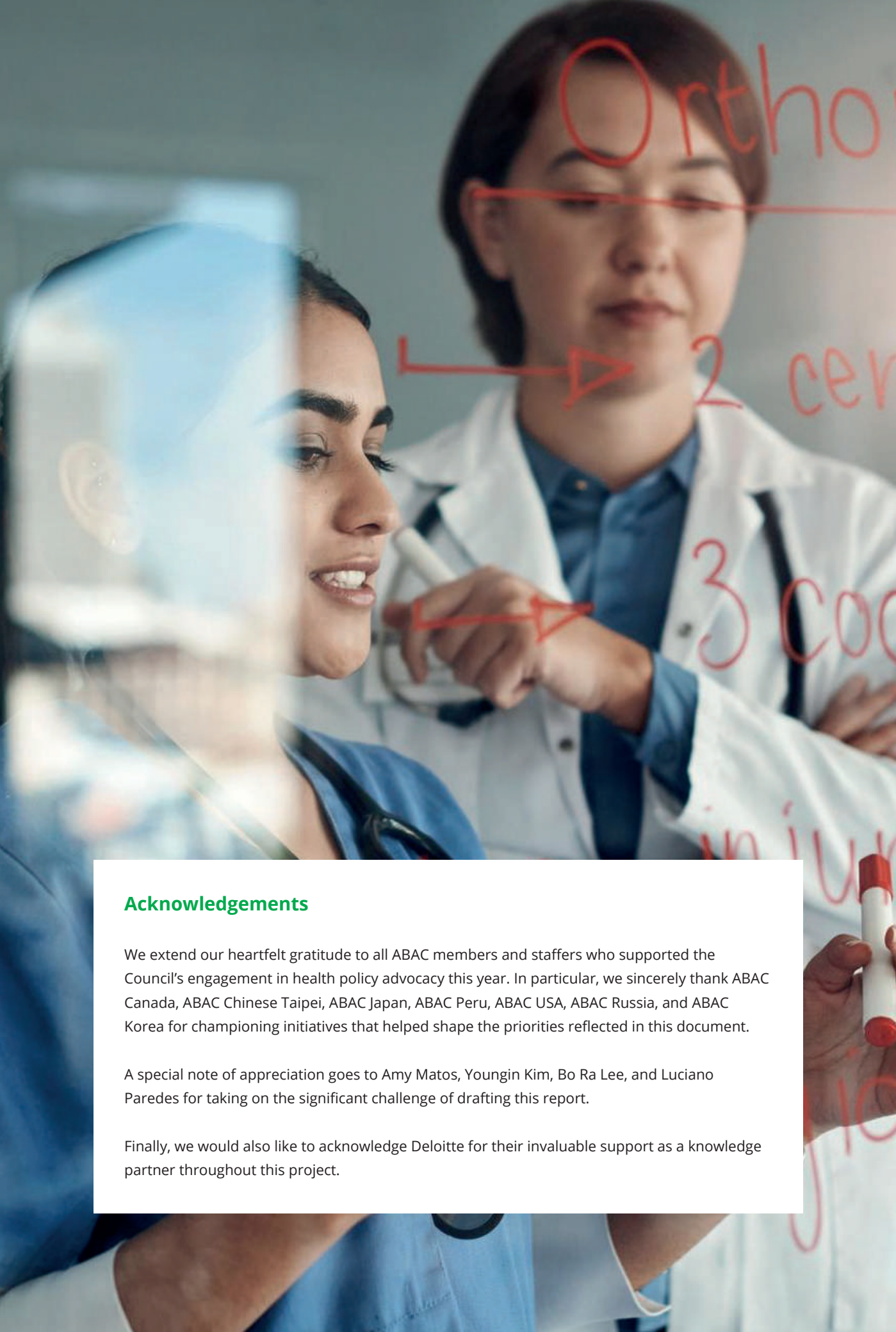
The Asia-Pacific region is undergoing profound transformations that demand a rethinking of healthcare policy and governance. Rising life expectancy, rapid demographic aging, and persistent health disparities have converged with technological advances to create both urgent challenges and unprecedented opportunities. From the private sector, we are eager and ready to engage with policymakers across APEC to respond not only to the immediate pressures on system sustainability but also to the longer-term imperative of building inclusive, resilient, and forward-looking health systems.

At the heart of this challenge lies the recognition that healthcare is intertwined to the region's broader economic and social agenda. Population aging, labor force contraction, and escalating chronic diseases threaten to erode human capital and fiscal stability. Left unaddressed, these trends risk widening inequality and weakening regional competitiveness. Conversely, well-designed healthcare reforms can safeguard human capital, promote social equity, and underpin sustainable growth. This roadmap therefore positions health not as a cost to be contained, but as a strategic investment in the future of the Asia-Pacific.

To succeed, APEC economies must prioritize two strategic shifts. On one hand, economies must accelerate digital and technological transformation in healthcare, while embedding strong governance principles to ensure security, transparency, and inclusiveness. This could lead to exponential efficiency gains in a context of mounting pressures to the healthcare systems. On the other, focus on creating inclusive systems that address heavy reliance on out-of-pocket spending, workforce and infrastructure, and limited access to existing and new treatments.

This roadmap underscores the need for joint and urgent actions that bridge demographic realities with technological advancement. It calls for health systems to be reoriented toward prevention, integration, and inclusivity. By working together, APEC economies can chart a path where healthcare is not only more accessible and equitable, but also a driver of resilience, innovation, and prosperity for all.

Raymond Kyuho Lee
Chair I ABAC Bio & Healthcare Working Group



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01. Context:

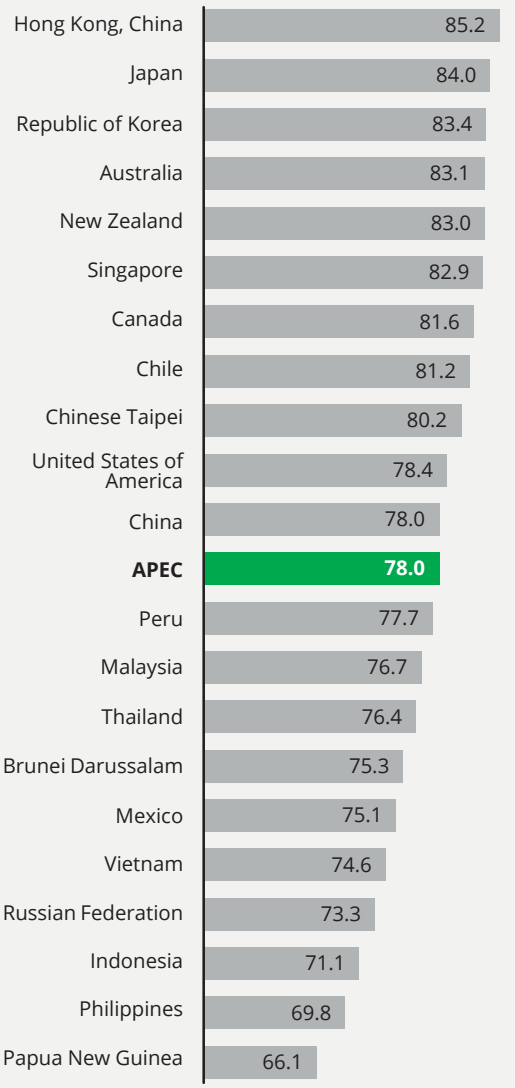
Healthcare access and demographic realities in APEC

1. Overview of healthcare accessibility across APEC economies

Healthcare accessibility across APEC economies is highly heterogeneous, reflecting the complex interplay of demographic pressures, institutional capacities, financial arrangements, and technological readiness. While certain economies—such as Japan, Canada, and Singapore—exhibit robust health systems characterized by high life expectancy, well-developed health infrastructure, and advanced digital maturity, others continue to grapple with coverage gaps in basic healthcare services, workforce shortages, and fragmented financing systems. A comprehensive analysis of key indicators reveals critical patterns that merit policy attention.

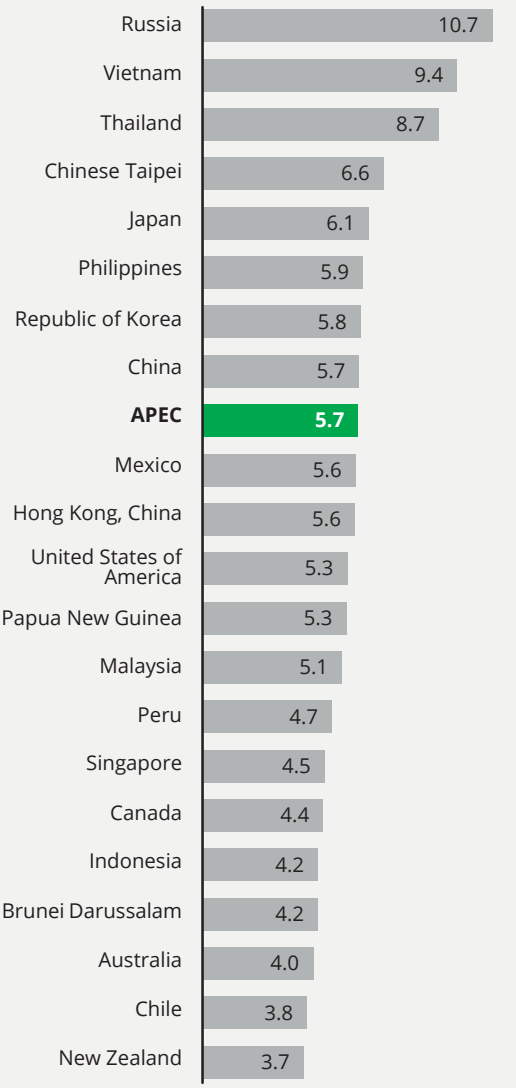
One of the most fundamental indicators of healthcare access is life expectancy. Across the APEC region, the average life expectancy is approximately 78 years, but significant disparities remain. Hong Kong, China leads with a life expectancy of 85.2 years, while Papua New Guinea lags significantly behind at 66.1 years. These differences are often reinforced by demographic dynamics. Economies such as Japan (29.6%), Hong Kong, China (21.6%), and Korea (20%) have rapidly aging populations with over 20% of their citizens aged 65 or older. In contrast, Papua New Guinea and the Philippines report elderly populations below 6%, implying differing pressures on long-term care systems and public health priorities. Moreover, the gender gap in life expectancy—a proxy for differential exposure to risk and access—averages 5.7 years across the region in favour of women, reaching as high as 10.7 years in Russia. This indicates significant gender-based disparities in both health outcomes and service utilization.

Life Expectancy at Birth, 2023
(in years)



Source: World Bank. Own elaboration

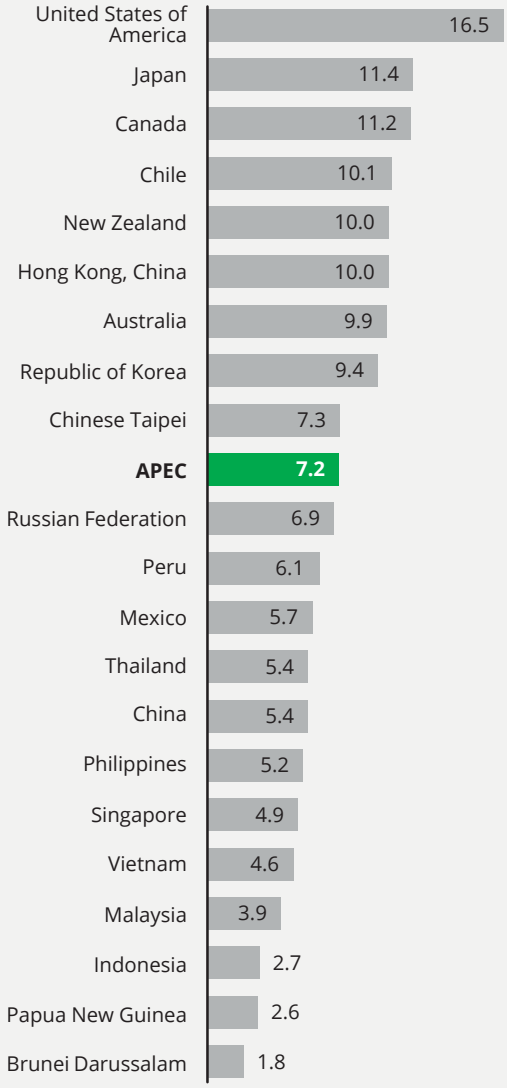
Life Expectancy gender gap, 2023
(years; women – men life expectancy gap)



Source: World Bank. Own elaboration

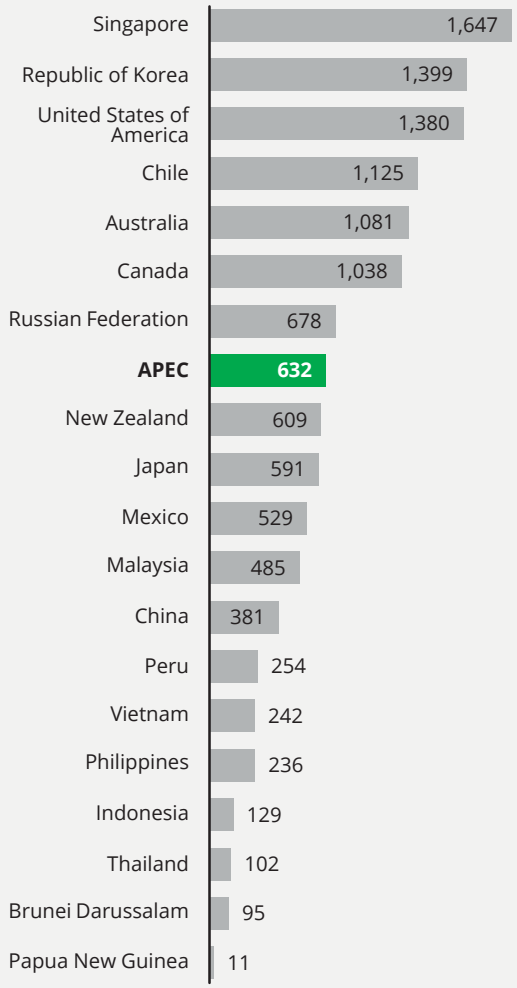
From a financial perspective, there is a stark divergence in how economies fund their healthcare systems. Current health expenditure as a share of GDP ranges from a minimal 1.8% in Brunei Darussalam to a substantial 16.5% in the United States, with the regional average at 7.2%. This reflects not only economic capacity but also policy choices in prioritizing public health investment. By combining this with out-of-pocket (OOP) spending per capita, arguably one of the most tangible indicators of financial protection, we can assess the healthcare systems inclusiveness from a financial perspective. High OOP expenditures are often symptomatic of inadequate prepayment mechanisms and low insurance coverage, and they increase the risk of catastrophic health spending, particularly among vulnerable populations. Economies such as Singapore, Korea and the United States exhibit intermediate OOP burdens, indicating potential areas for strengthening in financial protection strategies.

Current Health Expenditure, 2022
(% of GDP)



Source: World Bank. Own elaboration.

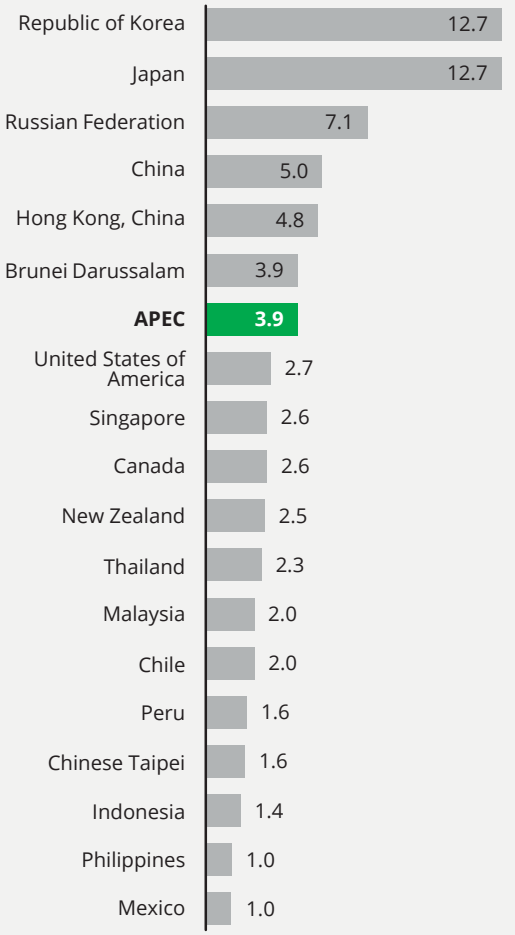
Out-of-Pocket Health Expenditure per Capita, 2022
(in current USD, PPP)



Source: World Bank. Own elaboration.
*/Information for Hong Kong, China is not available.

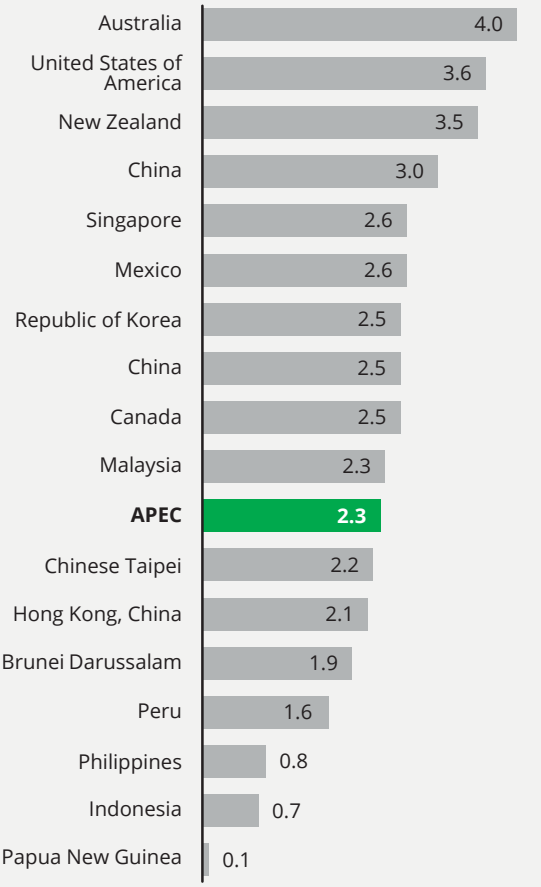
The accessibility of healthcare is also shaped by the availability of health infrastructure and practitioners. The number of hospital beds per 1,000 people, for instance, ranges from just 1.0 in Mexico and Philippines to a high of 12.7 in Japan and Korea, with a regional average of 3.9. Physician density tells a similar story: while advanced economies such as Australia and the United States and New Zealand boast more than 3 physicians per 1,000 inhabitants, Papua New Guinea reports only 0.1. The situation is even more pronounced in the availability of nurses and midwives, with Australia reaching 13.7 per 1,000, compared to 0.5 in the lowest-ranked economies. These disparities are indicative of broader systemic constraints, including the urban concentration of services, international migration of health professionals, and insufficient investment in health education and training.

Hospital beds, 2020
(per 1,000 population)



Source: World Bank. Own elaboration.
*/Information for Australia, Papua New Guinea and Vietnam is not available.

Physicians, 2021
(per 1,000 population)

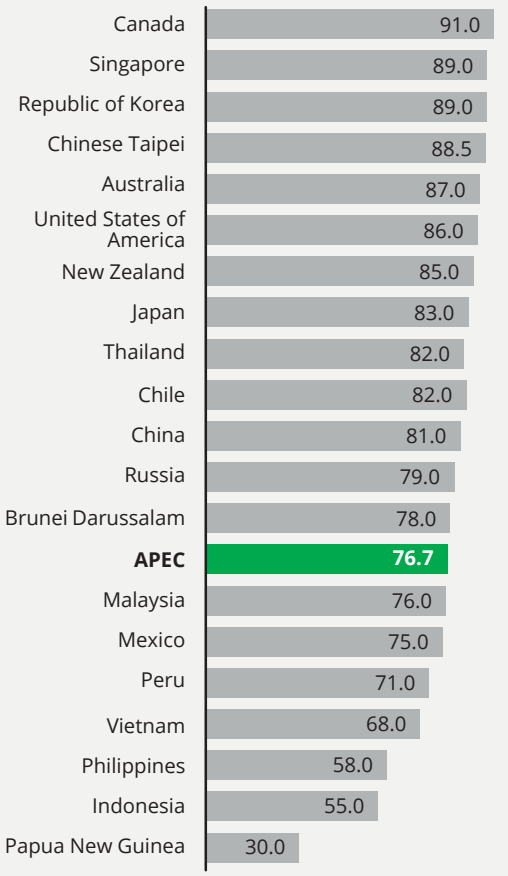


Source: World Bank. Own elaboration.
*/Information for Japan, Russian Federation, Thailand and Vietnam is not available.

In terms of coverage outcomes, we can observe an uneven landscape by examining the Universal Health Coverage (UHC) Index — a composite measure ranging from 0 to 100. The UHC Index is a key benchmark by WHO that assesses the extent of effective access to essential health services and to guide policy decisions aimed at strengthening equity and financial protection. It averages 76.7 across the APEC region. However, this masks wide gaps, with top performers like Canada exceeding scores of 89, while the lowest economy scores 30, signifying major deficits in access to essential health services.

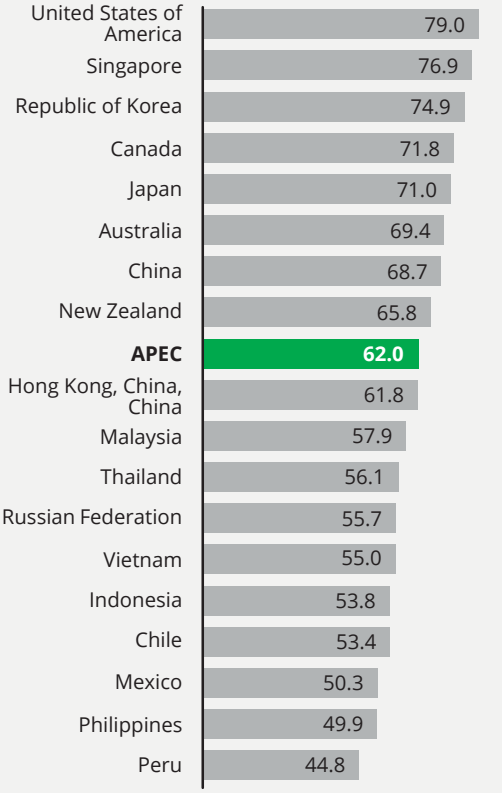
Technological readiness is also central to healthcare accessibility, particularly post-pandemic. The Digital Health Maturity indicator of WHO, which ranges from 0 to 5, shows an average score of 4.0 across the region, with leading economies like Singapore, Korea, and Australia demonstrating full maturity. In contrast, several economies are still in the early stages of digital development, limiting their ability to deploy telemedicine, integrate electronic health records, or use data for real-time decision-making. The Network Readiness Index (NRI) by WEF, which also supports this dimension, ranges from 44.8 to 79.0 across APEC, again reinforcing the digital divide. Bridging this gap will be essential to future-proof health systems and expand access in geographically dispersed or underserved populations.

UHC Service Coverage Index, 2021
(0-100)



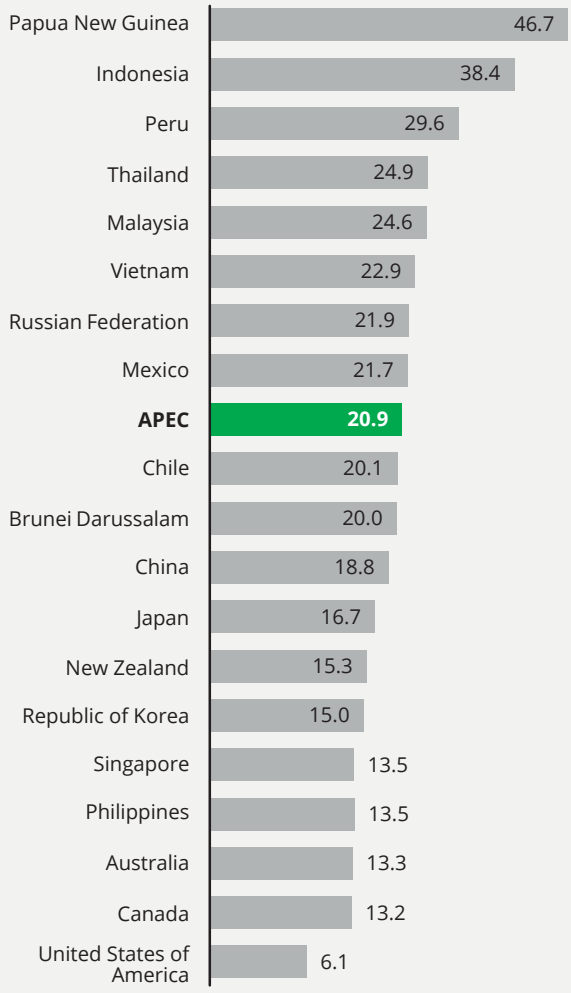
Source: WHO. Own elaboration.
*/Information for Hong Kong, China is not available.

Network Readiness Index, 2024
(score)



Source: APEC. Own elaboration.
*/Information for Brunei Darussalam and Papua New Guinea is not available.

Prevalence of Anemia Among Children, 2019
(% of children aged 6-59 Months)



Source: World Bank. Own elaboration.
*/Information for Hong Kong, China is not available.

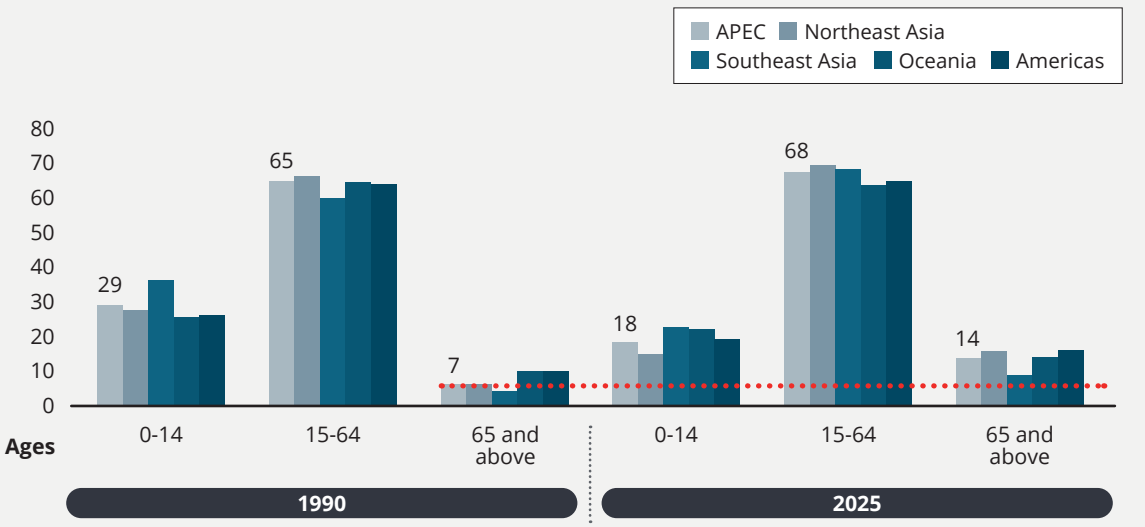
In sum, healthcare accessibility across APEC economies presents a fragmented picture: high-income economies have achieved near-universal coverage with sophisticated digital systems and extensive infrastructure, while several middle- and low-income economies still struggle with basic provision, financial barriers, and structural inequalities. Policy efforts should focus on expanding financial risk protection, strengthening human resources capacity, investing in health infrastructure, and fostering digital transformation—particularly in lagging economies. Cross-border cooperation and technical assistance within the APEC framework could play a crucial role in promoting convergence and ensuring that healthcare becomes a universally accessible right, not a privilege.

2. Demographic trends and future challenges

The demographic landscape of the APEC region is undergoing profound transformation. Driven by sustained declines in fertility and steady increases in life expectancy, this transition is reshaping not only the structure of populations but also the foundational dynamics of economies and societies. While aging is often perceived as a slow-moving trend, the pace and scale of demographic change in APEC economies—particularly in Northeast Asia—are historically significant. These developments are not isolated phenomena; they interact with patterns of urbanization, inequality, digitalization, and shifting family structures, creating a complex web of challenges that will define the region's socioeconomic future.

APEC population shares by age group, 1990-2025

(in %)



Source: UN WPP. Own elaboration.
*/Northeast Asia: China, Hong Kong, China; Japan; Korea, Russia; and Chinese Taipei.
Southeast Asia: Brunei Darussalam; Indonesia; Malaysia; the Philippines; Thailand; and Vietnam.
Oceania: Australia; New Zealand; and Papa New Guinea.
Americas: Canada; Chile; Peru and the United States of America.

The demographic transition typically begins with falling fertility rates. Across APEC economies, fertility has declined below replacement levels, leading to slower population growth. Japan, for example, has seen its population decline for over a decade. Korea and China are experiencing similar patterns more recently, with projections indicating continued aging and shrinking of the labor force. In contrast, economies such as Indonesia and the Philippines maintain more youthful population structures, though these too are trending towards aging

As the working-age population contracts, the share of older adults expands. This demographic shift places new demands on health systems, pensions, and caregiving networks. The transition is occurring at different speeds across the region: some economies are aging rapidly, while others are just entering this stage. Rapid aging will be a shared challenge and it compresses the time available to prepare institutions and infrastructure to support older populations, creating an urgent need for adaptation

Urban centers are often the focal point of these shifts. Many older adults reside in cities due to better access to healthcare and services. However, urban infrastructure in some economies is not yet adapted to the needs of an aging population. At the same time, rural areas experience both depopulation and aging, as younger individuals migrate to cities. These changes create regional imbalances in service provision and access to care, further straining social and economic systems.

Left unaddressed, ageing populations could overburden health systems, widening inequities and imposing financial hardship on families. This challenge is not only about rising demand for care, but also about the fiscal capacity to finance universal coverage. In economies with a high prevalence of informal employment, the challenge becomes even greater, highlighting the urgency of developing innovative and equitable health financing models.

While higher-income APEC economies generally have stronger institutional capacity and broader health coverage, they face distinct structural challenges. Their inverted population pyramids translate into rapidly rising dependency ratios and significantly higher long-term care needs. These systems also tend to be more costly, with growing reliance on out-of-pocket spending that exposes households to financial vulnerability despite nominally comprehensive coverage. In contrast, lower- and middle-income economies may enjoy a temporary demographic dividend due to younger population structures, but they still struggle with weaker financing bases, fragmented service delivery, and persistent gaps in universal coverage.

This dual reality underscores that demographic pressures cut across all income levels, albeit in different forms: high-income economies grapple with fiscal sustainability and the rising costs of elderly care, while developing economies face the challenge of building robust health and financing systems before they experience rapid aging. Both scenarios highlight the urgency of rethinking healthcare financing, investing in preventive and long-term care infrastructure, and adapting policy frameworks to ensure equity and sustainability across the APEC region.

3. The case for public-private collaboration in addressing healthcare disparities

Public-private collaboration will be critical for implementing a structural healthcare reform. In this regard, three APEC members—Singapore, Japan, and Australia—have successfully implemented public-private partnership (PPP) models that demonstrate concrete outcomes in addressing healthcare disparities while maintaining system efficiency and universal coverage. Their experiences provide compelling evidence for scaling collaborative approaches across the region.

Singapore has developed a sophisticated model that demonstrates how public-private collaboration can achieve universal coverage while maintaining cost-effectiveness. The foundation of Singapore's system lies in its mixed financing approach, where the public statutory insurance system MediShield Life covers large hospital bills and certain outpatient treatments, while being strategically complemented by government subsidies and compulsory medical savings accounts (MediSave).

This model proves particularly effective in addressing healthcare disparities through targeted interventions. Notably, in October 2024, Singapore expanded the reach of its healthcare subsidies: up to 1.1 million residents became eligible for enhanced financial support through revised income criteria for means-tested schemes. This expansion demonstrates the system's adaptability and its commitment to supporting vulnerable populations (Ministry of Health, Singapore, 2024).

The success of Singapore's approach stems from its strategic role allocation: private sector delivery is combined with public financing and oversight, ensuring both accessibility and quality. Additionally, the model achieves efficiency through shared financing responsibilities—patients contribute through premiums, deductibles, and co-insurance, while the government steps in with targeted support where it is most needed.

Japan's healthcare system exemplifies how predominantly private delivery can succeed under robust public regulation and targeted government support. The economy shows that public-private partnerships extend beyond service provision to include innovation and industrial development, creating a comprehensive ecosystem that reduces disparities while fostering economic growth. While Japan faces challenges in hospital efficiency—lengths of stay are among the highest in the OECD—the government's centralized approach to reimbursement for medical devices and treatments helps ensure broad access while encouraging private sector innovation and cost containment.

A key strength of Japan's model is the integration of its advanced medical device and pharmaceutical industries. As of 2021, Japan's medical device exports surpassed ¥1 trillion, and pharmaceutical exports exceeded ¥560 billion, highlighting the economic viability of sustained public-private collaboration. Programs led by the Ministry of Economy, Trade and Industry (METI), such as the Health & Productivity Stock Selection and the Certified Health & Productivity Management Program, have been instrumental for this sector's growth, supporting and recognizing companies that contribute to national health objectives.

Australia operates one of the world's most effective health systems through a well-integrated public-private model coordinated across multiple levels of government. The structure is anchored by Medicare, which ensures access to free or subsidized care in public hospitals operated by state and territory governments, while privately owned general practitioner clinics receive rebates under the same scheme. This system effectively addresses geographic and financial disparities by combining universal public coverage with diverse service delivery. According to official data, around 46% of Australians have private hospital coverage, and 55% hold general treatment coverage for services like dental, physiotherapy, and optical care—illustrating strong public trust in the hybrid model.

The federal government's sustained investment underpins the model's viability. As part of recent budget plans, substantial funding has been committed to strengthen Medicare and public-private integration. For example, the 2023–24 federal budget included an $8.5 billion package to bolster Medicare bulk-billing incentives and GP access, reflecting a trend of increasing investment over time. Though specific annual figures may vary, this trajectory reaffirms the system's sustainability and equity goals.

02. Looking Ahead:
The ABAC Roadmap for Smarter and Inclusive Healthcare

As outlined in section 1, our region faces mounting pressures from aging populations, widening inequalities, rising expenditures, and uneven preparedness for future health crises. These challenges, if not taken into consideration, risk undermining both social well-being and economic competitiveness. At the same time, innovation in data, biotechnology, and artificial intelligence provides unprecedented opportunities to reshape healthcare systems for the better.

This roadmap builds on that context by charting a clear path forward: beginning with health data as the foundation for evidence-based action, advancing through biotechnology and artificial intelligence as drivers of smarter and more inclusive solutions, reinforcing resilience through secure supply chains and sustainable financing, and addressing the long-term pressures of demographic change and addressing emerging health crisis. At its core, through regulatory convergence and greater cross-border cooperation, the roadmap seeks to guide APEC economies toward health systems that are not only more efficient and resilient, but also more equitable and inclusive.

01. Smarter Health:
Advancing Healthcare through Innovation and Technology

This roadmap turns to smarter health, where data, biotechnology, and artificial intelligence act as sequential drivers of transformation. Health data provides the foundation for evidence-based decision-making, system planning, and predictive care. Biotechnology builds on this base by converting knowledge into diagnostics, therapies, and precision medicine tailored to diverse populations. Artificial intelligence then scales these advances, enabling wider adoption, personalization, and efficiency even in resource-constrained settings. Together, these elements chart a coherent pathway for APEC to strengthen resilience, close access gaps, and move toward healthcare systems that are not only more innovative but also smarter and sustainable.

ⓐ Maximizing the Potential of Health Data

Building the foundation for smarter and more inclusive healthcare in APEC begins with unlocking the full potential of health data. While the digitalization of healthcare has gained significant momentum, the vast potential of reusing health data for purposes beyond individual clinical care—such as research, innovation, health system planning, and policy formulation—remains largely untapped. According to the OECD, less than 5% of health data is used globally, even though health data itself accounts for roughly 30% of global data.

When harnessed effectively, use of health data can bring transformative value across multiple domains.

In clinical practice, it enables early disease prediction, facilitates preventive interventions, and supports personalized medicine. In the pharmaceutical sector, it can improve clinical trial efficiency while accelerating AI-driven drug discovery and repositioning. For insurance and long-term care, health data utilization can enhance preventive strategies and enable more accurate, risk-based service design. In the health technology space, startups can leverage integrated public–private data sources to develop innovative solutions. From a policy and research perspective, it provides a robust foundation for evidence-based policymaking and allows for more precise simulations through AI-driven analytics. Unlocking this potential will require not only advanced analytics capabilities but also strong governance frameworks to ensure security, privacy, and equitable access.

Several barriers have slowed progress in this area: privacy concerns among patients and stakeholders, fragmented legal and regulatory frameworks across jurisdictions, the absence of standardized data formats, technological limitations in interoperability, and a lack of clear incentives for institutions and providers to share data. Addressing these barriers is essential to build trust, stimulate collaboration, and enable large-scale systems capable of delivering cross-economy benefits. Therefore, health data, given its broad social value, should be treated as a public good. Governments bear a central responsibility in enabling its use, while the private sector remains a crucial partner in building innovative solutions. International experiences demonstrate that investment in secure, interoperable data infrastructures is not only feasible but also economically sound.

This calls for a regional strategy that both strengthens national data repositories and advances a comprehensive technical architecture for integrated health data use that supports clinical care as well as research, innovation, and policy evaluation. Such a framework must be guided by the principles of privacy, transparency, and inclusiveness, ensuring broad stakeholder trust. Independent cost-benefit analyses would help quantify the direct and indirect benefits of health data infrastructure development, strengthening policy legitimacy, long-term sustainability, and private sector participation.

Equally important is the establishment of APEC-wide guidelines for the safe, ethical, and mutually beneficial sharing of health data. These guidelines should include interoperability standards, accountability mechanisms, and a shared trust framework, while respecting national sovereignty. By aligning with proven international models, APEC economies can accelerate their capacity to leverage health data in ways that are ethically responsible, economically sound, and socially beneficial.

To ensure impact, a minimum regional governance framework should be established as a common baseline across APEC economies. Drawing on OECD recommendations, such a framework would promote convergence of governance systems while respecting domestic sovereignty. Core elements would include transparent stakeholder engagement, oversight and accountability mechanisms, and privacy-by-design

safeguards. Economies could adopt compatible consent models and pseudonymization standards, pursue mutual recognition of data protection regimes, and develop interoperable "safe havens" for trusted data exchange. Independent accreditation of data processors and multidisciplinary review boards would further enhance accountability and trust.

At the same time, there is growing recognition that health systems remain "data rich but insight poor." Despite the vast volumes of information generated, only a small share is effectively reused for research, innovation, or system planning. This gap highlights the need for robust governance, interoperability, and secure infrastructures that can unlock the value of data while preserving privacy. Evidence shows that when data integration and advanced analytics are applied responsibly, the benefits extend well beyond individual patient outcomes—enabling faster and more accurate diagnoses, improving survival rates, and strengthening the efficiency of entire health systems. The true potential of health data lies not only in supporting clinical care but also in transforming the structural foundations of healthcare, advancing precision medicine, and guiding long-term, evidence-based policy.

The private sector can have an active role in establishing this new healthcare data governance, leveraging on existing practices of public-private collaboration for data sharing. Industries such as travel, finance, e-commerce and education co-operate on timely access to quality data to improve outcomes.

For a detailed discussion of challenges and policy recommendations on health data sharing within APEC, refer to ABAC's 2024 report, Health Data Sharing: Public-Private Partnership Policies to Empower People and Health Systems in APEC Economies. This report provides concrete recommendations on standardization (e.g., HL7/FHIR), regulatory convergence, and implementation strategies and is available at: https://www2.abaconline.org/content/download/22636051

ⓑ Fostering Biotech innovation

Once reliable health data is established as a foundation, the next step is to transform that knowledge into practical solutions. Biotechnology provides this bridge, turning information into diagnostics, therapies, and innovations that directly improve people's lives.

Recent initiatives across the region reflect a shared commitment to harness the transformative potential of biotechnology for both public health and economic resilience. A central pillar of this effort is genomics, the study of an individual's complete set of DNA and its interactions—which enables more accurate diagnostics, personalized treatments, and preventive strategies tailored to genetic profiles. Genomic technology can be used in different scenarios including oncology, reproductive health, and research and development to map genomes of organisms.

Building on these foundations, precision medicine is then able to further refine and target treatment options for patients. When this occurs, the benefits extend across both the clinical and system level. Genomics has demonstrated its potential to reduce diagnostic delays, improve treatment accuracy, and enable large-scale precision medicine programs that save lives while strengthening the efficiency of health systems. Linking genomic, clinical, and imaging data through privacy-preserving approaches such as federated learning not only accelerates personalized care but also lays the groundwork for biomarker discovery, oncology platforms, and national-scale innovations. This positions genomics as a strategic enabler of healthcare transformation, moving from individual breakthroughs to systemic resilience across APEC.

APEC could serve as a collaborative platform, bringing together the private sector, governments, academia, international organizations, and other stakeholders to facilitate ongoing knowledge exchange and collective action.

Large-scale genomics programs, particularly when implemented across organizations, reduce fragmentation of research disciplines and bridge the gap between experimental and clinical work. Such programs enable cross-specialty collaboration among clinical, governmental, regulatory, legislative, research, and commercial stakeholders. They also help build workforce capacity—training clinicians, educators, and counselors—while making systemic change and delivering tangible benefits where they matter most: to patients and their families.

Within the Smarter Health agenda, biotechnology acts as a pivotal bridge between health data and practical innovation, enabling APEC economies to translate information into advanced yet inclusive healthcare solutions. Genomic technology is mature and ready. Since 2001, innovations in this area have reduced the cost of DNA sequencing 500,000x from $100 million USD per human genome to $200 USD in 2023. This also sets the stage for artificial intelligence, which will amplify and scale these advances, guiding the next step in the roadmap.

© Leveraging Artificial Intelligence for Smarter Healthcare

As biotechnology transforms data into tangible medical solutions, artificial intelligence (AI) provides the means to scale, personalize, and deliver these innovations equitably. AI is therefore the next essential step in APEC's roadmap, ensuring that advanced healthcare solutions reach diverse populations across the region. The successful deployment of AI in healthcare could trigger a 9% cost reduction by halving diagnostic error and unlock potential productivity gains of up to 10% in more developed economies.

AI and generative AI (GenAI) are increasingly being applied to accelerate the digital transformation of healthcare. These technologies enable early disease detection, support clinical decision-making, improve diagnostic accuracy, and expand access to personalized treatments. They also reduce administrative burdens on healthcare professionals, allowing more time to be dedicated to patient care. Importantly, AI can help bridge gaps in access by supporting under-resourced facilities with tools for risk prediction, virtual care, and automated triage.

Workshops and collaborative platforms across the region demonstrate strong interest in these applications, highlighting AI's potential to empower local healthcare systems without requiring advanced technical expertise. By lowering barriers to adoption, AI allows professionals in diverse settings—from advanced hospitals to community clinics—to integrate smart tools directly into their workflows. This broadens access to innovative care models while stimulating new forms of public–private collaboration.

Looking ahead, AI will be instrumental in scaling precision medicine, strengthening health system resilience, and promoting inclusiveness. Its applications extend from predictive analytics for non-communicable diseases to real-time epidemic monitoring and tailored health interventions. As these technologies mature, the challenge for policymakers is to ensure that deployment is safe, ethical, and aligned with principles of transparency, accountability, and equity. By fostering regional cooperation and knowledge exchange, APEC economies can leverage AI not only as a driver of innovation but also as a cornerstone of smarter healthcare—ensuring that digital transformation benefits all populations, regardless of geography or income level.

By lowering technical barriers and fostering local capacity, AI can become a practical and inclusive tool for smarter, more equitable healthcare delivery across the region. Capacity-building efforts and an enabling ecosystem should be strengthened by advancing policies and programs that embrace no-code and low-code AI, enabling frontline health workers to create solutions without technical barriers. Additionally, a collaborative model-building approach should unite AI developers and healthcare providers to co-design tools rooted in real-world needs and responsive to diverse local contexts.

After conducting four workshops in 2023 and 2024, in terms of AI users and workers, ABAC has concluded that hands-on experience with AI is essential for preparing future digital workers. Our sessions demonstrated that knowledge workers—such as medical doctors without IT backgrounds—can be trained effectively to create and productively use AI models without coding by leveraging Auto Machine Learning (AutoML) platforms. AutoML refers to no-/low-code software that automates key machine-learning steps—such as data preparation, feature engineering, algorithm selection, hyperparameter tuning, and model validation—often through guided interfaces and with options to run on local infrastructure to meet privacy and security requirements. Building new capabilities for AI application among knowledge workers is more valuable than reskilling them through traditional coding-based training for AI model development.

The success of future AI-enabled digital economies depends on both "AI Makers" (AI model developers) and "AI Users" (domain knowledge workers). Public–private partnerships should be strengthened to empower both groups as digital workers. Creating regular dialogue between AI Makers and AI Users is crucial to foster teamwork in solving real-world problems with AI. Role-driven, domain-specific AI training should be developed for both groups, recognizing that their contributions are equally important. Furthermore, providing hands-on experience across the full AI pipeline—from data preparation and model development to deployment—will be vital in equipping the next generation of digital workers with practical, job-ready skills.

By positioning AI as both a complement to biotechnology and an enabler of inclusive healthcare, APEC economies can ensure that innovation does not remain isolated in research labs but reaches communities in need. This also prepares the ground for the next element of the roadmap: resilient healthcare supply chains that sustain these innovations even in times of crisis.

ⓓ Enhancing Resilience through Healthcare Supply Chain Innovation

While biotechnology and artificial intelligence expand the frontiers of healthcare, their impact ultimately depends on resilient systems that can deliver innovations to patients in every economy. Supply chains are therefore the backbone of smarter healthcare, ensuring that medicines, equipment, and technologies reach those who need them, even in times of crisis.

Strengthening healthcare supply chains requires improving the ability of APEC economies to anticipate, absorb, and respond to disruptions in the delivery of essential medical goods and services. Recent assessments highlight persistent gaps across the region, including fragmented monitoring systems, lack of real-time data visibility, and limited coordination between governments and the private sector. Beyond these overarching issues, there is significant variation in system maturity: while some economies operate advanced monitoring platforms, others are still building foundational infrastructure and regulatory capacity.

Across the region, three priorities are emerging as central to resilience. First, ensuring affordability and access by expanding the role of generics and biosimilars, improving transparency in pricing, and creating procurement systems that are competitive and fair. Second, strengthening domestic and regional production capacity for essential medicines, active pharmaceutical ingredients, and medical devices, reducing over-reliance on single suppliers or distant manufacturing hubs. Third, safeguarding the integrity of pharmaceutical and medical supply chains by addressing vulnerabilities exposed during the COVID-19 pandemic and recent trade tensions, ensuring that shocks do not cut off access to lifesaving goods. These priorities reflect a growing recognition that supply chain resilience is not just an economic issue but also a matter of health security and public trust.

At the same time, coordination challenges persist. In several cases, different government agencies request overlapping information from the private sector, generating duplication while failing to capture the data most relevant to resilience. More streamlined approaches—supported by common indicators such as stock levels, input availability, and shortage response protocols—would strengthen the value of information sharing while reducing burdens on companies. Aligning these practices with broader strategies for economic security would also allow supply chain policies to contribute to national resilience more effectively.

Addressing these challenges requires a whole-of-economy approach. Stronger public–private collaboration is needed to jointly design monitoring tools, risk assessments, and rapid-response mechanisms. Investments should focus not only on advanced economies with mature systems but also on building foundational capacity where gaps remain. Regional cooperation is equally important: regular information-sharing, convergence of regulatory standards, and mapping of critical dependencies across APEC economies can ensure that shocks are managed collectively rather than in isolation.

Ultimately, supply chain resilience is what ensures that the breakthroughs enabled by data, biotechnology, and artificial intelligence are not only developed but also delivered equitably. Building more transparent, diversified, and interoperable supply chains enables APEC economies to secure access to affordable medicines, strengthen health security, and guarantee that innovation reaches all populations, even in times of disruption.

02. Inclusive Health:
Strengthening Healthcare Equity and Accessibility

The advances in data, biotechnology, artificial intelligence, and supply chain resilience outlined in the previous section demonstrate how innovation can transform healthcare systems across APEC. Yet, as previously mentioned, the full value of these breakthroughs can only be realized if they are accessible, affordable, and equitable for all populations. Persistent gaps in financing, capacity, and regulation continue to create uneven outcomes, disproportionately affecting vulnerable groups and limiting the reach of innovation. Building inclusive health systems is therefore the next essential step in the roadmap—ensuring that scientific progress translates into universal benefits by strengthening financing frameworks, addressing emerging crisis, and advancing regulatory convergence to expand access to innovative treatments and technologies.

ⓐ Sustainable Health Financing

A cornerstone of inclusive healthcare is the ability to guarantee financial protection and equitable access for all populations. Across APEC, however, public health expenditure remains limited—averaging less than 8% of GDP—while most of the spending still comes from private sources. This reliance on out-of-pocket payments exposes households to significant financial hardship and widens inequalities in access to care.

The pressures of demographic change make this challenge more urgent. As populations age and fertility rates decline, the working-age share of the population contracts, eroding tax bases just as health and long-term care needs expand. In several economies, approval ratios of contributors to beneficiaries are falling rapidly, undermining the sustainability of systems financed largely through payroll taxes. At the same time, older populations are living longer but not always healthier lives, driving demand for costly chronic disease management and long-term care. Without reform, these dynamic risks reinforcing a cycle of lower productivity, higher fiscal strain, and inequities in access to essential services.

Moreover, intergenerational fairness is at stake. Rising expenditures on pensions, healthcare, and caregiving risk placing a disproportionate burden on younger cohorts, especially if reforms to retirement ages, contribution rules, or health delivery models are delayed. In parallel, the prevalence of informality across many labor markets undermines stable revenue generation and threatens the ability of governments to secure sustainable health financing.

Addressing these pressures requires a dual response: innovative financing models that expand fiscal space and reduce reliance on out-of-pocket payments, and systemic adaptation to demographic realities. Priority actions include closer coordination between health and finance authorities, greater investment in prevention and primary care to contain long-term costs, and recognition of unpaid caregiving as a critical but often invisible contribution to health system resilience. Expanding coverage schemes, strengthening data on demographic and health trends, and embedding aging into fiscal planning are equally critical to long-term sustainability.

Advancing these measures will allow APEC economies to safeguard human capital, reduce inequities, and enhance resilience. In doing so, health systems can remain financially sustainable, intergenerationally fair, and responsive to the needs of all communities.

ⓑ Understanding and Addressing Emerging Brain Crisis

Shifts in lifestyles, technological adoption, and demographic transitions are reshaping the health profile of APEC economies. These changes have fueled a rapid rise in neurological and developmental conditions, turning new areas such as brain health into an urgent and complex emerging crisis. Unlike traditional public health challenges, these conditions carry both profound social impacts and escalating economic costs, demanding a coordinated and forward-looking response.

Brain-related conditions—such as stroke, dementia, autism, ADHD, and other neurological and developmental disorders—are becoming one of the most pressing health challenges worldwide. Their prevalence has increased dramatically, with cases of dementia diagnosed every few seconds and the global economic cost of brain disorders estimated at several trillion dollars annually. Beyond financial burdens, these conditions impose significant pressures on families, caregivers, and healthcare systems, with impacts that will only intensify as populations age.

Despite growing recognition, valuable innovations in brain health often fail to achieve impact. The complexity of the brain, long clinical validation timelines, limited standardized biomarkers, and stigma have historically slowed progress. Today, the ecosystem continues to face fragmented funding, siloed initiatives, and weak translation of research into practical solutions. As a result, promising advances are frequently lost before reaching patients or health systems.

To overcome these barriers, a collaborative framework has been proposed, structured around four key pillars:

Funding: establishing sustainable financing models, including blended public–private partnerships and performance-based mechanisms that reward measurable outcomes.

Infrastructure: developing joint research centers and shared virtual platforms to enable cross-economy data analysis, while streamlining approval processes through coordinated review systems.

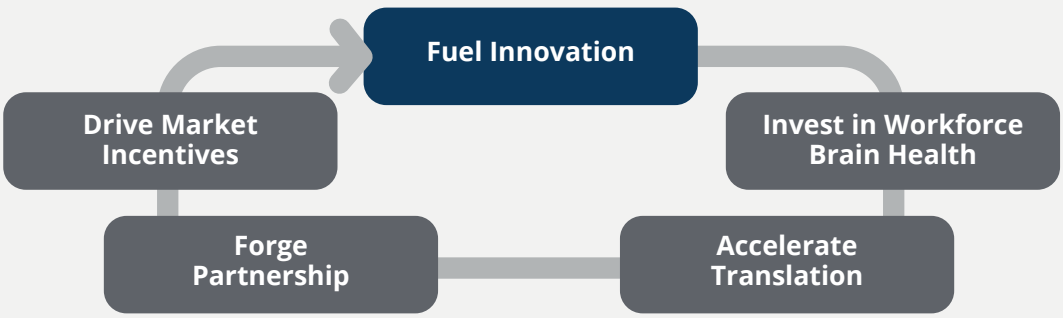
Talent: strengthening workforce capacity through fellowships, short- and mid-term research exchanges, online training modules, and interdisciplinary collaboration across medicine, life sciences, and AI.

Data: advancing standardized repositories and clear frameworks for sharing clinical, imaging, genetic, and behavioral data. This includes harmonized coding systems, mapping tools, and privacy safeguards such as pseudonymization and standardized consent processes, ensuring ethical and equitable data use.

Promoting brain health also requires addressing inequities in data contribution and benefit-sharing. Mechanisms such as performance-linked research funding, data credit systems, and preferential access rights can help ensure fair recognition of all participants. Inclusive governance frameworks and transparent agreements on data-sharing conditions are central to building trust.

When effectively integrated, brain health data can power precision medicine and evidence-based policy. Multinational sharing of datasets allows AI models to improve diagnostic accuracy in rare cases, enables earlier interventions for conditions like autism or schizophrenia, and supports personalized rehabilitation strategies for stroke patients adapted to cultural and lifestyle factors. It also accelerates drug repurposing and response prediction, enhancing both treatment effectiveness and safety. At the policy level, integrated data provides insights that support regional prevention strategies and help design more inclusive health systems.

By prioritizing brain health, APEC economies can convert a growing global crisis into an opportunity: improving quality of life, lowering long-term healthcare costs, boosting productivity, and fostering resilience. With coordinated investment, collaboration, and innovation, brain health can become a strategic pillar of public health and inclusive growth across the region.



© Facilitating Regulatory Convergence to Improve Access

To strengthen access to innovative and life-saving medical technologies across the region, greater regulatory convergence is essential. Fragmented frameworks, duplicative approval processes, and lengthy timelines often delay patient access, increase costs, and create inequities between economies. Regulatory reliance, the practice of leveraging evaluations and decisions conducted by trusted foreign regulators, offers a pathway to streamline approvals, minimize duplication, and accelerate access to safe and effective medicines and devices.

The APEC Business Advisory Council (ABAC) has consistently emphasized the critical importance of regulatory coherence for improving access to medical products, enhancing regulatory efficiency, and advancing public health outcomes across the region. Within APEC, the Regulatory Harmonization Steering Committee (RHSC)—now operating under the Health Working Group with a renewed mandate—plays a central role in guiding this effort. Its focus on building trust, aligning practices, and promoting reliance has created an important platform for cooperation among regulators, industry, and other stakeholders.

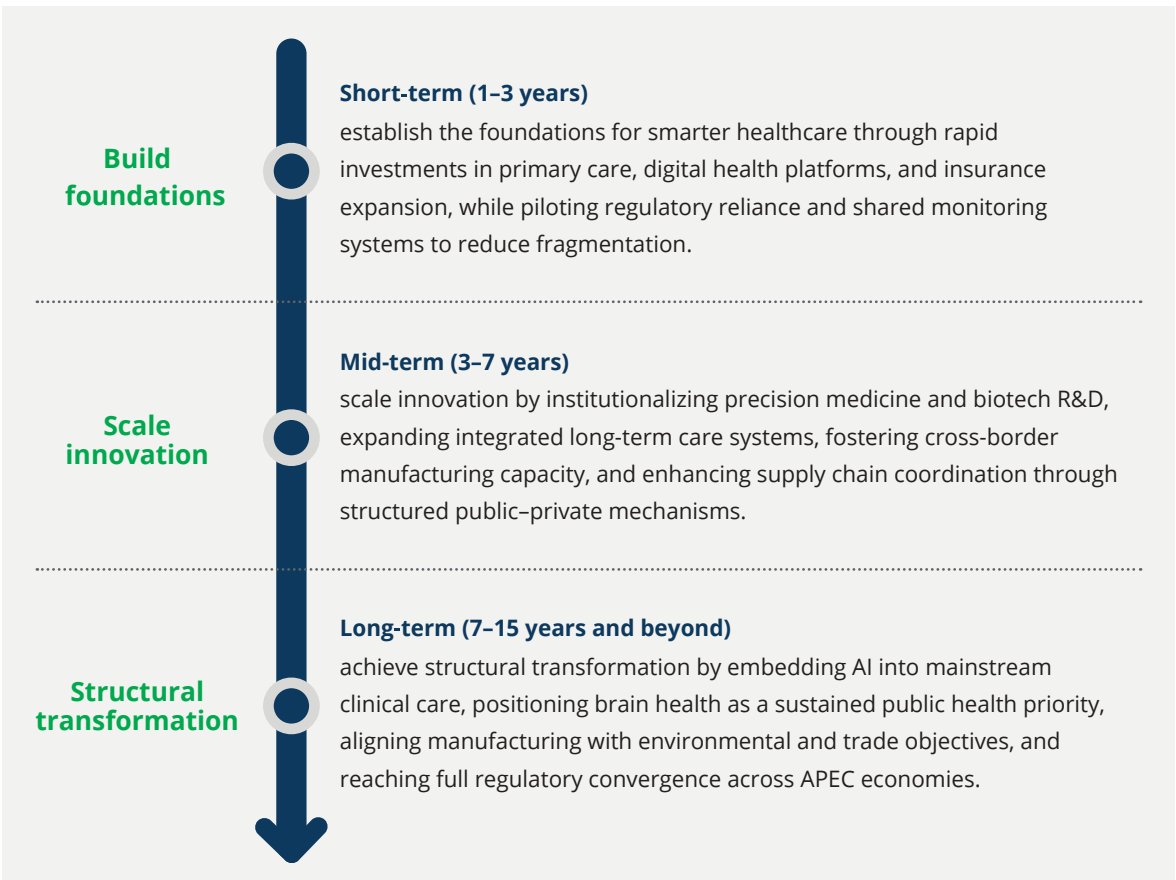
Significant challenges, however, remain. In some economies, even where legal frameworks for regulatory reliance exist, processes can still take years—or even decades—longer than in high-surveillance jurisdictions. These delays not only restrict access to cost-effective therapies but also contribute to preventable mortality and widen gaps in healthcare equity. Addressing these barriers requires a more coordinated and strategic approach that supports convergence across APEC economies.

A common framework for advancing regulatory reliance would establish shared principles, actionable guidance, and practical mechanisms to strengthen regulatory systems, particularly in lower-capacity settings. Looking ahead, APEC can play a pivotal role in advancing regulatory harmonization across the region. Building on guidance from international organizations such as WHO and OECD, APEC should develop a collective framework that sets out shared principles for recognition and harmonization. This can be complemented by expanding mutual recognition arrangements for key certification documents such as GMP and Certificates of Pharmaceutical Product (CPP), which will help minimize duplication and accelerate approvals.

By promoting this framework, APEC economies can enhance regulatory efficiency, reduce unnecessary duplication, and accelerate the delivery of high-quality medical technologies. The result will be more agile, transparent, and equitable healthcare systems —ensuring that innovations move swiftly from development to patients, where they can deliver the greatest impact.

03. Policy Recommendations and Roadmap for Smarter and Inclusive Healthcare

The previous chapters outlined the vision and strategic priorities for smarter and more inclusive healthcare across APEC. This section translates those priorities into a practical potential roadmap with defined timelines, key actions, and measurable indicators derived from ABAC's extensive project work. It is designed to guide economies from strengthening immediate foundations to achieving long-term transformation. The roadmap operationalizes the core themes—health data, biotechnology, artificial intelligence, supply chain resilience, sustainable financing, demographic change, and brain health—into a sequenced and indicative policy framework for the region



This staged approach ensures that early gains in accessibility and resilience build momentum for medium-term innovation and culminate in systemic reforms, creating health systems that are interoperable, inclusive, and sustainable at the regional level.

ABAC Roadmap for Smarter and Inclusive Healthcare

Short-term (1–3 years)	
Key actions	**Indicators of progress**
Healthcare accessibility and system readiness • Immediate investments in primary care, digital health platforms (telemedicine, real-time health management), and basic infrastructure in underserved economies. • Expand insurance schemes and reduce out-of-pocket expenditure for stronger financial risk protection.	• Public health expenditure as % of GDP. • Telemedicine penetration rate (% of consultations via digital platforms). • % of population with access to primary care facilities in underserved areas. • OOP spending share of total health expenditure. • % of population covered by insurance schemes.
Enabling Data and AI for smarter healthcare • Discuss the foundations for APEC-wide healthcare data-sharing principles. • Develop a regional methodology for assessing economic returns from health data infrastructure. • Training and capacity-building programs for AI adoption in clinical settings. • Promote no-code AI tools to empower broader local participation. • Establish initial ethical and governance frameworks.	• Number of AI training programs conducted. • % of healthcare professionals trained in AI tools. • Number of no-code AI pilots in clinical settings. • Number of economies adopting baseline AI governance frameworks.
Resilient healthcare supply chains • Develop shared monitoring tools and indicators to detect vulnerabilities. • Strengthen digital infrastructure for real-time cross-border data sharing in emergencies.	• Number of cross-border supply chain dashboards/tools established. • % of supply chain disruptions detected in real time. • % of economies with digital infrastructure for emergency data sharing.
Advancing regulatory reliance implementation • Begin adoption of reliance frameworks in economies with legal readiness. • Provide technical assistance and peer-learning opportunities.	• Number of economies piloting regulatory reliance frameworks. • Average time reduction for market approval (months). • Number of peer-learning/technical assistance initiatives completed.

Mid-term (3–7 years)	
Key actions	**Indicators of progress**
Addressing demographic shifts and aging • Expand support for community-based and integrated LTC (Long-Term Care) systems. • Incorporate unpaid caregiving into official frameworks/statistics. • Promote digital inclusion for older adults via telehealth/e-services.	• Coverage rate of LTC services (% elderly with access). • % of economies recognizing unpaid caregiving in national accounts. • Telehealth usage rate among elderly populations.
Fostering biotech innovation • Strengthen regulatory frameworks to support precision medicine. • Build regional biotech R&D capacity and reduce cross-border barriers.	• % of clinical trials integrating genomics/biotech. • Investment in biotech R&D as % of GDP. • Number of regional biotech hubs established. • Number of economies with precision medicine programs.
Resilient healthcare supply chains • Facilitate public-private dialogue to improve transparency and reduce fragmentation.	• Number of public-private dialogues held. • % improvement in supply chain transparency index.
Sustainable health financing • Implement innovative financing models by reducing OOP. • Strengthen collaboration between health and finance ministries.	• % of healthcare financed via pooled/prepaid funds (vs OOP). • Number of economies with new financing models (PPPs, blended finance). • Number of formal health-finance ministry collaborations.

Long-term (7–15 years and beyond)	
Key actions	**Indicators of progress**
Healthcare accessibility and system readiness • Achieve interoperable, region-wide digital health ecosystems with strong UHC foundations.	• Regional digital health interoperability index (0–100). • % of population covered by UHC.
Addressing demographic shifts and aging • Invest in age-friendly infrastructure (urban & rural). • Design multi-sectoral strategies for aging societies.	• % of older adults living in age-friendly communities. • Number of economies with multi-sectoral aging strategies.
Fostering biotech innovation • Public-private partnerships to commercialize genomic/biotech innovations. • Establish regional biotech hubs.	• Number of biotech products commercialized regionally. • Number of regional biotech hubs in operation.
Enabling AI for smarter healthcare • Mature AI governance frameworks. • AI integration in mainstream clinical care.	• % of economies with AI governance frameworks. • AI adoption rate in hospitals/clinics (% facilities using AI).
Sustainable health financing • Expand fiscal space for health via progressive revenue mobilization.	• Reduction in catastrophic health expenditures (% households).
Demographics and aging societies in APEC • Create permanent cross-sector platforms on aging. • Improve demographic data systems.	• Number of permanent cross-sector platforms created. • % of economies with age-disaggregated demographic data systems.
Promoting research and innovation in emerging crisis • Establish collaborative frameworks and joint repositories. • Mainstream brain health in public health agendas.	• Number of joint APEC brain health repositories established. • % of economies including brain health in public health strategies.
Advancing regulatory reliance implementation • Achieve full regional alignment through RHSC.	• RHSC alignment index (% economies adopting reliance & harmonization standards).

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