KPMG

SANOFI

Sustainable Healthcare Investment as an Economic Driver: The Time for ASEAN to Act is Now

EU-ASEAN BUSINESS COUNCIL

Table of Contents

1 Executive Summary

The Association of Southeast Asia Nations (ASEAN) as a collective represents a population of nearly **650 million people** and is projected to be the **world's fourth largest economy** by 2050. More than 50% of the economic growth is derived from productivity gains in the countries, backed by a sizeable labour force that is still young enough to deliver a demographic dividend. The European Union (EU) has long been an investor, rating ASEAN as the #1 economic opportunity according to the most recent business sentiment survey.

But, put frankly, none of this matters without a healthy population and durable care system. According to KPMG experience in driving health reform programmes globally, every year of life expectancy gained by a population contributes an additional 4% toward GDP.

10 YEARS AND COUNTING. As part of the United Nation's Agenda for Sustainable Development, all countries have committed themselves to achieving the implementation of Universal Health Coverage (UHC) by 2030 [10]. Now that we've arrived to 2020, not only is 10 years the amount of time left for countries to realise the goal, moreover we've heard from many governments and economists that 10 years might just be the amount of funding time left in ASEAN to maintain the financial stability of healthcare systems.

The ASEAN region has made tremendous progress over the past decades, in socioeconomic terms as well as in healthcare. **There is a question though of how closely the countries view the intertwine between socioeconomics and healthcare?** Despite a 250% increase in healthcare expenditure across the region [3], outcome measures such as life expectancy and UHC index scores remain lower than those of many developed nations. More importantly, it may well be an industry like healthcare that either makes or breaks the escape of ASEAN countries from the middle-income trap. **"SUSTAINABILITY"** is a big word that many are scrambling to address; we must apply the same line of thinking to the viability of healthcare financing including and beyond UHC.

Health expenditure as a % of GDP								
Selected ASEAN countries						Developed countries		
Malaysia	Singapore	Indonesia	Vietnam	Philippines	Thailand	Canada	Germany	UK
3.8%	4.5%	3.1%	5.7%	4.4%	3.7%	10.5%	11.1%	9.8%

Life expectancy								
Selected ASEAN countries						Developed countries		
Malaysia	Singapore	Indonesia	Vietnam	Philippines	Thailand	Canada	Germany	UK
76	83	71	75	71	77	82	81	81

Source: The World Bank

The EU-ASEAN Business Council's Healthcare Committee published an overarching paper in 2019 that sets out the key advocacy topics to address over the coming years. The purpose of our new report herein is to take a deep dive into the healthcare sustainability element, in conjunction with concurrent EU-ASEAN Business Council sustainability reports for sectors such as insurance, trade, and infrastructure. Sustainability of healthcare is a complex situation, we do not pretend to offer a precise recipe. Rather, we hope that our menu of curated and cultivated ideas will provide a sense of inspiration to ASEAN leaders for reflection, exploration, and adaptation of thinking.

About the research

We kicked off at the ASEAN Health Summit in Malaysia in 2019. Subsequently, a global literature review was conducted, and we spoke to nearly 30 public/private stakeholders from across the ecosystem about what more can be done to achieve the vision of sustainable healthcare financing for the region. **The issues uncovered can be largely bucketed into three groups:**

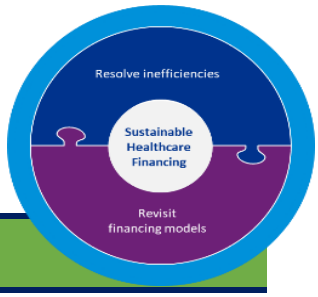
The demand on healthcare is unprecedented.	Within 20 years, all ASEAN countries will officially be "aged" societies [5], and the region continues to lose 9 million people annually to lifestyle-related disease [6] while also representing 27% of total global parasitic cases [7]. The majority of the big six ASEAN countries spend less than 5% of their GDP on healthcare, while UHC index scores remain around 70 (100 being perfect) [11].
⚠ **Whole system inefficiencies underutilise existing healthcare budgets.**	Child immunisation rates remain below 70% in many countries [1], and typically less than 10% of healthcare budgets are being allocated toward disease prevention programmes [2]. The model of healthcare services purchasing encourages volume-based activities, and medical technology purchasing fails to properly value innovation. On top of all is the lack of human capital available throughout the system.
The financing base is unsustainable.	There is low tax collection (well below the 15% tax-to-GDP target set by the IMF) combined with large proportions of informal workers who do not contribute to national health insurance schemes. The high out-of-pocket expenditures (OOPE) are keeping households in poverty. And to compound the other points, ineffective risk pooling fails to maximise the funds and instead creates fragmentation.

Necessity is the mother of innovation

Where there are challenges, there are opportunities. 10 years gives enough time to correct course if we work together now. This paper provides great detail on a number of practical, tangible solutions that are already in place in ASEAN or across the wider globe. There is something to teach, and something to learn for everyone.

Summarised in the table below are the core recommendations stemming from the identified issues and researched solutions. **Key to all is the relationship between public and private sectors.** In healthcare, Public-Private Partnerships (PPPs) must evolve beyond infrastructure and into services as well as sustainable financing. We welcome the opportunity to discuss further in order to pivot ASEAN from concerns around "health-for-all" financing and into "health-for-wealth" economic drivers that create a more sustainable system for the future of our societies.

A CHECKLIST FOR SUSTAINABILITY IN HEALTHCARE

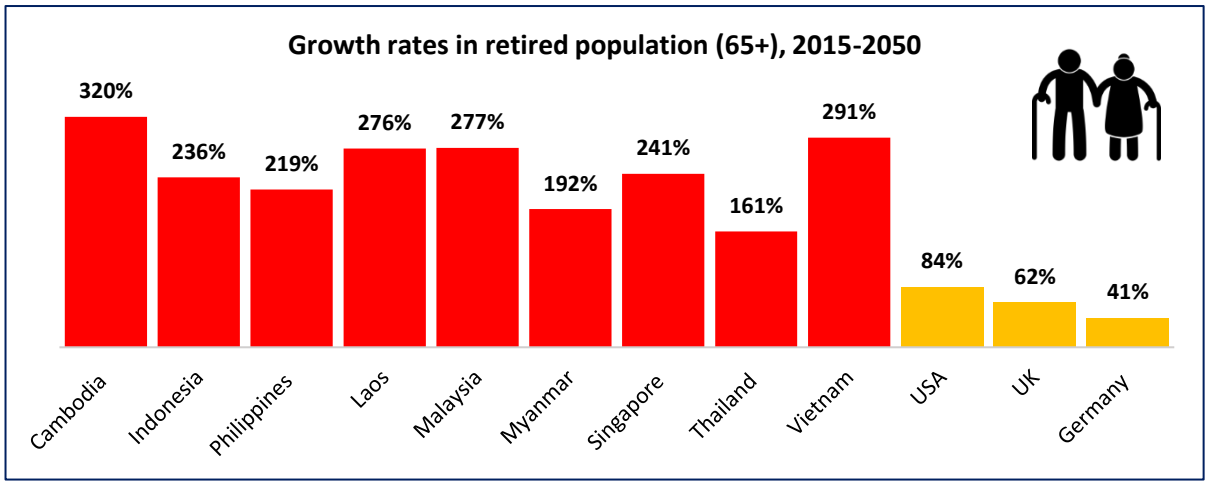


Recommendations Set #1: Resolve the inefficiencies in the existing system	
1.1	☐ Simple, yet effective – establish a more regular routine of driving healthcare across Ministries (e.g. MOH, MOF, MOE). For example like New Zealand, there could be a common healthcare-related KPI that all Ministries are working toward together.
1.2	☐ Bring prevention concepts into reality – raise life-course immunisation levels up to international standards, apply sticks but also carrots for healthy lifestyle choices (e.g. nation-wide physical activity challenges), and properly invest in early diagnosis techniques to targeted subsegments so as to improve outcomes and cost-control.
1.3	☐ Begin the nextgen wave of healthcare service delivery models – use primary care the way it is meant to be (as a front door), promote self-care options such as access to OTC products, and leverage the vast array of "digital" interventions available.
1.4	☐ Implement the methods by which to properly assess the value of innovation – there are many such models around the world to lean upon for both the purchasing of healthcare services as well as for novel medical technologies.
1.5	☐ Do not overlook the human capital factor – incorporate task-shifting into health system planning such as augmenting the roles nurses and pharmacists (like in the UK).
Recommendations Set #2: Revisit the core financing model to upgrade the system	
2.1	☐ Ramp up efforts around revenue collection and scheme contributions. Such as by taxing health-damaging products (then reinvest into healthcare programmes), or tailoring premiums and packages for the informal economy.
2.2	☐ But do not continue to rely only on taxation or scheme contributions for revenue sustainability – the more progressive thinking is a composite fundraising model that exploits the best of both, such as what has been implemented in Japan.
2.3	☐ Raise the role of private insurance to build the future of healthcare coverage together. For example, encourage citizens to take action by offering a tax relief for private insurance protection (like in Malaysia).
2.4	☐ Review population risk pooling to ensure there is maximisation of the available funding, not fragmentation and waste. One method is to consolidate schemes into a universal basic package that is supplemented by flexible, need-specific plans.
2.5	☐ Look beyond traditional financing – social impact bonds, individual health savings accounts, e-payments, crowdfunding, earmarked schemes (e.g. elderly, cancer). Utilise the variety of novel contracting models available (e.g. outcomes-based).

2 Laying out the current landscape for ASEAN

2.1 The demand on healthcare systems is expanding, and so are the gaps

ASEAN is facing a level of financing pressure for its healthcare systems more than ever before. Health expenditures in the region have increased by 250% between 1998 and 2010 to over USD 68 billion [3]. The trend is expected to continue due to factors such as an ageing population, the increase in prevalence of lingering infectious diseases, as well as the emergence of lifestyle-related ones (non-communicable, or NCDs) [4]. To put things into perspective, it is estimated that all ASEAN countries will officially become aged societies (i.e. more than 7% of the population being 65 years or older) within the next 20 years [5]. By 2030, more than 70 million people in ASEAN are projected to be over 65.



Source: United Nations, Department of Economic and Social Affairs, Population Division

To compound the ageing factor is the rise of NCDs such as cardiovascular, chronic respiratory, diabetes, and cancer that are now the leading causes of death in the region, claiming nearly 9 million lives each year [6]. Infectious diseases remain a formidable opponent too – ASEAN represents 27% of global parasitic and 30% of respiratory cases [7]. Most recently, the region has been plagued by the outbreak of COVID-19, a virus not too distant in construct to SARS [8]. A few years prior, the region was dealing with the re-emergence of measles and polio [9].

As part of the United Nation's Agenda for Sustainable Development, all countries have committed themselves to achieving the implementation of Universal Health Coverage (UHC) by 2030 – which means that a nation's citizens should receive comprehensive coverage and financial protection from catastrophic healthcare expenses [10]. While significant steps in ASEAN have been made towards realising the goal, progress varies from country to country. Singapore and Thailand, for example, score above 80 on the UHC index (an indicator of essential health services within a country, perfect score being 100) [11]. Yet Indonesia, Laos, and the Philippines lag behind with scores below 70. Clearly there is urgent need to make smarter healthcare investments so as to bridge the gaps.

2.2 Whole system inefficiencies cannot sustain these pressures

> *"It is estimated that the same life expectancy for countries can be achieved at just 30% of current healthcare expenditures."*
>
> *- World Economic Forum and KPMG*

> *"The primary problem is not the funding, but the ineffective use of funds which results in wastage."*
>
> *- Raymund Azurin, Senior Vice President, Government Affairs & Sustainability, Zuellig Pharma Asia Pacific*

Globally, there is inefficient distribution of health and care due to the misalignments in structures, incentives, and behaviours. The same phenomenon is observed in the ASEAN region.

2.2.1 Lack of investment in cost-effective healthcare services

Most ASEAN countries have underinvested in cost-effective healthcare services such as primary care, long-term care, and preventive care. These services could be a more convenient touchpoint for people to manage themselves. Yet without proper investment, expensive hospital visits become overutilised. Even preventive techniques such as immunisation, which are cheaper than cure, typically receive less budget allocation than treatment infrastructures. Despite being declared as one of the greatest health challenges which affects up to 64 million people in Southeast Asia each year [13], influenza vaccines are often not covered by national immunisation programmes [14]. Indeed, the budget allocation for prevention programmes was observed to be less than 10% of total healthcare expenditures in the region [2].

> *"Almost 50% of all outpatient visits in Vietnam take place in a hospital, rather than a primary care facility."*
>
> *- The World Bank*

Preventative care as a method to combat the health system inefficiencies is starting to pick up though. In the Philippines, the PhilHealth programme provides complementary screening and assessment under its Expanded Primary Care Benefit (EPCB) [16]. The Philippines are also putting the stick behind the carrot, introducing a sugar tax (either 6 or 12 pesos per litre of beverage depending on the sweeteners used) in a bid to curb unhealthy diet and the repercussions like diabetes [17]. The WHO estimates that this policy alone will avert 24,000 premature deaths over the next 20 years [18]. Singapore similarly has assigned USD 203 million for health promotion and disease prevention programmes, such as education around food choices and construction of communal spaces for physical activities [19].

2.2.2 Underutilisation of advanced healthcare procurement techniques

The majority of ASEAN countries continue to adopt pure provider payment mechanisms for the procurement of healthcare services, and suffer from its deficiencies. The alternative is for ASEAN to explore a mixed provider payment mechanism, which many countries around the world are now using. The table below compares the two mechanisms:

Healthcare Services Payment Mechanisms	
Pure Provider Payment	**Mixed Provider Payment**
▪ Use of single metric or KPI to determine reimbursement ▪ Potentially leads to abuse	▪ Use of multiple metrics or KPIs to determine reimbursement ▪ Creates more balance in the system against those trying to abuse
Example: Capitation: ▪ Governments reimburse a fixed amount for different types of hospital wards ▪ Actors can compromise volume or quality of services to maintain low delivery costs	Example: Capitation + Pay-For-Performance: ▪ Governments reimburse a fixed amount for different types of hospital wards, but set additional KPIs such as reduced allotments for high rehospitalisation rates so as to ensure quality of care

Under pure provider payment mechanisms, common structures are Fee-For-Service (FFS) and capitation schemes. The main difference between the FFS and capitation lies in how the payment amount is calculated – while FFS involves reimbursement for each unit of healthcare service provided, the capitation approach is calculated based on the fixed estimated healthcare costs of each patient enrolled. Such payment structures have their shortfalls when used in isolation. For instance, FFS incentivises high volume and expensive services resulting in unnecessary healthcare expenditures. Capitation may incentivise lower volume, but also lower quality in order to maintain financial viability.

Mixed provider payment mechanisms are a potential way out. This mechanism layers the pure provider payments so as to drive the desirable behaviours. For example, the Japanese government sets a fixed reimbursement amount for different types of psychiatric wards; however to prevent hospitals from cutting corners on the quality of care, the government also ruled that hospitals will receive a lower reimbursement rate for any rehospitalisation within three months [20].

Developed countries are already shifting toward mixed provider payment mechanisms, yet most ASEAN countries remain under pure provider models. The Philippines continues to pay for primary care based on a capitation system [21], and FFS is still commonly observed in Vietnam [22]. In Indonesia, the government reimburses for health services based on care groupings (INA-CBGs). The concept is similar to the Diagnosis-Related Group (DRG) model that calculates reimbursement based on average payment rate per case type by illness, severity of a patient's condition(s), and hospital classification [23]. In the near-term this can improve efficiency by incentivising to keep costs under the payment rate, but equally the model may foster behaviours of increased volume and compromise on quality.

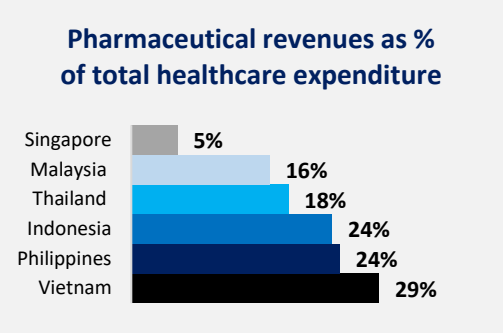
Further on the Indonesia landscape and at the time of the writing of this report, the government is altering the classification of hospitals (Regulation 3/2020) [24]. Whereas previously hospitals were classified based on metrics such as number of health personnel, facilities, capacity, and capabilities, thereby impacting the reimbursement rates, going forward the hospitals will be classified purely based on number of beds. This is seen by many as a move that discourages hospital investment plans [2]

Similar to the procurement of healthcare services, many ASEAN systems suffer from inefficiencies in the way in which medical supplies are sourced. Common observations from the industry include a lack of transparency in vendor selection process, coupled with a focus on near-term cost control rather than more holistic recognition of the value that innovative medical technologies will bring to the countries. Malaysia's healthcare budget, for example, is consumed by the variety of middlemen involved in the process. Charles Santiago, Democratic Action Party (DAP) Member of Parliament for Klang, estimated such procurement inefficiencies across the Health Ministry have cost taxpayers around USD 1 billion [25].

2.2.3 The hot debate: pricing controls on medical technology

Of course, discussions around health system financing are not complete without addressing the matter of access and reimbursement toward medical technologies, such as the novel drug therapies that are becoming increasingly available. While most governments use pricing control as a lever to try to stop the bleeding healthcare spend and to position national health programmes as public-driven (versus dominated by private sector), in reality such efforts are having limited effect.

Firstly, pharmaceutical revenue as a percentage of total for country health budgets, remains a disproportionately smaller allotment as compared to the human capital and services elements (where the aforementioned inefficiencies are primarily sitting). In ASEAN, the figure is about 20% [26]. Yet countries in the region remain in process of pushing reforms such as drug price referencing and transparency, incentives toward generic products, and volume-based centralised procurement.



Secondly and more positively, medical technology innovation can be a source of economic power for a country rather than just perceived as a cost. **A study conducted in the US estimated that cutting pharmaceutical prices by 40% led to 60% fewer R&D initiatives being undertaken [27].** Especially in light of forecasted growing demand for targeted therapies due to disease state complexity and the need for more personalised interventions, now is the time for countries to be investing in the future of the industry not falling behind those who are more progressive.

> *"A year of life expectancy gained by a population contributes an additional 4% toward GDP. In developed markets between 2000-2009, pharmaceutical innovation is estimated to have singlehandedly increased life expectancy by nearly two years."*
>
> *- KPMG, National Bureau of Economic Research*

A number of countries are embarking on "value of innovation" studies too that seek to better understand the impact of investing (or not) in novel therapies. In Australia for example, the pharmaceutical industry is estimated to have contributed AUD 21.7 million worth of disease awareness programmes and employs more than 100,000 people in the country [28]. The concerns from industry about price cutting techniques is that it discourages prioritisation of manufacturing, R&D, and new drug launch activities. Moreover, many countries are evolving their thinking to look at pricing reform through more market-driven mechanisms such as encouraging healthy competition, streamlining regulatory pathways (to lower costs), greater patent protection, and removing entry barriers such as trade tariffs. We address such novel thinking later in the paper as it pertains to solutions like better leverage of well-managed Health Technology Assessments (HTA), and furthermore break down the status of pharmaceutical pricing reform in each of the six ASEAN countries in the Appendix.

Ultimately, we must all keep the end patient in mind. Many pricing reform attempts observed by industry thus far are actually rooted around the inefficiencies in the value chain, and the eventual impact to the patient is remaining unchanged in terms of cost and access. A more holistic view of health system financing alternatives and wealth creation is required.

2.2.4 Don't forget one of the most important factors – human capital

Healthcare will always remain a people-centric industry, yet most systems in ASEAN are prioritising infrastructure development rather than manpower development. It is projected that Southeast Asia will need approximately 4.7 million more health workers in order to achieve the desired population coverage levels [29] . Unfortunately, there will never be enough such resources. The inefficiencies are exposed when the investments in infrastructure development outpace those for manpower development. In Malaysia for example, there is a rapid increase in hospitals and number of beds yet a stagnant doctor shortage. Many healthcare staff are overworked, affecting the efficiency and efficacy in their output which may in turn lead to longer discharge timeframes and higher rehospitalisation rates, ultimately resulting in healthcare expenditures [30]. Even despite proactive efforts to stand up HTA organisations for more strategic medical supply purchasing, capacity and capability constraints on the procurement teams are observed [2]. One potential solution for unlocking the inefficiencies, known as task-shifting, is addressed later in the paper.

2.3 An unsustainable funding base exacerbates high demand and inefficiencies

2.3.1 Healthcare systems are currently financed on disappearing revenue sources

ASEAN countries rely on taxation to finance their healthcare needs, yet collection in the region falls well short of the targeted 15% tax-to-GDP ratio set out by the International Monetary Fund (IMF) as the critical threshold to support sustained and inclusive growth [4]. In Indonesia for example, the tax collection rate is only 9.9% of GDP [31]. While there is urgency in ASEAN countries to improve tax collection efforts, it will never be enough due to a shrinking taxable workforce caused by ageing population and coupled with the large informal economies. In Thailand, health economists from Chulalongkorn University have projected that the funding sources used to finance the UHC system may run out within the next 10 years, a factor of low population growth and declining contributions to national pension schemes [2].

ASEAN governments do attempt to complement tax sources with social health insurance premiums, but are constrained by low participation rates from a mostly informal workforce. Social health insurance is typically financed through compulsory payroll contributions jointly between employers and employees, also known as "sickness funds". The size of these funds in ASEAN, however, is limited by low participation rates and large informal economies. According to the International Labour Organization (ILO), informal employment encompasses "all remunerative work (i.e. both self-employment and wage employment) that is not registered, regulated, or protected by existing legal or regulatory frameworks, as well as non-remunerative work undertaken in an income-producing enterprise. Informal workers do not have secure employment contracts, workers' benefits, social protection, or worker representation [32]." **The informal segment accounts for 78% of the employed population in Southeast Asia [33].**

Informal workers tend to go through manual processes for premium enrollment and payment as they are not captured by the labour system. While the poor working in the informal economy may be covered by partially or fully-subsidised premiums, the non-poor are not. As such, they often decline to enroll in social health insurance schemes which therefore compromises the country's ability to effectively fund and manage the population pool [34].

The inefficient use of available budgets coupled with the growing challenge of unsustainable funding bases have led to limited capital for healthcare systems. ASEAN sees a relatively small share of GDP allocated toward healthcare, and therefore a high out-of-pocket expenditure (OOPE) for individuals. The average healthcare expenditure as a percentage of GDP, across the six ASEAN countries covered in this paper, falls below the 5% minimum sustainability threshold recommended by WHO [35]. It is also significantly lower than developed nations like UK, Germany, and Canada which allocate approximately 10% of their GDP toward healthcare. Not surprisingly, the developed countries rank much higher in critical health outcomes such as life expectancy. The Philippines, sitting at a UHC index score of 61, has announced that it can only provide approximately 63% of the healthcare funding required in order for all the country's citizens to enjoy free basic health services, leaving close to US 2 billion worth of deficit [36].

Health expenditure as a % of GDP								
Key ASEAN countries						Developed countries		
Malaysia	Singapore	Indonesia	Vietnam	Philippines	Thailand	Canada	Germany	UK
3.8%	4.5%	3.1%	5.7%	4.4%	3.7%	10.5%	11.1%	9.8%

Life expectancy								
Key ASEAN countries						Developed countries		
Malaysia	Singapore	Indonesia	Vietnam	Philippines	Thailand	Canada	Germany	UK
76	83	71	75	71	77	82	81	81

Source: The World Bank

Despite the ambition to keep the end patient in mind, they are the ones most impacted by the limited funding available. Average OOPE as a percentage of total health expenditures in ASEAN is nearly 40%, compared to an average of 15% in developed countries and the WHO's recommendation to stay less than 20% [37].

OOPEs % of current health expenditures								
Key ASEAN countries						Developed countries		
Malaysia	Singapore	Indonesia	Vietnam	Philippines	Thailand	Canada	Germany	UK
38%	31%	37%	45%	54%	12%	15%	12%	15%

Source: The World Bank

OOPE drives exactly against the ambitions of ASEAN to get out of the "middle-income trap" – it pushes individuals and families into poverty. In the Philippines, while PhilHealth is now covering nearly the entire population, households are paying on average for 41% of hospital care [38]. For outpatient care, PhilHealth covers less than 20 types of medications [16]. The impact of OOPE incurred for healthcare services is estimated to have pushed more than 1.5 million Filipinos into poverty since 2012 [39].

> *"Unless you're Bill Gates, you're just one serious illness away from bankruptcy."*
>
> - David Himmelstein, *American Journal of Public Health*

Heavy leverage of unsustainable funding sources is still somewhat masked by reliance on foreign aid programmes. While such programmes have been instrumental in progressing health-for-all across the globe, they are only temporary measures that will be phased out as countries achieve higher levels of economic status. For instance, Gavi is ending its financial support for Indonesia's vaccines programmes in 2020 [40]. Unless there is enough foresight and planning in place to address these disruptions, ASEAN countries may find their healthcare and economic systems moving backwards not forwards.

2.3.2 Last but not least, population risk pooling is also creating financial gaps

In addition to the challenges faced in funding models, ASEAN countries tend to adopt sub-optimal pooling techniques which is a core element of sustainable healthcare financing. The purpose of pooling is to aggregate collected funds from the various sources (taxation, premiums, etc.), and to reallocate those funds from the healthy to the sick, from the rich to the poor. Effective pooling spreads the financial risk across all members instead of allowing individuals to bear the cost burden.

Population risk pooling by socioeconomic status remains fragmented in ASEAN. Typically, formal workers contribute directly to mandatory social insurance through automatic payroll deductions and are likely to pursue voluntary top-up insurance in order to access private healthcare services [41]. Lower income groups and informal workers tend to be subsidised by governments toward utilisation of public healthcare services. In Thailand for example, there are three segments – Universal Coverage Scheme (UCS) for the poor, Social Security Scheme (SSS) for the employed, and Civil Servants' Medical Benefit Scheme (CSMBS) for the government workers. Yet the three schemes are governed by different legal frameworks and authorities without any unifying mechanism to consolidate the pools of funds, reducing the opportunity to cross-subsidise [42]. It is common in many countries for people to get "lost in the system", which becomes a waste of resources.

In addition, sporadic informal economy participation has increased the risk of adverse selection. In order to achieve the objective of pooling, members included within the same cohort must have diverse income and risk profiles. In ASEAN however, informal workers tend to enroll/re-enroll only when they require care, and lapse when they do not – which is a common case in Indonesia [43]. This will ultimately lead to adverse selection – high-risk or sick individuals are more likely to buy health insurance than low-risk or healthy individuals. The mismatch between utilisation and contribution rates will essentially make the pool and funding unsustainable.

SNAPSHOT OF CURRENT HEALTHCARE LANDSCAPE IN ASEAN

EXPANDING DEMAND

By 2030, >70 million people are projected to be over the age of 65

9 million annual deaths due to NCDs, and representing 27% of global parasitic + 30% of respiratory cases

Committed to achieving UHC by 2030

INEFFICIENT SYSTEM

<10% of healthcare budget allocated for preventive care

Purchasing lacks consideration of innovation

Infrastructure investments outpace those for manpower

INSUFFICIENT AND INEQUITABLE FUNDING

Tax collection falls <15% of tax-to-GDP target

78% of workers are informal limiting taxability and contributions collection

Risk pooling by socioeconomic status remains fragmented

Risk of adverse selection due to selective participation from informal segment

The healthcare industry is a global challenge, not just in ASEAN. We felt it important to lay out the regional dynamics in order to set the scene for the relevant solutions that can be deployed to offset the demand, efficiency, and funding model concerns. The next section articulates not only case study mechanisms to address the concerns, but moreover how to position healthcare as a wealth-creation activity.

3 Bridging the gaps in ASEAN

> *"The perfect health system doesn't reside in one country, but there are fantastic examples of great health and healthcare all over the world."*
>
> - Dr. Mark Britnell, Global Chairman and Senior Partner, KPMG UK, Author of *In Search of the Perfect Health System* and *Humans: Solving the Global Workforce Crisis in Healthcare*

In order to arrive at the appropriate solutions for the ASEAN context, we conducted an extensive literature review of global best practices and then tested these hypotheses with nearly 30 interviews of public and private stakeholders across the region. The research kicked off at the ASEAN Health Summit 2019 in Malaysia and thereafter involved a diverse set of perspectives from policymakers, hospitals, payers, funds, NGOs, medical technology companies, tech players, etc.

The first set of solutions herein are meant to most directly address the inefficiencies in the current systems as raised in section 3.2. There are four measures outlined – philosophical shift, prevention, nextgen care delivery, and evidence-based decision-making.

3.1 Evolving from "health-for-all" to "health-for-wealth"

> *"It is a fact that healthy nations grow their incomes faster. Not investing in health can impede economic growth."*
>
> *- Professor David E. Bloom, Clarence James Gamble Professor of Economics and Demography from Harvard T.H. Chan School of Public Health, Harvard University*

> *"Health as a basic human right should be the foundation from which the economy is built upon, not debated. Like how governments offer free education because of its economic returns, healthcare deserves the same priority."*
>
> *- Dr. Ann-Marie Chacko, Assistant Professor, Cancer & Stem Cell Biology Programme, Head, Laboratory for Translational and Molecular Imaging (LTMI), Co-Lead, Singapore Cancer Immunotherapy Imaging (CITI) Programme, Duke-NUS Medical School*

A paradigm shift is required for ASEAN countries. No policy measure can fully realise its potential if healthcare is continued to be viewed as solely a cost item. Governments must see healthcare as a fundamental driver of the economy. Often seen in its isolation, healthcare has not received the attention and investment it deserves. There is a proven correlation between population health and GDP – countries with better health status tend to have higher incomes, a relationship known as the "Preston curve" [44]. The philosophical underpinnings are quite straightforward, as follows:

(1) Early childhood cognitive and physical development enables productivity as an adult.
(2) Healthy workers have higher productivity as well as lower absenteeism.
(3) A longer prospective lifespan encourages the population to save for retirement, generating higher levels of wealth.
(4) Improvements in healthcare prolong the working years of the population.

When a working-age population exceeds its dependent population, which mainly comprises children and retirees, a country is expected to reap a demographic or population dividend [45]. East Asian countries have already experienced a demographic dividend as a result of heavy investments in expanded access to programmes such as family planning. For example, South Korea's GDP grew by 2,200% between 1950 to 2008 [46].

> *"A demographic dividend is observed when the working-age population exceeds its dependent population, reaping economic growth."*
>
> *"Between 1965-1990, East Asia achieved its 'economic miracle' (real per capita GDP rose twice as fast as in any other regional grouping) when its working-age population grew four times faster than its dependents."*
>
> *- Financial Times, Boston University*

Prolonging the working years of a population due to good public health can serve to reverse the threat that an ageing society has on the economy. The aforementioned demographic dividend is set to expire in silver nations, which include ASEAN countries such as Singapore and Thailand. Longer life expectancy is increasingly accompanied by greater disease burden, which factors into the now often-used Quality Adjust Life Years (QUALYs) model. For example, in Singapore average life expectancy increased from 76.1 in 1990 to 84.8 in 2017; yet Singaporeans now spend 10.6 years in ill-health, about 1.5 years more than in 1990 [47].

> *"Ministries of Finance tend to prioritise investments that bring immediate and visible outcomes. This can be challenging for social industries such as healthcare."*
>
> *- Representative from an international donor agency, Vietnam*

In order for countries to zero in on the economic benefits of a healthy society, it is critical to establish a more synergetic partnership across the Ministries. Traditionally, Finance Ministries tend to perceive healthcare as an expense line item, hence creating a challenge for incremental budget requests. The WHO and World Bank have long been championing for closer collaboration between Finance Ministries and Health Ministries. Harvard has also launched the Ministerial Leadership Program, which brings Education, Health, and Finance Ministers together from across nations in order to improve the political acumen of pan-governmental functions and to enact the process of public sector transformation [49].

Some countries have started to adopt such an approach toward system-wide budgeting. For example, Japan's Ministry of Finance and Ministry of Health, Labor & Welfare are in close collaboration. Both Ministries continuously share information about the need for fiscal allocations required to improve health services [4]. In Singapore as well, several of the past Finance Ministers have served as Health Ministers [51]. New Zealand took it a step further by connecting health financing policy across sectors using a whole-of-government approach. The country has moved to a Wellbeing Budget concept whereby all Ministries work together to collectively address society's priorities [52]. Steady commitment is pivotal in order to make such changes effective.

"Governments can enact various laws to reiterate the importance of health. However, the biggest challenge lies in the enforcement, which goes hand-in-hand with data-driven measurement. Health must be measured based on outcomes."

- Raymund Azurin, Senior Vice President & Area Director Philippines, Zuellig Pharma Asia Pacific

3.2 Reinforce focus on prevention programmes

"Preventative care is the way to go. It brings significant value to economies and is instrumental to avoid the ballooning healthcare expenditures in the future."

- Dr. Patrick Chia, Director of Integrated Health Information Systems (IHiS) Clinical Informatics in Singapore

As the adage goes, "an ounce of prevention is worth a pound of cure". Many governments have prevention programmes in place, it's time to put more emphasis behind them. Treatment will always serve an important role to address health issues, but there should be no doubt that prevention and early intervention lowers the probability of sickness. A study in US showed that for every dollar invested in a proven, community-based prevention programme, the country saves 5.6 dollars in avoidable future healthcare costs [53]. Prevention programmes can stimulate economic production by ensuring the population spend the maximum number of days in market activities [54]. Other studies have proven that an increase in preventative health expenditure is correlated with better economic performance.

Prevention is understandably a wide spectrum, so we recommend a few main initiatives herein – immunisation, encouraging healthy lifestyles, and early detection.

3.2.1 Immunisation

"Among older people, disease prevention today includes promoting the uptake of existing elderly vaccines like those for influenza, shingles, and pneumococcal disease. Looking forward, disease prevention could encompass the development of new innovations like a universal flu vaccine and vaccines for common hospital-acquired infections like C-difficile or RSV."

- Professor David E. Bloom, Clarence James Gamble Professor of Economics and Demography from Harvard T.H. Chan School of Public Health, Harvard University

Vaccination is among the most impactful public health interventions of all time and should be prioritised by ASEAN governments [55]. Immunisation serves to be especially powerful to the ASEAN region that is still battling infectious diseases like the measles. In 2019, the WHO declared a measles pandemic in 11 countries around the world, three of which were in Southeast Asia (Philippines, Thailand, Myanmar) [56]. Between January and April 2019, the number of measles cases in the Philippines soared from 6,641 to 31,056 over the same period in the prior year (an increase of 368%). Such an avoidable scenario stretches the already thin resources – three patients were sharing a single hospital bed on average. The outbreak was eventually put under control with a vaccination awareness intervention.

Vaccinations are estimated to be able to save 2-3 million lives globally on an annual basis [57], and also reduce the risk of antimicrobial resistance (AMR) that occurs from the misuse of antibiotics against infectious diseases, which in itself is projected to take 10 million lives each year by 2050 [58]. Studies done by the WHO estimate that immunisation in low- and middle-income countries against 10 preventable diseases can avert 20 million child deaths and save USD 350 billion [59]. Similarly for those aged 50 and above, studies have shown that providing the 13-valent pneumococcal vaccine has an ROI of 150% in terms of greater productivity and avoidable treatment costs [60]. Gavi has estimated that since their launch in 2001, a more productive workforce has generated USD 820 billion in economic returns.

Over half of the estimated social and economic value of vaccines can be attributed to Haemophilus Influenza Type B, Hepatitis B, and Streptococcus Pneumoniae. Influenza remains one of the world's greatest public health challenges with an estimated one billion cases each year resulting in upwards of 650,000 deaths [61]. The costs of workforce absenteeism and hospitalisations, especially for the elderly, are considerable. Indonesia has estimated influenza causes 3.3 million lower respiratory tract infection (LRTI) clinical episodes in the country each year, which leads to more than 40,000 hospitalisations and 4,000 deaths. The associated economic burden was projected to be USD 19 million in direct medical costs and USD 867 million in productivity loss [62].

> *"We see that the private sector is strong in vaccinations and nutrition in the urban areas. The public sector should collaborate with the private sector to mobilise resources to the rural regions."*
>
> *- Representative from an international donor agency, Vietnam*

Life-long immunisation is vital to lessen the impact of an ageing society and to protect against preventable diseases [64]. The cost of contracting infectious disease dwarfs the costs of immunisation. The elderly population are more likely to be hospitalised and to suffer from co-morbid conditions (such as hypertension) [65]. The impact of vaccines goes beyond reducing treatment costs and loss of productivity income for families. Immunisation improves cognitive skills and physical strength. Boosted vaccine programmes will help societies to achieve herd immunity status.

We do see countries taking the lead. Certain vaccines are made compulsory in Australia, France, and Singapore. Australia has a "No Jab, No Pay" policy – the welfare system is tied to a child's immunisation status [66]. ASEAN countries with low immunisation rates like the Philippines could consider to implement such policies and to collaborate with the private sector for best practices.

3.2.2 Encouraging healthy lifestyles

> *"Reducing healthcare demand by outlawing or significantly taxing health-damaging products such as sugar and tobacco, will be key to improving the sustainability of healthcare financing. The related tax revenue can also be channeled to the cause of UHC."*
>
> *- David Thomas Boucher, Chief Business Transformation Officer, Bumrungrad International Hospital, Thailand*

Due to the increasing prevalence of NCDs in ASEAN, a greater focus on prevention through the promotion of healthy lifestyles is needed. No surprise, the major risk factors for NCDs include lifestyle choices such as tobacco use, physical inactivity, unhealthy diet, and alcohol consumption [67]. Hence, prevention in the form of healthy lifestyle habits must start from a young age.

> *"Contrary to the perception that the benefits of preventative healthcare may require a long time to realise, these initiatives are relatively low cost to advocate, implement, and help promote social connectedness. When executed well, the intangible benefits are visible in the short term such as a mindset change and strengthening of engagement between community leaders and citizens."*
>
> *- Robert Chew, Chairman, Dover Park Hospice and Board Member, National Healthcare Group, Singapore*

Singapore has been quite proactive in this respect. The country has the second-highest proportion of diabetics among developed nations [68], costing USD 787 million and estimated to reach USD 1.8 billion by 2050 [69]. The Singapore government therefore stood up "beyond healthcare to health" as one of the core pillars for transforming the landscape [70]. Efforts are channelled through the Health Promotion Board (HPB) which actively advocates a healthy lifestyle among citizens. Included in the measures are providing a wider range of food choices at hawker centres, building innovative communal space for senior residents to engage in physical activity, and launching the National Steps Challenge that rewards participants through use of a free steps tracker provided.

3.2.3 Early detection and diagnostics

> *"With ageing comes the increased risk of disease, including cancer. Rather than expecting everyone to stay healthy, what we also need are better prevention strategies that incorporate early screening and diagnosis."*
>
> *- Dr. Ann-Marie Chacko, Assistant Professor, Cancer & Stem Cell Biology Program, Head, Laboratory for Translational and Molecular Imaging (LTMI), Co-Lead, Singapore Cancer Immunotherapy Imaging (CITI) Programme, Duke-NUS Medical School*

Allowing people to seek timely treatment and to avoid complex advanced disease cases is a worthwhile investment for any health system. The WHO reports that 8.8 million people die from cancer each year, with majority of the cases occurring in low- and middle-income countries [71]. One of the main reasons for high fatality rates can be attributed to late diagnosis. Especially for the prevalent cancers – breast, cervical, colorectal – early diagnosis will improve survival and lower treatment costs. We'll come back to the cancer topic a bit later in the paper.

ASEAN countries must improve public awareness about key disease symptoms and encourage people to reach out for help. Governments must also equip healthcare providers with appropriate training for accurate and timely diagnosis. For example, mass public health screening may be viewed as expensive given the relatively percentage of disease detection rates. However targeted screening, through

better use of digital and analytical tools toward the high-risk population subsegments, can maximise the return of such prevention programme investments [2].

Once again, governments are moreover encouraged to collaborate with the private sector for best practices. One of the established private hospitals in ASEAN shared that they provide free health screenings as part of their Corporate Social Responsibility initiatives around preventative care [2]. The hospital observed an increase of 40% in sign-ups, 10% of which in turn detected health issues that required early intervention. Governments can learn from one another as well. Below are some of the success factors identified by Dr. Patrick Chia from the Singapore public health system:

- Prioritise awareness in children so as to avoid a snowballing effect as they grow in terms of healthcare expenditure and economic cost
- Cross collaboration of government functions such as with Ministry of Education
- Infrastructure is needed to enable outcome measurement and data collection

- Dr. Patrick Chia, Director of Integrated Health Information Systems (IHiS) Clinical Informatics in Singapore

3.3 Exploring the nextgen healthcare service delivery models

If we were to rebuild healthcare from scratch, would it look the same as today? Among the inefficiencies in the current systems is an opportunity to deploy nextgen healthcare services in ASEAN.

3.3.1 Primary care as the bedrock for population health

As per the WHO, achieving a fully-functioning health system is not possible without stronger primary care models [72]. Primary care serves as an effective frontline, especially in countries with limited access to hospital facilities. Primary care often frees up the overutilised expensive parts of the chain. Focusing on primary and community-based care is a clear strategy for ASEAN, a region that faces a crisis of ageing population suffering from multiple chronic disease states and requiring long-term treatment paths. Orientating such growth in demand for healthcare services on the hospitals themselves is neither convenient nor economically-feasible. In Israel for example, medical teams sitting in community health clinics provide patients with access to a broad range of health support, thereby avoiding unnecessary hospitalisations [73]. The clinics are assessed based on quality indicators across 35 measures. As a result, although Israel has the same rate of diabetes as many other OECD countries (6.5% of the adult population), it has the second-lowest rate of diabetes-related hospitalisations.

Similarly, Singapore has established various community hospitals as well as long-term care facilities such as nursing homes [74]. It is part of the Ministry of Health's Primary Care Networks (PCN) scheme to decentralise healthcare so that patients can remain closer to home [75]. Singapore is also now pushing forward with an integrated delivery model, facilitating seamless transition between care levels so as to ensure a holistic and coordinated patient journey.

3.3.2 Encouraging individual accountability through the promotion of self-care

The practice of self-care allows people to address basic needs without the complications of going to see a doctor, resulting in cost savings to the system and a more effective use of resources. Self-care can occur in a variety of stages, such as diagnosis, medication, and management. It also encourages individuals to take health and wellbeing into their own hands. As a mechanism to curb the economic burden of ageing population in Japan, the government has listed self-help ("Ji-jo") as one of the core pillars of the Community-Based Integrated Care System (CICS). Even further, Japan introduced a self-medication tax deduction system that provides refunds to citizens who exceed the threshold of spend on OTC drugs each year [76].

Self-care is viewed by many as expected to yield significant cost savings to the system. In the US, every $1 spent on OTC medication saves the broader healthcare budget more than $7 [77]. In Japan, improving citizens' knowledge of self-care is projected to save up to USD 550 million in national healthcare costs [78]. More recent estimates in ASEAN countries like Vietnam calculate savings of nearly USD 5 billion related to workforce productivity and reduced treatment costs if self-care were to become a more regular practice against the common disease areas [79].

One self-care measure for governments to consider is to allow selected prescription medications to be distributed OTC, reducing unnecessary process steps and costs. In Europe, moving 5% of prescription medications to OTC status is estimated to result in annual savings of more than EUR 16 billion [80]. In the Asia-Pacific region, New Zealand has been progressive in the switching, already approving more than 10 medicines to OTC [81]. **ASEAN countries are suggested to follow suit and speed up the prescription-to-OTC switching process.** To avoid misuse of self-care, ASEAN can model peers like UK in still requiring pharmacist consultation for certain classes of OTC products [82].

In light of the aging societies and rise of NCDs, healthcare systems should also shift focus to support patients live well with their chronic illnesses. Conditions such as obesity, diabetes, and hypertension, as well as various forms of musculoskeletal pain, are generally not curable but can be managed. Effective self-care requires interventions to enhance an individual's ability to control symptoms and to deal with pain. Such a step involves cultivating long-term behavioural changes in daily lives like proper diet and medication adherence. Technology, covered further in the next section, is a powerful tool too – for instance Pulse, an all-in-one digital app launched by Prudential in selected ASEAN markets, allows users to look up health information specific to their conditions, key in their symptoms, and receive recommendations from the AI-powered chatbot [83].

3.3.3 Digital interventions in healthcare are also a worthwhile investment area

> *"Governments should tap on private sector with strong financial capabilities to invest in digital tools such as telehealth."*
>
> *- Raymund Azurin, Senior Vice President & Area Director Philippines, Zuellig Pharma Asia Pacific*

An increasingly popular nextgen service delivery model gaining traction is through the use of digital health tools. All the common challenges of healthcare – access, cost, geography – are even more extreme in the ASEAN region making it ripe for such digital techniques. Telehealth, medication adherence, point-of-care-diagnostics – the technology is ready, so countries should cautiously begin the adoption journey by forming open discussions on topics such as service quality, accuracy, and data integrity.

Take the ophthalmology pathway as an example. More than one billion people worldwide are living with vision impairment because they do not get access to the care needed [84]. India is now leveraging digital tooling to bring treatment to rural areas. Mobile van units are equipped with slit lamps, fundus cameras, and software to capture patient demographics and diagnosis, as well as to transit the encrypted data to the hospital. People are able to receive a complete diagnostic within one hour and having never stepped foot inside a physical hospital [85]. Likewise, Telenor, a telecommunications company across the Nordics and Asia, unveiled its digital health service called "TONIC" in Bangladesh [86]. TONIC offers members a platform by which to access health record information and to seek immediate medical advice. Sanofi, similarly, has rolled out My Dose Coach™ to help diabetics with self-management of blood glucose levels and adjustments to long-acting basal insulin doses according to their personalised care plan [87].

Digital health interventions for mental illness are another booming area, especially given the recognition of mental illness economic burden on society yet still lack of sufficient resources to appropriately address the situation. Not to mention the stigma which prevents majority of cases from ever being diagnosed. In Thailand, a mobile application named Ooca was launched in 2017 to help those suffering from mental illnesses gain access to a wide network of psychiatrists and psychologists, conveniently and privately without requiring a physical presence. Users can register anonymously and schedule video calls with their chosen mental health professional for a 30-minute counselling session [88]. Thus far, it has served about 60,000 users and won the Thailand World Summit Awards (Health and Well-being) for its positive impact on the healthcare system [89].

> *"I felt there are a lot of struggles that push people away from getting help – it's not just about accessibility but also stigma around the issue. So we try to create a bridge between the psychiatrist and the user, because what matters is the real conversation."*
>
> *- Kanpassorn Suriyasangpetch, Founder of Ooca*

Governments are encouraged to ensure digital health is a core component of national strategy going forward, especially with respect to the broader look toward nextgen service delivery models.

> *"Many hospitals adopt digital tools but in isolation of each other. To transform the healthcare sector as a whole, the application of digital health should be done through systematic intervention on a strategic level ensuring synergy across the ecosystem."*
>
> *- Representative from an international donor agency, Vietnam*

3.3.4 A reminder of one of the most important variables – human capital

> *"Health professionals out to practice at the upper limits of their licence (not to be confused with working at the top of their capacity). Buurtzorg in the Netherlands allows nurses to extend their roles, generating productivity gains of nearly 30%."*
>
> - Dr. Mark Britnell, Global Chairman and Senior Partner, KPMG UK, Author of *In Search of the Perfect Health System* and *Humans: Solving the Global Workforce Crisis in Healthcare*

> *"Bringing nurses up the value chain to redefine their role in longitudinal care, not just episodic care, will help to alleviate the burden of doctors and chronic diseases."*
>
> *- Dr. Patrick Chia, Director of Integrated Health Information Systems (IHiS) Clinical Informatics in Singapore*

We established earlier in the paper that there will never be enough healthcare workers in Southeast Asia to satisfy the growing demand on services. The region already has significantly fewer doctors per 1,000 population (0.57) as compared to developed nations such as in Europe (3.2) [90]. Governments should continue to attract talent to the field, while also looking at cross-training as a mechanism to narrow the gap.

Nurses constitute the largest segment of the professional healthcare workforce and play a key role in alleviating doctor shortages, if equipped to perform such procedures. Developing nursing communities is in line with the campaign "Nursing Now", run in collaboration with the International Council of Nurses and WHO, which aims to improve health and care by raising the status of nurses on a global basis [91]. In Hong Kong for example, the Hospital Authority has developed the concept of nurse-led clinics which allow specialised workers to provide the care and oversight. In this new model, a patient with COPD will go to the nurse-led clinic as a first port of call [92].

Pharmacists are another role in the chain that could stand to be further empowered. It is not hard to imagine how important the role of the pharmacy will be in the future service delivery model given the vision for community-based care, and we already see such a phenomenon in markets like the US. Countries such as Australia and New Zealand are some of the few in the region that authorise pharmacists to administer vaccines, and therefore have among the highest population immunisation rates [93]. Pharmacists in the progressive countries are also typically able to prescribe certain medicines to the community [94].

Human capital is yet another opportunity for the public and private sectors to work together. Taking care of our people, in a health and workforce capacity, will certainly be of benefit to the greater good.

3.4 Evidence-based decision-making to recognise the value of innovation

A fourth solution for ASEAN countries to consider is to address the inefficient and ineffective procurement techniques with modernised purchasing policies that drive real value and outcomes.

3.4.1 Strategic purchasing for healthcare services

Many developed countries have evolved from pure provider payment systems into ones that optimise value for money. ASEAN should also move in this direction. Outlined below are the more novel purchasing models for healthcare services, the pros and cons, as well as the applicability to the ASEAN context. There is a brief explanation of each model followed by a summary table.

Blended Payment: This model is characterised by layering individual pure payment mechanisms such as FFS and capitation. While pure provider payment mechanisms in isolation have shortfalls, their combination can create a coherent set of incentives. For instance in Canada, primary care medical services are billed on a FFS basis with additional "pay-for-performance" fee for certain KPIs such as the development of care plans and taking more time for patients with chronic or complex conditions [95]. The "pay-for-performance" feature prevents doctors from providing unnecessary treatments under FFS mechanism and from compromising the quality of care. Countries such as Vietnam could pivot to layer existing FFS with performance-based KPIs in order to minimise redundant treatment costs.

> *"Beyond the existing capitation mechanism, incentives may be provided to health facilities providing better service quality, efficiency and equity e.g., providing financial and licensing incentives to form a network."*
>
> *- Estrella M. Garcia, Financial Director, Manila Doctors Hospital*

Bundled Payment: This model is defined by the degree to which components of healthcare are paid for together. A common approach in use is to remunerate providers on a per person basis for all the services delivered along a particular disease pathway. A healthcare provider typically receives a fixed, lumpsum payment to be divided at its discretion among the facilities and other providers involved in the care for the given patient.

Such a model improves patient coordination and encourages doctors to keep costs down. The transition from a FFS reimbursement payment system into a bundled payment system was associated with a decline in spending of up to 10% across eight high-income countries (Belgium, United Kingdom, Italy, Sweden, Taiwan, Japan, Netherlands, United States) [95]. This model can also be effectively adopted in the area of chronic care management such as for cardiovascular diseases, given treatment typically involves multiple care settings from different disciplines (primary, cardiology, cardiac surgery, anaesthesiology, radiology, etc.) [97]. ASEAN countries facing high prevalence of chronic diseases and ageing populations can explore such a payment strategy in order to control healthcare costs.

Quality-centred KPIs with bundled payments are also key here in order to create the right incentives for countries to address all patient needs in a society, not just those with lower risk.

Cost Containment Rewards: This model focuses on rewarding providers for cost savings or gains achieved through collaborative efforts. ***Shared savings*** payment offers providers a percentage of net savings so as to incentivise reduction in healthcare spending over a defined patient population. This strategy is well-suited for ASEAN countries aiming to increase utilisation of primary and preventative care, as it eases use of more expensive healthcare services through the development of effective frontline and population health management techniques. In 2006, Germany implemented an integrated care model in the Kinzig Valley alongside a shared savings arrangement with two health insurance funds. It reported savings of USD 203 per person per year in the enrolled population [95]. Quality-centred KPIs can be included here as well so as to ensure any lower-cost services deployed are still delivering on the desired health outcomes.

By comparison, ***gain sharing*** arrangements involve payment to providers based on cost reductions achieved through quality improvement, rather than through utilisation or productivity. The implementation requires measurable and clear goals, transparent data sharing among stakeholders, and safeguards against inappropriate referrals or reductions in care quality.

For instance, the US deployed episode-based bundled payment along with the gain sharing model for elective joint replacement surgery [95]. The government reimbursed hospitals with a fixed amount of money for each episode of elective joint replacement care while also rewarding providers for meeting other specific KPIs such as no mortality and no readmissions. The pilot revealed that immediately over half of the cases were already able to meet the negotiated price targets.

ASEAN countries should consider this approach to optimise cost for the more expensive medical specialities like cardiovascular surgery, orthopaedics, neurology, and oncology, since these treatments incur high expenditures but are often left with little room for utilisation reduction [98].

Cost Sharing: Individual accountability remains a key tenet of some healthcare systems, as it is believed that people tend not to take good care of their health when the care is "free for all". As a result, these countries mandate patients to pay for the healthcare costs that are not covered by insurance as a mechanism to guard against the moral hazard problem and to control government expenditures. The mechanism can come in the form of copayments, deductibles, or coinsurance. In Malaysia for example where there is limited co-payment model, private insurance holders tend to go directly to tertiary facilities as the first point of treatment rather than seeking primary care [2]. On the other hand, countries like Singapore drive co-payment rates ranging from 3% to 15% [99]. The implementation of a co-payment system may pose a challenge to ASEAN countries with a large population of poorer people who can barely afford healthcare as it is. The use of co-payment has to be considered and tailored according to the socioeconomic status of the citizens.

So in summary:

STRATEGIC PURCHASING MODELS FOR HEALTHCARE SERVICES

	Blended Payment	Bundled Payment	Cost Containment Rewards		Cost Sharing
			Cost Saving	Gain Sharing	
How is it done?	Layering of individual pure payment mechanism	Grouping various healthcare components together for a single patient and for a specific disease	Rewarding providers for cost savings or gains achieved through collaborative efforts		Patients co-pay for part of the healthcare costs
Pros?	A coherent set of incentives can drive desired behaviours	Improves care coordination with multi-disciplinary medical teams for patient journey to drive better outcomes	Encourages providers to reduce non-essential treatment	Encourage providers to strive for improved performance, hence achieving better efficiency with lower costs	Reduces the moral hazard problem
Cons?	There must be appropriate alignment of incentives between the payment models	Patient performance needs to be data-driven; the absence of extensive data would limit adoption	May result in decrease utilisation of services as a cost-savings measure, affecting patient outcomes	Requires measurable and clearly-stated goals, and transparent data sharing among stakeholders	OOPE may be a burden to ASEAN countries with large populations that can barely afford healthcare
What can it be used for?	Addressing the shortfalls from pure payment mechanism such as "fee-for-service"	Ensuring proper coordination of chronic care	Diverting utilisation from hospitals to primary and preventative care	Improving performance of high-volume procedures in expensive specialities like oncology	Can be applied for segments who meet the socioeconomic threshold

3.4.2 Strategic purchasing for medical technology

Similar to services, there is a need for policy reform in healthcare as it pertains to the purchasing of medical technology products. A well-managed Health Technology Assessment (HTA) is a start. Many countries around the globe have already established and dedicated HTA units to make evidence-based decisions about medical technologies coming to market. HTA is defined by the systematic evaluation of direct and indirect effects of health technology and interventions to society, including the relevant social, economic, organisational, and ethical impacts. HTA results are then used to inform policy and decision-making on how best to allocate funds toward the health technologies and interventions. Such a process, which has the potential to create an advanced and sustainable spending model, is endorsed as a key lever by the WHO [100].

A well-managed HTA does not consider price alone in its assessment. Costs and outcomes of alternative policy options are held in comparison to identify which set of interventions offer the best value for money [101]. In addition, any other criteria which is important in the local context – such as affordability, budget impact, fairness, feasibility – should be taken into consideration.

The six ASEAN countries in the scope of this report have all implemented HTA to some degree, but with limited adherence to best practices and to varying stages of maturity. Unlike countries such as South Korea and Taiwan, most ASEAN nations do not have legislative requirements to consider the results of HTA in the decision-making process [102]. In Vietnam, healthcare products that are paid for by the National Health Insurance Fund are not based on scientific evidence nor HTA studies, such as cost-benefit, cost-effectiveness, or cost-utility analysis [103]. The Philippines similarly does not involve civil society in the HTA process and does not publish HTA guidelines or outcome reports [102] . The status of HTA in each ASEAN country is covered in the Appendix.

We recognise the efforts of ASEAN around strategic purchasing of services as well as products, and hope to continue and open dialogue so as to design the future of sustainable healthcare together.

The four measures mentioned above will help ASEAN countries to resolve the inefficiencies in the current healthcare systems. However, given the growing demand that will continue to widen the gaps, these measures alone will not be sufficient. Governments must also look at the core financing models being used in order to upgrade the healthcare systems.

3.5 Future-proofing the core financial assumptions for country healthcare systems

3.5.1 Fundraising for healthcare going forward must be in a composite model

ASEAN has an opportunity to learn and leapfrog – learn from the models of the West such as general revenue and contributory – and seek to combine the best elements together. Two traditional funding models dominate healthcare systems globally: general revenue-funded and contributory schemes. General revenue-funded healthcare systems such as Beveridge model (single payer national health service) and National Health Insurance (single payer national health insurance) provide coverage to the entire population primarily via tax revenues. Contributory schemes such as Bismarck model (social

health insurance) and voluntary private health insurance predominantly rely on premiums collection either through earmarked payroll deductions or OOPE to finance healthcare coverage.

We are not suggesting to apply such models directly to ASEAN in standalone format. Relying solely on a general revenue-funded approach is unsustainable in the region due to the limited tax collection base at less than 15% of GDP. Likewise, contribution schemes alone will prove difficult due to the number of informal workers who cannot afford the premiums and who lack a registered payroll. In Indonesia for example, 10% of the population remain below the poverty line and 58% work in the informal category [105]. The Indonesia national health insurance programme (JKN also known as BPJS Kesehatan) is running a deficit of USD 660 million [106].

Rather, ASEAN is more likely to benefit from a composite healthcare financing system that brings out the positive features of both models. Such an approach has been implemented in Japan:

Case study: Japan

Japan currently funds healthcare through a mixture of taxation and social health insurance. According to National Health Care Expenditure (NHCE), insurance premiums contributed to 48.7% of financial contributions followed by taxation/public subsidies (38.8%) and patients' co-payments (11.7%).

Outcome:
The country has achieved the following results with its healthcare system:

Sustainable Financing		Universal Health Coverage	
Current health expenditure as a % of GDP **10.9%**	Out-of-pocket expenditure % of current health expenditure **13.45%**	Life expectancy 84 **years**	UHC Service Coverage Index (SCI) **83**

Source: The World Bank, WHO

Composite healthcare financings is not a panacea though. The structural weaknesses in ASEAN of tax collection and individual contributions must still be addressed. ASEAN governments should continue to ensure efficient tax collection processes as well as the expansion of their tax bases. Policies targeted at raising taxes on health-damaging products, earmarking revenues for healthcare budgets, and minimising corruption are considerations. Hungary has undergone similar measures:

Case study: Hungary

In 2012, Hungary introduced a public health tax on foods high in salt, sugar, and fat, including soft and energy drinks. The country has raised USD 219 million in revenue that is earmarked for reallocation within the healthcare system.

Source: WHO

In addition, measures such as mandating the enrollment of national healthcare programmes and increasing collection rate of social health insurance contribution through digital tooling can be implemented to maximise the potential of the premium schemes. The Philippines has made a stride in this aspect of late through the Universal Health Coverage Republic Act No. 11223, introduced in 2019, stipulating that all Filipinos are automatically enrolled and thus entitled to the benefits of the National Health Security Program when premiums are paid [107]. Some countries try to drive contribution collection from the poorer classes by offering a benefits package that is relatively smaller than that of formal workers and by charging a fraction of premium [109].

Beyond a composite healthcare financing model and reinforcing the structural tax + contributions elements, our paper also recommends to give a boost to the private insurance market. We believe private insurance companies have scope to play a more active role in ASEAN healthcare system financing. The private insurance penetration rate in ASEAN is just 3.5% compared to a global average of 6.1% [110]. Increased uptake of private health insurance stands to deliver the following outcomes:

- ✓ OOPE for individuals will be driven down as insurance companies cover a larger portion of the healthcare costs, leaving households with greater disposable income.
- ✓ Governments stand to save on social security expenditure with the additional healthcare protection being provided by the private sector.
- ✓ The private insurance companies themselves will contribute to the economy in the form of job creation and income taxes paid. Once a sustainable insurance funding pool is established across the population, the private insurance companies can support the long-term development of the country's healthcare system.

It is clear that the Asia-Pacific has started to move in the direction of private healthcare insurance. Many major economies such as Singapore, Thailand, Malaysia, Hong Kong, and China are granting tax incentives to individuals and employers for the uptake of private life and health insurance. For example, the Malaysian government now provides MYR 6,000 tax relief for life insurance policies, and MYR 3,000 tax relief for medical and education policies [111].

A sister paper to this one by the EU-ASEAN Business Council conducted a study on tax incentives for life and health insurance in Thailand and Malaysia (the second and fourth largest insurance markets in ASEAN by premium volume, respectively). The analysis shows that the introduction of tax incentives for individuals is expected to deliver benefits to the tune of USD 15 billion across the two countries over the next 20 years.

Lastly, and as aforementioned, ASEAN governments are advised to look at the cross-utilisation of population pooling techniques so as to spread the financial risk across segments more sustainably. Fragmented pooling leads to higher administrative costs, duplication of benefits programmes, and loss of negotiating power along the chain. Since 2003, Turkey has heeded the World Bank's guidance and consolidated their five insurance schemes into a unified general health insurance programme with harmonised benefits and a larger risk pool. This measure has improved healthcare coverage and equity across income groups in the country [41]. For ASEAN markets such as Thailand, with UHC in place but spread across fragmented schemes, it is worth assessing universal basic packages with supplemental plans that continue to offer the situational flexibility [2].

3.5.2 Look to the horizon at the creative funding models emerging

Fixing the core with composite funding is critical for ASEAN countries. At the same time, there are a variety of new ideas coming to bear that could be explored for healthcare system financing too.

3.5.2.1 Debt financing through Public-Private Partnerships (PPPs), but with a social cause

PPPs have long been instrumental in making healthcare projects happen. We recommend to continue this format, however to explore the evolution of PPPs beyond just infrastructure.

> *"The nature of debt – invest now and obtain return later – coincides with the nature of healthcare investment, making debt financing a natural funding option for the sector."*
>
> *- Professor David E. Bloom, Clarence James Gamble Professor of Economics and Demography from Harvard T.H. Chan School of Public Health, Harvard University*

The rise of PPPs decades ago came from governments' desire to work closer with the private sector as a means to cope with the growing demand of healthcare. The initial wave of PPPs were centred around financing of primarily infrastructure-related projects. For example, the Portuguese government collaborated with private sector to develop Hospital De Braga – which utilises a blended payment model of fixed prices and performance-related elements in order to minimise capital outlay and to ensure timely delivery [112]. PPPs for infrastructure projects remain a viable option, and could well be used to expand the Barangay Health Centres in the Philippines [2].

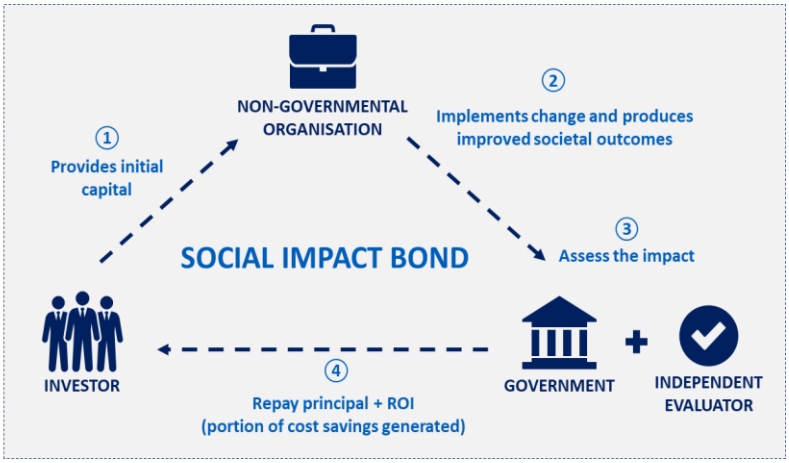
Once UHC 2030 came into the picture, PPPs evolved beyond infrastructure and into the development of innovative, efficient models of healthcare service delivery that make the costs more affordable in the long-term. Brazil, for example, has leveraged the PPP approach to operationalise its renowned primary care-led health system. Datuk Dr.Kuljit Singh, President of the Association of Private Hospitals Malaysia, suggested that congested public hospitals could utilise the equipment and facilities in private hospitals such as MRI scanners at an agreed cost to increase productivity rates and avoid duplicative purchasing within the country. Such a suggestion supports the concept of a circular economy too – keeping resources activated for as long as possible through recovery and re-use, a key pillar to sustainability.

PPPs are now evolving even further to go beyond UHC and directly into the financial sustainability of health systems, with prevention programmes being one of the main areas of focus. This has led to the rise of Social Impact Bonds (SIBs). SIBs are a novel financing mechanism in which private organisations invest in identified NGOs or public sector programmes seeking to deliver a desired social outcome. Once the social outcomes are achieved, the private organisation will be repaid with the principle and returns. Such transfer of government risk to progressive and social-minded investors can help to ensure the effectiveness of healthcare financing.

SIBs can be best used when governments have solutions but without adequate resources to fund projects upfront, or when governments do not have solutions for certain issues and would like to engage private sectors for novel ideas.

> *"A financial instrument like a bond can play a positive role in funding the strained national healthcare systems. Private funders will be willing to invest so long as the terms and conditions are clear, and a win-win solution is provided."*
>
> *"SIBs can be used as an alternative financing mechanism to aid the social well-being of the population. We are already starting to explore this mechanism."*
>
> *- As heard through interviews across ASEAN for the purposes of this report*

The world's first SIB was structured by the UK government in 2010 for a prisoner rehabilitation programme to prevent the high costs incurred when ex-offenders are reincarcerated. In 2017, an independent evaluation of that SIB shows a reduction of recidivism by 9%, exceeding the target of 7.5% over five years. It has also repaid private investors in full, with a return of 3% interest per annum [115]. Since then, this financing approach has been gathering attention worldwide with nearly 140 SIBs across industries and raising USD 440 million of capital [116].



The deployment of SIBs in the healthcare sector has commenced too:

Case study: Canada

The Public Health Agency of Canada is working in partnership with the Heart & Stroke Foundation and the MaRS Centre for Impact Investing to deliver the first health-related SIB in the country. The SIB is focused on a hypertension prevention initiative initially in two provinces, and with plans to replicate the concept on a national scale.

Source: OECD

Case study: Japan

The first batch of SIBs in Japan were launched during 2017-2018 along the themes of severe diabetes prevention in the city of Kobe and colorectal cancer screening in the Hiroshima Prefecture.

The projected cost for the three-year colorectal cancer screening project in Hiroshima is USD 90 thousand, while the anticipated savings from the early detection due to the reduced medical expenses is USD 154 thousand, demonstrating a clear cost-benefit and source of financial return for private investors.

Source: The Japan Times

Awareness and adoption levels of SIBs in ASEAN remains low. According to Kevin Tan, the Founder of Tri-Sector Associates, a non-profit organisation backed by Economic Development Board of Singapore, narratives and perception of SIBs within the region need to be better contextualised for the unique needs. Educational programmes such as roundtable discussions are a key part of paving the way for wider adoption. Successful implementation of SIBs in ASEAN would require solid baselines and measurements. While the present state of SIBs around the world has been primarily at the district or state level for experimentation, there is potential for larger scale-up as is seen in the Canada example. Of course ultimately it is also a matter of political will and strengthening national lending structures.

3.5.2.2 Individualised healthcare savings accounts

While "health as a basic human right" implies public sector responsibility, individuals should be accountable for their wellbeing too. Financing the system with individualised savings programmes could be a natural way forward. Another emerging healthcare financing model is designed specifically for the underinsured – the concept of managed individual savings. In Kenya for example, CarePay – in partnership with Safaricom, PharmAccess, and UAP Insurance – launched a mobile health wallet called M-TIBA. The platform allows uninsured Kenyans who belong to the informal sector to ring-fence part of their individual savings for health services at approved providers. To encourage use of the app, monetary incentives are given depending on the level of savings allocated to the platform

and even friends/family can chip in. To date, users have paid nearly USD 7 million in medical expenses through the savings platform [117]. In many instances, such initiatives are also providing the self-management tools for people to lead healthier lifestyles. And the data insights collected can be mined for broader population healthcare strategy.

There is similar line of thinking about cross-sector innovation happening in Indonesia:

> *"Similar to the idea of cash rewards, telecommunications players can charge a small rate per phone call which is then assigned to the caller's health savings account."*
>
> *- Sajid Rahman, Chief Executive Officer of Telenor Health, Telenor Group*

Singapore is one example of running a nation-wide individualised savings scheme. Under MediSave, all working Singaporeans and permanent residents are mandated to contribute around 10% of their monthly wages to the savings account for future medical needs, with some level of matching coming from employers [118]. This ensures that citizens take charge of their own current and future healthcare. MediSave does not cover total costs of most treatments but a significant proportion of them. Cash co-payment then applies as well. Such arrangements help individuals to reduce OOPE but without eradicating accountability. This in turn encourages citizens to act responsibly by only seeking necessary treatments in order to limit OOPE, thereby reducing the burden on state financing.

3.5.2.3 Tagging on to the fintech revolution

Fintech is an emerging phenomenon in and of itself, the momentum of which healthcare can ride. Most countries are fast-adopting fintech both due to consumerisation of the private sector (e.g. banking, insurance) as well as the push toward "digital citizen" programmes like demonetisation and national ID numbers. So why not apply the same thinking to other social services, such as healthcare? One example recently observed in Thailand is the roll-out of a national digital payment tool called PromptPay. Under the country's wider vision for "Thailand 4.0", 50 million citizens have been set up with digital IDs to be used for e-payments. We've already seen social expansion of such concepts in countries like China, where the WeChat messaging platform (with over one billion monthly subscribers) is being used for healthcare appointment booking, health records management, self-care gamification, and purchasing of products such as insurance coverage and even crowdfunding [119]. A country's healthcare payments processes are typically quite clunky and slow due to the multiple parties involved, claims assessments, and deferred reimbursements. Perhaps simply reallocating existing digital payment initiatives to include the healthcare sector is a quick win.

Crowdfunding, alluded to above, is a similar opportunity. While system financing has traditionally been limited to the public and private institutions, ultimately healthcare is every individual's responsibility. We already see grassroots movements of people who attempt to cover their high OOPE by requesting support from social network circles. Countries could consider formalising this process, either in donation or equity-based formats. The shift toward niche and rarer disease conditions is one such example [120]. As therapies become more personalised, the cost of R&D is escalating due to the efforts around finding patients for trials and in deploying the medicine to a narrower user pool. In Singapore, the Rare Disease Fund RDF) sees the government match SGD 3 to every SGD 1 contributed by society [121]. Such mechanisms convert healthcare from "their problem" to "our collective passion".

3.5.2.4 Earmarked funding – elderly care

Rather than general public or private insurance buckets, perhaps a future strategy could be more targeted financing toward the dynamics of a particular population subgroup. As mentioned in this paper and quite commonly in the media, there is a global crisis related to the rapid ageing of humankind. It is estimated that upwards of 50% of people above age 80 require daily assistance due to reduced functional and cognitive capabilities [76]. According to OECD, the cost of such long-term care is estimated to consume nearly 2% of the world's GDP and will double by 2050.

In response, specialised healthcare financing plans for the elderly will likely be required. In Taiwan for example, taxes on tobacco and inheritance gifts are earmarked for the country's Long-Term Care Plan [122]. Likewise Japan launched Long-Term Care Insurance (LTCI) in 2000, requiring citizens age 40 and above to contribute premiums to the scheme [123]. In Southeast Asia, Singapore is following a similar path with a new plan as of 2020 called "CareShield Life", a long-term care insurance fund with mandatory contributions starting from age 30 [124]. Muang Thai Life Assurance in Thailand is exploring such a model too – offering delayed insurance packages for people who contribute to the scheme throughout their working career, to offset the drop-off of corporate protection upon retirement [2].

3.5.2.5 Earmarked funding – cancer care

Likeminded to the elderly care example, cancer is another societal burden area for which the economics may benefit from more targeted funding schemes.

> *"Among all NCDs, cancer is a key concern. It is the second highest cause of death globally, with nearly 70% of cases coming from low- and middle-income countries."*
>
> *"The estimated number of cancer cases among population aged 70+ in Southeast Asia will increase by 156% from 2018 to 2040."*
>
> *- WHO, International Agency for Research on Cancer*

A recent study found that 75% of people in ASEAN countries who have cancer either pass away or face financial catastrophe within one year of diagnosis [125]. And the rate of cancer impact is made exponential by the ageing dynamic too.

Take multiple myeloma for example, which has the 8th highest mortality by incidence in ASEAN [126] and globally has increased by 126% between 1990 and 2016 [127]. Multiple myeloma has a median age of mid-60s[128], and therefore the elderly population contributed to about half of the case growth rate [129]. Multiple myeloma is now the cause of 2.1 million disability-adjusted life years (DALYs) lost [129].

Cancer care is already severely underfunded across ASEAN, if anything typically only basic treatment is covered. Patients seeking higher quality or more novel interventions face tremendous OOPE, which leads to either restricted access or to push households into poverty [125]. Moreover, traditional treatments such as chemotherapy have an average efficacy of about 25% [130]. The advance of more targeted approaches like immunotherapy bring much promise and are becoming a reality. Immunotherapy is also not a one-time solution – it teaches the body to fight for the long-run [2]. So clearly more can be done both in terms of financing and availability of helping our societies to move beyond the emergence of complex disease states like cancer.

ASEAN governments can start by looking at the regulation and reimbursement pathways in place that could be streamlined so as to ensure greater access and affordability to cancer care by the populations. In the UK, the Cancer Drugs Fund (CDF) allows patients to try novel medicines that are still under clinical trial [132]. Authorities monitor the results to determine if broad access should be

granted. It is through this programme that the UK government approved funding of CAR-T for patients with B-cell Lymphoma [133].

> *"New strategies such as cancer immunotherapy hold promise as being curative and even preventative. However, we need better biomarker-driven tests to make more informed medical decisions given the higher cost associated with this approach."*
>
> *- Dr. Ann-Marie Chacko, Assistant Professor, Cancer & Stem Cell Biology Program, Head, Laboratory for Translational and Molecular Imaging (LTMI), Co-Lead, Singapore Cancer Immunotherapy Imaging (CITI) Programme, Duke-NUS Medical School*

Another area governments can look to progress the cancer discussions is around enabling innovation along the entire patient pathway. Professor Kanaga Sabapathy of the National Cancer Centre in Singapore discussed the idea of molecular cancer prevention, using natural or synthetic agents to identify the prime drivers of cancer and to stop them before the cancer even occurs. He envisions a future where the population can take supplements to activate specific molecules to prevent cancer. Similarly, the concept of advanced diagnostics can ensure right patient, right treatment from the beginning so as to eliminate wastage in the system. Current patient response rates to cancer therapies, even the novel ones, are only around 20% [2].

To complement the above solutions, there are a number of financing mechanisms emerging to deal with the challenge of cancer burden versus treatment cost. Clearly there is economic return to a country of healing its population to return to productivity, though it is understood that public healthcare budgets remain limited. A few such case study financing instruments are outlined here:

Risk-sharing between payers and manufacturers

Outcome-based pricing models can allow for risk sharing between payers and pharmaceutical companies for novel therapies. There are already well-documented spectrums of such contracts ranging from cost savings to efficacy as the measurable KPIs.

An outcome-based deal was signed in Germany by a pharmaceutical player for its high-profile CAR-T cell therapy, for example.

Source: MAP BioPharma

Collaboration between payers and private insurers for higher cancer coverage

The Singapore Integrated Shield Plan is an innovative partnership between social health insurance (MediShield Life) and private insurance to develop a combined policy. The private insurer offers supplemental coverage thereby allowing for higher levels of reimbursement for cancer treatment.

The insurance has a lifetime pay-out but one has to subscribe before the age of 75.

Source: ACCESS Health International

Cancer targeted insurance from the private sector

Several financial firms offer standalone cancer insurance programmes now.

ManuSilver Care, an insurance package introduced by Manulife Hong Kong in 2016, specifically targets those between the ages of 50 to 80. It offers an early stage cancer benefit and major cancer benefit. Holders paying the premium up to the age of 85 are covered until the age of 100.

Source: ACCESS health international

Sales-based donation scheme

In Vietnam, SeABank collaborated with Bright Future Foundation to boost funding for breast cancer patients. For every VND 1 million that SeABank credit card users spend, they have the opportunity to contribute VND 2,000 to the Bright Future Foundation.

Source: ACCESS Health International

Crowdfunding between payers and community

In 2017, the World Child Cancer campaign launched an initiative in which all donations by citizens were matched in double by the UK government.

Source: World Child Cancer

Cancer fundraising gamification

"War on Cancer" is a free-to-play fundraising mobile game created by Alivia Oncological Foundation in Poland. Money can actively be donated to a real-life chosen cancer patient via the in-game purchasing app.

The game has been quite effective, earning more than EUR 1 million.

Source: IQVIA

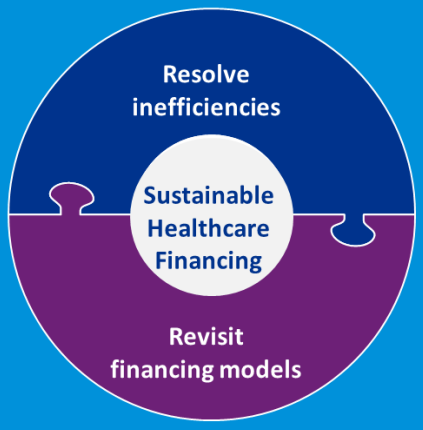
Healthcare innovation is upon us, with many exciting models for ASEAN to consider. There are really only two steps – to start, and to keep going. Let's not fail at the first step.

4 Concluding remarks & recommendations

We hope this paper inspires a vision of "health-for-all" in terms of the need to work together as a public-private multi-stakeholder group. But even more, we should also consider how to fundamentally change the mentality and structures so as to avoid a scenario by which it's too late to intervene due to the unstainable base on which healthcare currently sits.

The next evolution is "health-for-wealth", using population healthcare as an economic driver and making the proper investments accordingly. We welcome the opportunity to discuss such matters, to learn from global best practices, and to position ASEAN as a productivity leader into the future. Therein, we summarize the two main buckets of recommendations covered in the paper:

SUMMARY OF KEY RECOMMENDATIONS



"Health-for-wealth"
Transform how healthcare is viewed – from a cost item to key driver of economy – to make healthcare a forefront agenda across Ministries

Prevention
Prioritise three main initiatives – immunisation, encouraging healthy lifestyles, and early detection to reduce future healthcare expenditure

Nextgen healthcare service delivery models
Promote the use of cost-effective delivery models: primary care, self-care, and digital interventions to share the load off of hospitals

Human capital
Develop and extend the role of health practitioners such as nurses and pharmacists to alleviate doctor shortages

Composite funding and emerging platforms
Secure funds through both tax and social health insurance contribution, unify fragmented schemes, leverage private insurance to close financial protection gap

Explore other novel funding models to complement traditional revenue sources such as SIBs, crowdfunding, individualized healthcare savings accounts, earmarked plans

5 Appendices: Country snapshots

5.1 Indonesia

5.1.1 Overview of healthcare landscape and disease burden

Sustainable Financing		Universal Health Coverage	
Current health expenditure as a % of GDP **3.1%**	Out-of-pocket expenditure as a % of current health expenditure **37%**	Life expectancy **71 years**	UHC Service Coverage Index (SCI) **57**

Source: The World Bank

Like many developing countries, Indonesia is faced with the prevalence of both NCDs and infectious diseases. **Deaths caused from diabetes increased by 50.1% from 2007 to 2017, the highest growth among top diseases in Indonesia** [134]. With near 10.7 million people having diabetes in the country, the associated healthcare expenditures were estimated to be USD 4 billion in 2019 [135]. This excludes indirect economic costs such as the loss in productivity due to a less healthy workforce.

For infectious diseases, the country has recorded near 17,000 measles cases in 2017 and 2018 – the third highest in the world for those two years [136]. Being located at the centre of tropical Southeast Asia, Indonesia is also highly vulnerable to influenza. In fact, it was estimated that influenza caused near 3.4 million lower respiratory tract infections (LRTI) in 2017, which led to more than 40,000 hospitalisations and 4,000 deaths. The associated economic burden was projected to be USD 19.2 million in direct medical costs and USD 866.7 million in productivity loss [62].

5.1.2 The current healthcare financing system

5.1.2.1 Public healthcare

In 2014, the government established a mandatory national health insurance programme – known locally as Jaminan Kesehatan Nasional (JKN) – to ensure coverage for its entire population. Formal workers contribute 1% of their salaries complemented by 4% matching contribution from their employers, while informal workers pay fixed monthly premiums depending on the tier of care selected. The poor and near-poor are subsidised by the government [137]. By 2019, 81% of the population is covered under the programme, making JKN the largest single-payer health insurance in the world [138].

5.1.2.2 New models of care

Although NCDs such as diabetes are predominantly lifestyle-related, budget allocation remains skewed towards treatment instead of prevention. The government budget allocated to preventive care and public health services, including health promotion activities, was less than 10% of total health expenditures [139].

Vaccination rates in Indonesia have remained low as compared to peer countries. For instance, the uptake of essential vaccines like DTP3 (diphtheria, tetanus and pertussis), IPV1 (polio) and MCV2 (measles) stands at 76%, 66%, and 52% respectively. At present, less than 2% of the population receives seasonal influenza vaccine [62]. Low vaccination rates in Indonesia can be partially attributed to its large Muslim community, because some vaccines contain traces of pork gelatine used to stabilise the medicine and are therefore non-halal [141]. As such, while all provinces on Java achieved the 95% immunisation target for measles, provinces such as Aceh that are ruled under the Islamic Law has only achieved 8% for the same vaccine [142].

The government has been stepping up efforts to improve vaccine coverage. Currently, all vaccines on the Indonesia's national immunisation schedule are provided free of charge by the government to public and private providers [143]. In 2017, the government also launched a two-year measles-rubella immunisation campaign which aims to eliminate these diseases by 2020 [144].

5.1.2.3 Healthcare purchasing techniques

For healthcare services, the government mainly employs pure provider payment mechanisms which do not fully incentivise cost containment nor enhancement of care quality. Primary care providers are paid by capitation for outpatient services, while hospital providers are paid based on Indonesian Case-Based Groups (INA-CBGs) rates. INA-CBGs utilises the concept of diagnosis grouping by estimating the average amount of expenditure for a particular diagnosis [23]. Both payment methods could see providers compromising on the quality of care in a bid to reduce costs.

With the introduction of Permenkes No. 3 2020 by the MOH, hospitals will no longer be classified by number of health personnel, facilities, and capabilities. Rather, they will be decided solely based on the number of in-patient beds [145]. Given that JKN reimbursement rates are dependent on the classification, hospital providers are concerned that they will not be rewarded fairly for investing in capabilities and facilities. This will discourage future investments which are critical to improve quality of healthcare services in Indonesia [2].

For generic drugs, public procurement prices were found to be 74% higher than international benchmarks [146]. In response, the government has placed all unbranded generics that are on the National Essential Medicines List under direct price control. **While such policies may curb costs in the short run, they can also alter the business climate within the country resulting in redirection of investments, drug manufacturing, and R&D by pharmaceutical companies**. The government must exercise caution when implementing such measures. Alternatives like encouraging healthy market competition, streamlining regulatory pathways, and removing import tariffs could be considered.

The Komite Penilaian Teknologi Kesehatan (PTK) was established as the national HTA agency [147]. In 2018, the government decided to terminate JKN reimbursement for two high-cost cancer drugs, after local HTA studies concluded both drugs to be poor value for money [148]. This exemplifies the potential that HTA has in helping the government make optimal healthcare-related decisions that improve sustainability of the system. **To realise the full benefits, the government could consider to make HTA results a legislative requirement in all future decision-making processes** [149].

5.1.2.4 Unsustainable funding base

Despite wide population coverage, JKN is unsustainable. Over the six years of implementation, its deficit has already ballooned to approximately Rp 28 trillion (USD 2.05 billion) [150]. This is due to the difficulty in enforcing enrollment and premium collection from its large informal economy, which accounts for up to 65% of total employment [151]. Unlike public servants and office workers, premiums cannot be automatically deducted from the earnings of informal workers. Consequently, this allows for adverse selection where only the sick enroll into the JKN while the healthy people do not. There are also frequent reports of informal workers (re)enrolling into the JKN only when they require care and lapsing when they do not [152]. This results in a disproportionate amount of sick people in the mix and a mismatch between contribution and utilisation rates. To ensure continuation of JKN, the government has resorted to increasing premiums by up to 100% [153].

Medical coverage for high-impact diseases such as complex forms of cancer cannot be fully covered thereby exposing patients to high OOPE [154]. More can be done to improve financing of the JKN, to truly meet the healthcare needs of the Indonesian population.

5.2 Malaysia

5.2.1 Overview of healthcare landscape and disease burden

Sustainable Financing		Universal Health Coverage	
Current health expenditure as a % of GDP **3.8%**	Out-of-pocket expenditure as a % of current health expenditure **38%**	Life expectancy **76 years**	UHC Service Coverage Index (SCI) **73**

Source: The World Bank

Lower respiratory tract infections (LRTIs) are quickly becoming a concern in Malaysia. From 2007 to 2017, the number of deaths caused by LRTIs increased by 72.1% – faster than any other diseases in the country [155]. Like other NCDs, most LRTIs are caused by lifestyle choices such as tobacco use.

Among all LRTIs, pneumonia is responsible for 11.8% of total deaths in Malaysia [156]. In 2018 alone, pneumonia accounted for 234 deaths among children aged 14 and under, out of which 170 were below age five [157]. Apart from being a major social issue, each child mortality also represents a loss of decades of economic productivity [157].

Between December 2019 and January 2020, there has been **an outbreak of influenza-like illnesses** (ILI) and Severe Acute Respiratory Infection (SARI) across Malaysian states including Johor, Perak, and Penang [158]. The outbreak sent families scrambling for vaccines for their children who belong to the high-risk groups. However, clinics and hospitals have depleted their stocks due to the sudden spike.

5.2.2 The current healthcare financing system

5.2.2.1 Public healthcare

To make healthcare affordable for all, the Malaysian government heavily subsidises public health services allowing patients to make meagre co-payments. For instance, Malaysians are only required to pay RM 1 for a general outpatient consultation and RM 5 for a specialist consultation [159]. Therefore, government subsidies are predominantly funded by tax revenues collected.

5.2.2.2 New models of care

While Malaysia currently places more emphasis on treatment, the Health Minister rightly points out that the government should shift the focus towards health promotion and disease prevention [160]. For instance, the Health Ministry has looked to community engagement activities to tackle lifestyle-related NCDs. The more noteworthy ones include the Healthy Community Builds the Nation (Kospen) programme which has screened more than 821,600 people for NCD risk factors, and the Enhanced Primary Health Care initiative that focuses on the improvement of NCD care management across 20 primary healthcare clinics in Selangor and Johor.

To date, more than 90% of the children in Malaysia have been vaccinated for infectious diseases such as polio and measles [140]. **Recognising the importance and effectiveness of vaccination, the government announced in the Malaysia Budget 2020 that a further RM 60 million will be allocated to the Health Ministry to administer pneumococcal vaccines to all children** [157]. This makes the vaccine, which otherwise costs between RM 200 and RM 300 per dose, more affordable. Beyond pneumococcal vaccines, the government **should also promote the importance of regular influenza vaccination and maintain a healthy stock of such vaccines.**

5.2.2.3 Healthcare purchasing techniques

The Health Ministry uses a global budgeting approach for healthcare services, which means that the funds available are being segmented based on historical spending and prospectively paid to the

various public healthcare providers [161]. Unfortunately, this may mean that providers receiving a fixed budget may employ cost containment methods such as undersupply of health services and over-utilisation of lower quality treatments.

In 2019, the Malaysian government announced that drug prices will be benchmarked against those in other countries and a ceiling equivalent to the average of the three lowest prices identified will be implemented [162]. **At the same time, the government has also considered market-based mechanisms to reduce prices which include centralised procurement, and increased competition and transparency.** It was announced in Malaysia Budget 2020 that the procurement of RM 500 million worth of medicines across hospitals will be centralised and combined, hence concentrating purchasing power to secure better prices from suppliers [163].

The Malaysia Health Technology Assessment Section (MaHTAS) was established as the national HTA agency in 1995 [164]. **While it has been able to provide valuable advice for the Health Ministry, the quality of these inputs can be further enhanced if local economic, population, and health data is available** [165]. Considering to make the HTA results a legislative requirement could also expand its role and benefits for the country's healthcare system.

5.2.2.4 Unsustainable funding base

Malaysia's public healthcare system is heavily reliant on government tax revenue, making it unsustainable in the long run. The country's tax-to-GDP ratio was 12% in 2018 [166], falling short of the 15% target set out by the IMF as critical to support sustained and inclusive growth [4]. Moving forward, this gap is only expected to widen given the challenge of population ageing and a shrinking tax base.

Limited funding means that only basic healthcare services can be substantially subsidised. High-cost treatments including cancer care usually demand significant OOPE from patients [125]. Therefore, it is imperative that the Malaysian government seek alternative sources of financing to ensure the sustainability and completeness of its public healthcare system.

5.3 Philippines

5.3.1 Overview of healthcare landscape and disease burden

Sustainable Financing		Universal Health Coverage	
Current health expenditure as a % of GDP **4.4%**	Out-of-pocket expenditure as a % of current health expenditure **54%**	Life expectancy **71 years**	UHC Service Coverage Index (SCI) **61**

Source: The World Bank

In the Philippines, cardiovascular diseases are responsible for one-third of all deaths [167] **and tobacco use is a key contributor.** On average, each Filipino consumes more than 1,000 sticks per year, more than any other Southeast Asian country. According to Doctor Ranulfo Javelosa Jr., Division Chief of Preventive Cardiology at the Philippine Heart Centre, the healthcare costs associated with cardiovascular diseases due to smoking alone are PHP 63.4 billion (USD 1.2 billion) per year [168].

In 2019, back-to-back infectious disease outbreaks have also taken a toll on the Philippines. There were over 42,000 reported measles cases with 560 deaths and over 350,000 reported cases of dengue with 1,300 deaths [169]. Polio has as well re-emerged in the country, 19 years after its eradication.

5.3.2 The current healthcare financing system

5.3.2.1 Public healthcare

Since 1995, PhilHealth was put in place to administer the country's national health insurance programme [170]. Almost 25 years down the road, the Universal Health Care Act was signed in 2019 to dictate that all Filipino citizens are now automatically enrolled into the programme [171]. Today, formal workers contribute 3% of their monthly wages, half of which comes from their employers. These premiums will increase by 0.5% yearly until it reaches 5% in 2025. Informal workers are fully responsible for their premiums which are computed based on their monthly earnings [172]. The government sponsors coverage for indigents and the elderly. By 2018, 94% of the population is covered under the programme [173].

5.3.2.2 New models of care

Healthcare in the Philippines has been predominantly prescriptive rather than preventive. However, there are changes underway. In 2018, the government passed a bill to impose sugar-sweetened beverage tax to discourage its consumption, which had led to an increasingly overweight population [174]. Through these taxes, WHO estimates that the country can yield healthcare savings of USD 627 million and annual tax revenue of USD 813 million which can be used for healthcare purposes [175].

On the other hand, plummeting vaccination rates in the country did not manage to protect the population from a series of disease outbreaks. For instance, vaccine coverage for measles has decreased from 88% in 2013 to less than 70% in 2018, far below the 95% required level to achieve herd immunity [1]. This is largely due to anti-vaccine sentiments caused by misinformation and the resulting lack of public confidence towards vaccination [176]. Nonetheless, the government remains committed to improving vaccination coverage of its population. Since 2011, the Mandatory Infants and Children Health Immunisation Act has been put in place to make basic immunisation mandatory and free at all government hospitals and health centres, for children five years and below. During the outbreak in 2019, the government responded quickly by launching nationwide measles vaccination campaigns which managed to slow the outbreak significantly [177].

5.3.2.3 *Healthcare purchasing techniques*

Over the years, there has been a transition from FFS to case-based payment for healthcare services under PhilHealth. However, a weakness in the current case-based system is that it allows healthcare providers to charge the patient for any balance between the PhilHealth rates and the actual costs which continues to be calculated based on the previous FFS system. While the no balance billing (NBB) policy was put in place in 2010 to provide financial protection for the indigent, it does not extend to the other groups of Filipinos [178]. Hence, the transition to case-based payment does not incentivise cost containment nor discourage excessive supply of expensive treatments – the same problems faced by pure provider mechanisms. This explains why Filipinos continue to suffer high OOPE for their healthcare expenditures. **In addition, PhilHealth's position as a strategic purchaser of healthcare services is compromised by the fragmentation of public funds.** Healthcare services are not only purchased by PhilHealth, but also the Department of Health (DOH) and local government units [178].

In the Philippines, the government has started to look at bulk procurement of pharmaceutical products to reduce the prices [180]. In February 2020, the president signed Executive Order No.104 to set Maximum Drug Retail Price (MDRP) for 86 medicines [181]. Such price reduction can be as high as 58%, but more likely for the middle of the chain rather than for the end patient. Instead, it could be suggested that the government explore further improvement in supply chain strategies.

While there is a legislative requirement for HTA to be conducted for healthcare-related investment, **there is no establishment of a national HTA agency to formally conduct and oversee the process** [182].

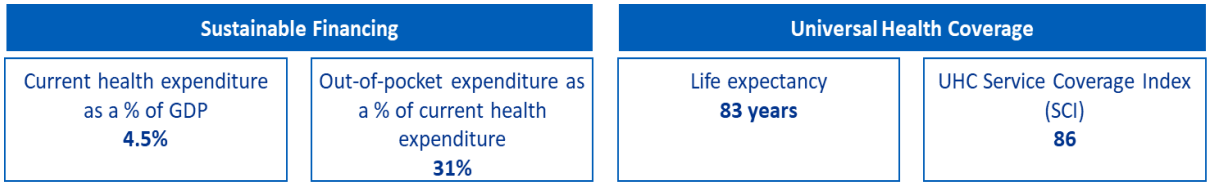
5.3.2.4 *Unsustainable funding base*

Despite wide population coverage, PhilHealth only accounts for a 14% of total health expenditures in the country [183]. The reason is that fund size remains limited due to challenges faced in enforcing contributions from its large informal economy, hence coverage remains very basic. Treatment costs for high-impact diseases such as cancer are usually self-funded with OOPE [154]. **The DOH estimates that in just the first year after the establishment of the Philippines' Universal Health Care Act in 2019, the programme will face a deficit of almost PHP 95 billion (USD 1.86 billion)** [184].

In February 2019, the president signed the National Integrated Cancer Control Act (NICCA) which states that PhilHealth will expand its benefit packages for all types and stages of cancer. In the long run, the Philippines must either seek new sources of funding or refine its existing financing and spending policies to achieve a sustainable public healthcare system.

5.4 Singapore

5.4.1 Overview of healthcare landscape and disease burden



Source: The World Bank

Like many high-income countries, cancer is the leading killer in Singapore as it accounts for 28.8% of total deaths in 2018 [185]. Given that cancer treatment is typically a lengthy and costly process, high cancer incidence will necessarily be a huge economic burden on the country. **On the other hand, most vaccine-preventable infectious diseases which trouble the ASEAN region have generally seen their numbers plummeting in Singapore** [186]. That being said, influenza continues to occur all year round with small seasonal peaks.

5.4.2 The current healthcare financing system

5.4.2.1 Public healthcare

The government firmly believes that healthcare financing should include individual responsibility. Government subsidies are meant to keep basic healthcare affordable, especially for the poor [187].
As such, Singapore adopts a contributory healthcare system commonly known as the "3M" framework. The MediSave account is a compulsory medical savings scheme – all working Singaporeans and permanent residents are to allocate between 8% and 10.5% of their monthly wages for their future medical expenses [118]. For formal workers, part of this contribution comes from their employers. MediShield Life is a mandatory basic health insurance offering protection against infrequent medical episodes with high financial impact, such as cancers [188]. The insurance premiums can be paid using MediSave funds. MediFund is a sovereign endowment put in place to assist patients who face financial difficulties even after exhausting the government subsidies and coverage from the above schemes [189]. To cope with population ageing, Singapore has recently launched a new insurance plan called "CareShield Life" in 2020, which will require contributions from the age of 30 for financial protection against long-term care costs [124].

The government provides means-tested subsidies for a wide range of healthcare services, including payment of MediShield Life premiums. Poorer families with lower per capita household income will receive higher subsidies [190]. Singapore citizens can also apply for the Community Health Assist Scheme (CHAS) to receive further subsidies at participating primary care clinics [191].

5.4.2.2 New models of care

The MOH has been proactive in the expansion of the Primary Care Network (PCN) scheme to decentralise care beyond hospitals and into communities. This scheme involves clinics organising themselves into networks that support holistic and team-based care, especially for chronic diseases such as diabetes [75]. In addition, Singapore has established various community hospitals as well as long-term care facilities like nursing homes in order to alleviate the load from public hospitals and to allow patients to receive effective care closer to home [74].

The rise of lifestyle-related NCDs has prompted the government to look beyond treatment and towards prevention. The annual cost of diabetes in Singapore is estimated to rise from USD 787 million in 2010 to USD 1.8 billion in 2050 [192]. As such, the government declared a "War on Diabetes" in 2016 to engage citizens in brainstorming for ideas on how to improve prevention as a nation [193]. Since then, many initiatives were adopted such as the Healthier Dining Programme which encourages F&B companies to provide healthier meals for their customers [194]. In Singapore Budget 2019, the government has allocated a sum of SGD $275 million to the Health Promotion Board (HPB) for similar disease prevention programmes [19].

The National Childhood Immunisation Programme (NCIP) covers a wide range of vaccinations that takes place from a child's birth up till 11 years of age. Vaccinations against diphtheria and measles have been made compulsory by law [195]. To further improve vaccination coverage in Singapore, the government plans to subsidise all childhood vaccinations at polyclinics and primary care clinics under CHAS by the end of 2020 [196].

However, vaccination rates among adults remains suboptimal. Based on the National Population Survey of 2016/2017, MOH reported that pneumococcal and influenza vaccine coverage for persons aged 65 to 74 were only 12% and 14% respectively. By comparison, the median influenza vaccine coverage was 49% in OECD countries [197]. To encourage vaccination uptake among adults, the government established the National Adult Immunisation Schedule for guidance on vaccinations for persons aged 18 years and older [198]. Also, the government has allowed Singaporeans to withdraw up to $500 from their MediSave Account to pay for approved vaccinations.

5.4.2.3 Healthcare purchasing techniques

For the provision of government subsidies to healthcare providers, Singapore mostly employs mixed provider payment mechanisms intended to drive desirable behaviours. For instance, public hospitals are given annual block budgets within which they will be required to break even. Subsidy and cost-recovery targets are also set for each hospital ward class, indirectly keeping public hospitals from inducing excess demand [199].

Singapore primarily adopts a market-based mechanism to manage drug prices. Public hospitals are divided into three integrated clusters and generally purchase pharmaceuticals through centralised Group Procurement Offices (GPOs) [200]. The MOH also publishes public and private treatment fee benchmarks on its website [201].

The Agency for Care Effectiveness (ACE) is the national HTA body in Singapore [202] which plays an advisory role to policy makers through the provision of technical evaluations. Drug subsidy recommendations are ultimately made by the Drug Advisory Committee (DAC) [203]. The documentation and publishing of these recommendations on ACE's website increases the level of transparency and gives greater effect to the HTA methodology. **The key challenge facing Singapore in this aspect would be its local HTA capacity, as there are currently few who are formally trained in HTA methods** [203].

5.4.2.4 Unsustainable funding base

Singapore's approach to healthcare financing – a combination of individual contributions and subsidies funded by government tax revenues – has served the nation well. With adequate funding, MediShield Life provides coverage for high-quality healthcare, even for high-impact diseases.

5.5 Thailand

5.5.1 Overview of healthcare landscape and disease burden

Sustainable Financing		Universal Health Coverage	
Current health expenditure as a % of GDP **3.7%**	Out-of-pocket expenditure as a % of current health expenditure **12%**	Life expectancy **77 years**	UHC Service Coverage Index (SCI) **80**

Source: The World Bank

From 2007 to 2017, deaths caused by LRTI grew by 75.2% – the largest increase among the top 10 diseases in Thailand [204]. This can be attributed to widespread tobacco use in the country. According to Doctor Ronnachai Kongsakon, Director of the Tobacco Control Research and Knowledge Management Centre at Ramathibodi Hospital, nearly five million households in Thailand have smokers, exposing around ten million people to second-hand smoke at home [205]. This doubles the risk of sudden infant death syndrome and increases children's chances of developing bronchitis or pneumonia by 47%. Altogether, approximately 400,000 Thai people die from NCDs caused by smoking each year. **Cancer incidence is also becoming a growing concern in Thailand – the number of new cancer cases in 2018 alone was 170,495** [206].

Due to its robust immunisation policies, Thailand has been much less susceptible to disease outbreaks as compared to its neighbouring countries in the ASEAN region.

5.5.2 The current healthcare financing system

5.5.2.1 Public healthcare

Thailand's national healthcare coverage is generally categorised into three different schemes – the tax-financed Civil Servants' Medical Benefit Scheme (CSMBS) under the Finance Ministry covering public employees, the contributory Social Security Scheme (SSS) under the Labour Ministry covering private employees, and the tax-financed Universal Coverage Scheme (UCS) under the Public Health Ministry covering the residual Thai population with free healthcare [42]. Across these three schemes, 99.5% of the population have health protection coverage [207].

5.5.2.2 New models of care

The focus of care in Thailand has been on treatment rather than prevention. Preventive and health promotion services accounted for less than 20% of the UCS budget [208]. Nonetheless, in 2019 the government signed the Act on Promotion of the Family Institute Development and Protection. It states that Thai people are no longer allowed to smoke at home as long as their habit has a negative effect on other family members, due to exposure to second-hand smoke [205].

The government moreover places a strong emphasis on nationwide immunisation against critical diseases. Since 1977, the nation-wide Expanded Program on Immunisation (EPI) has existed. All vaccinations included in the EPI schedule are provided free-of-charge by public hospitals and clinics [209]. By 2012, Thailand has achieved more than 98% immunisation coverage for the important WHO-recommended vaccines [210].

5.5.2.3 Healthcare purchasing techniques

As the three healthcare schemes operate under their own legal frameworks administered by different ministries, the payment methods differ from scheme to scheme. **Regardless, the schemes primarily employ pure provider payment mechanisms including capitation and FFS which, when used in isolation, may not incentivise desirable behaviours such as cost containment and quality of care.**

The government does implement direct price controls for medicine. Private hospitals are only allowed to set drug prices capped at their label price and have to disclose any mark-up for additional costs incurred. They must also provide detailed prescriptions to allow patients to purchase the necessary drugs elsewhere [211]. In 2019, the government added medicine, medical supplies, and medical services to its price control lists for both public and private hospitals [212]. **This decision has drawn backlash from private hospitals who believe that the higher prices charged are well-justified by their investments in advanced medical care as well as in the absence of government subsidies** [213].

The government has furthermore mandated that all drug suppliers are now required to submit the purchase and sale prices of over 3,800 items to the Department of Internal Trade (DIT). Profit margins for those products are restricted to less than 10% and any decision to raise prices must be communicated to the DIT 15 days prior to its execution [214].

Thailand HTAs are conducted through the Health Intervention and Technology Assessment Programme (HITAP). **However, HITAP does not have enough capacity to meet the demands of HTA submission.** The country also evaluates new health interventions using one single cost-effective (CE) threshold (160,000 Baht per QALY/DALY) across primary care, specialist care, and rare disease medicines [215].

5.5.2.4 Unsustainable funding base

Considering that Thailand's public healthcare system is predominantly tax-financed, its sustainability will undoubtedly be challenged by the trend of population ageing and a shrinking tax base. In addition, since the three schemes operate under their own legal framework, funding under the contributory SSS cannot be used to cross-subsidise other members.

Inequalities do exist across the three different schemes. While the UCS is usually assigned with basic coverage only [125], spending per patient under the CSMBS is four times higher [207] – this means that treatment under the latter for high-impact diseases could be covered. There have been recent efforts to equalise different statutory schemes via fixed fees for emergency healthcare.

5.6 Vietnam

5.6.1 Overview of healthcare landscape and disease burden

Sustainable Financing		Universal Health Coverage	
Current health expenditure as a % of GDP **5.7%**	Out-of-pocket expenditure as a % of current health expenditure **45%**	Life expectancy **75 years**	UHC Service Coverage Index (SCI) **75**

Source: The World Bank

Cardiovascular diseases account for nearly one-third (31%) of total deaths in Vietnam [216]. Tobacco use is identified as one of the key contributors, as it accounts for 30% of all cardiovascular diseases [217]. With almost half of all adult males (45.3%) smoking tobacco, this exposes nearly 5.3 million non-smokers to second-hand smoke at home and in public areas. Including other associated diseases such as lung cancer, tobacco use leads to approximately 40,000 deaths each year [217].

Despite great progress being made, Vietnam remains susceptible to infectious diseases that are prevalent in the region. Like the Philippines, Vietnam suffered from a measles outbreak in 2019, albeit to a more limited extent.

5.6.2 The current healthcare system financing

5.6.2.1 Public healthcare

Established in 1992, Vietnam's social health insurance divides its population into five different groups depending on their contributive responsibility [218]. The government fully subsidises the premiums for vulnerable groups such as the poor, minorities, and children under age six. The insured can choose to register with any government-approved public or private healthcare facilities and under the co-payment system, the insurance will cover 80% of any medical costs incurred. The remaining costs are borne by the individual and paid directly to the healthcare provider, except for the marginal groups that are subsidised 100% by the government. While participation is compulsory for some groups such as formal workers, it remains voluntary for others.

In 2018, Vietnam achieved a population coverage rate of 87% [219]. It is currently on track to attain 90% and 95% by 2020 and 2025, respectively.

5.6.2.2 New models of care

Vietnam operates a hospital-centric system. As such, primary care is often neglected [220]. Primary care staff are undertrained screening and management of NCDs. The list of pharmaceuticals that primary care facilities can dispense is limited, and few basic medical tests or imaging services are available. Consequently, patients often choose to seek care at hospitals despite substantially higher co-payments and inconvenience.

Additionally, Vietnam's healthcare system remains geared towards treatment rather than preventive care and health promotion. While the government has pledged to implement measures according to the WHO Framework Convention on Tobacco Control – which include the banning of tobacco advertising, promotion and sponsorship, mandating health warnings on tobacco packaging, and increasing tobacco taxes – the results have been limited thus far. For instance, tobacco tax in Vietnam remains low (35.6% of retail price) relative to the world average (56%) and WHO recommendation (70%) [217].

Vietnam is making progress with immunisation. With the support of UNICEF, Vietnam's Expanded Programme on Immunisation (EPI) has led to the successful eradication of polio and neonatal tetanus, as well as nationwide control of measles. However, vaccination coverage in mountainous, remote, and ethnic minority-populated areas remain significantly lower, leaving these parts of the population susceptible to disease outbreaks [221].

5.6.2.3 Healthcare purchasing techniques

In paying for healthcare services, Vietnam uses capitation for most district hospitals, DRG for provincial hospitals, and FFS for the remaining hospitals [222]. **The key drawback of these pure provider payment mechanisms is that they could incentivise undesirable behaviours** – such as oversupply of expensive healthcare services under FFS or compromising of care quality under the capitation and DRG systems.

Drug procurement in Vietnam is highly decentralised to the provincial level. The absence of oversight of the procurement process leads to differences in drug prices across the provinces. To tackle the issue, the Vietnamese government has been actively implementing reforms. For instance, the National Centralized Drug Procurement Centre was established to consolidate bids for pharmaceutical procurement, to negotiate prices of single-source innovator products, and to regulate the tendering processes undertaken at the provincial level [22].

The selection of medical technology to be funded by Vietnam's social health insurance programme is not based on scientific evidence nor HTA studies [223]. Currently the MOH is responsible for conducting HTA but in practice, though the results have not been utilised for regulatory and reimbursement decisions [223]. This means that there could potentially be health interventions and technologies that are costly for the value delivered, yet still funded by the programme. Vietnam should consider formally establishing a national HTA agency with the proper capabilities to conduct such assessment and evaluation processes [224].

5.6.2.4 Unsustainable funding base

Given that participation remains voluntary for some groups, this allows for adverse selection where only the sick people enroll into the programme while the healthy people do not. For instance, a study shows that families of formal workers have a higher probability of enrolling into the social health insurance programme if any of the family members has been ill during the past 12 months [218]. This results in a disproportionate amount of sick people in the mix and a mismatch between contribution and utilisation rates.

In addition, Vietnam's social health insurance programme is highly fragmented, as each of its 63 provincial funds collects its premiums independently. With only marginal redistribution across these through the central reserve, there is effectively no cross-subsidisation among the provinces [225]. Therefore, the government might find it even more difficult to sustain certain groups in specific provinces where contribution rates are low.

6 List of interviewees

- Dato' Dr. Mohd Khairi bin Yakub, CEO of Malaysian Medical Council (MMC)
- Datuk Dr.Kuljit Singh, President, Association of Private Hospitals, Malaysia
- David Thomas Boucher, Chief Business Transformation Officer, Bumrungrad International Hospital, Thailand
- Dr. Ann-Marie Chacko, Assistant Professor, Cancer & Stem Cell Biology Program, Head, Laboratory for Translational and Molecular Imaging (LTMI), Co-Lead, Singapore Cancer ImmunoTherapy Imaging (CITI) Programme, Duke-NUS Medical School
- Dr. Marcus Schabacker, President & CEO, ECRI, USA
- Dr. Loke Wai Chiong, Clinical Director of Projects, MOH Office for Healthcare Transformation, Singapore
- Dr. Patrick Chia, Director of Clinical Informatics, Integrated Health Information Systems (iHIS), Singapore
- Dr. Taketo Tanaka, Technical Officer Health Policy, World Health Organization, Malaysia
- Eric Woo, Regional Director, ECRI, Malaysia
- Estrella M. Garcia, Finance Director, Manila Doctors Hospital, Philippines
- Hung Tran, Chief Executive Officer, Monitor Consulting, Vietnam
- Ivan Loh Ee Hoe, COO, Parkway Pantai Limited, Malaysia
- Kanpassorn Suriyasangpetch (Eik), Founder of Ooca, Thailand
- Kevin Tan, Founder of Tri-Sector Associates, Singapore
- Nadia Suttikulpanich, Head of Fuschia Innovation Center, Muang Thai Life Assurance, Thailand
- Prof. David E.Bloom, Clarence James Gamble Professor of Economics and Demography, Harvard T.H.Chan School of Public Health Harvard University, USA
- Professor Kanaga Sabapathy, Head of the Division of Cellular & Molecular Research, National Cancer Centre, Singapore
- Professor Siripen Supakankunti, Centre for Health Economics, Chulalongkorn University, Thailand
- Rahul Mullick, Digital & Supply Chain Lead, Bill & Melinda Gates Foundation, India
- Raymund Azurin, Senior Vice President, Government Affairs & Sustainability, Zuellig Pharma Asia Pacific
- Robert Chew, Chairman of Dover Park Hospice and Board member of National Health Group, Singapore
- Representatives from Allianz, Malaysia
- Representatives from an international donor agency, Vietnam
- Representatives from Prudential, Malaysia
- Representatives from Siloam Hospitals, Indonesia
- Sajid Rahman, Chief Executive Officer of Telenor Health at Telenor Group

7 Authors & contributors

Chris Humphrey
Executive Director
EU-ASEAN Business Council
E chris.humphrey@eu-asean.eu
T +65 8168 2199

Satyanarayan Ramamurthy
Partner
Head of Infrastructure, Government & Healthcare
KPMG in Singapore
E sramamurthy@kpmg.com.sg
T +65 6213 2060

Guillaume Sachet
Partner
Advisory
KPMG in Singapore
E gsachet@kpmg.com.sg
T +65 6411 8080

Chris Hardesty
Director
Life Sciences
KPMG in Singapore
E chrishardesty@kpmg.com.sg
T +65 9824 2924

Serene Ng
Manager
Advisory
KPMG in Singapore
E sereneng@kpmg.com.sg
T +65 6411 8560

Soey Chiam
Advisory
KPMG in Singapore
E soeychiam@kpmg.com.sg
T +65 6411 8144

With special thanks to KPMG's global network, especially: Bernardi Djumiril, Chris King, Irwan Djaja, Irwan Soenarjono, Imelda Corros, Luke Treloar, Lee Yeekeng, Pilar Teves, Tay Kai Xian, and Vasu Pazhoor.

This whitepaper is funded by Sanofi in Singapore

8 References

[1] ABS-CBN News, "UNICEF: PH immunization coverage dropping at alarming rate," 8 May 2019. [Online]. Available: https://news.abs-cbn.com/news/05/08/19/unicef-ph-immunization-coverage-dropping-at-alarming-rate. [Accessed 7 Feb 2020].

[2] *Obtained through primary research,* 2020.

[3] Deloitte, "A perspective of future healthcare landscape in ASEAN and Singapore," 2015. [Online]. Available: https://www2.deloitte.com/content/dam/Deloitte/sg/Documents/risk/sea-risk-healthcare-3-0-model.pdf. [Accessed 7 February 2020].

[4] The World Bank, "High-Performance Health Financing for Universal Health Coverage," 2019. [Online]. Available: http://documents.worldbank.org/curated/en/641451561043585615/pdf/Driving-Sustainable-Inclusive-Growth-in-the-21st-Century.pdf. [Accessed 7 February 2020].

[5] BioSpectrum Asia Edition, "Japan looks out for rapidly growing ASEAN ageing population," 4 Sep 2019. [Online]. Available: https://www.biospectrumasia.com/news/30/14389/japan-looks-out-for-rapidly-growing-asean-ageing-population.html.

[6] World Health Organization, "South East Asian Region: Noncommunicable Diseases," 2020. [Online]. Available: https://www.who.int/nmh/ncd-tools/who-regions-south-east-asia/en/. [Accessed 7 February 2020].

[7] World Health Organization, "Communicable diseases in the South-East Asia Region of the World Health Organization: towards a more effective response," 2010. [Online]. Available: https://www.who.int/bulletin/volumes/88/3/09-065540/en/. [Accessed 7 February 2020].

[8] Channel News Asia , "China foreign minister to meet ASEAN peers at COVID-19 summit," 20 Feb 2020. [Online]. Available: https://www.channelnewsasia.com/news/asia/coronavirus-covid-19-asean-summit-laos-china-wang-yi-12453104. [Accessed 25 Feb 2020].

[9] The New York Times , "Philippines Declares Polio Outbreak After 19 Years Free of the Disease," [Online]. Available: https://www.nytimes.com/2019/09/19/world/asia/philippines-polio-outbreak-.html. [Accessed 7 Feb 2020].

[10] The Nation Thailand , "Asean committed to its goal of Universal Healthcare Coverage," 28 Dec 2019. [Online]. Available: https://www.nationthailand.com/news/30379947?utm_source=category&utm_medium=internal_referral. [Accessed 25 Feb 2020].

[11] The World Bank, "UHC service coverage index," 2019. [Online]. Available: https://data.worldbank.org/indicator/SH.UHC.SRVS.CV.XD. [Accessed 7 February 2020].

[12] WHO, "Index of Service Courage," 2019. [Online]. Available: http://apps.who.int/gho/data/view.main.INDEXOFESSENTIALSERVICECOVERAGEv?lang=en. [Accessed 7 February 2020].

[13] Simmerman JM, Uyeki TM, "The burden of influenza in East and South-East Asia: a review of the English language literature. Influenza Other Respir Viruses," 2008. [Online]. [Accessed 7 Feb 2020].

[14] MOH, Singapore, "VARIOUS CONSIDERATIONS FOR VACCINES IN NATIONAL SCHEDULE," 3 Aug 2019. [Online]. Available: https://www.moh.gov.sg/news-highlights/details/various-considerations-for-vaccines-in-national-schedule. [Accessed 7 Feb 2020].

[15] World Health Organization, "The Republic of Indonesia Health System Review," 2017. [Online]. Available: https://apps.who.int/iris/bitstream/handle/10665/254716/9789290225164-eng.pdf. [Accessed 7 February 2020].

[16] PhillHealth, "Benefits," 2014. [Online]. Available: https://www.philhealth.gov.ph/benefits/. [Accessed 7 February 2020].

[17] World Health Organization, "Development of a sweetened beverage tax, Philippines," 1 December 2018. [Online]. Available: https://www.who.int/bulletin/volumes/97/2/18-220459/en/. [Accessed 7 February 2020].

[18] The Straits Times, "Sugar tax could help more Filipinos live longer," 7 December 2018. [Online]. Available: https://www.straitstimes.com/asia/sugar-tax-could-help-more-filipinos-live-longer. [Accessed 7 February 2020].

[19] Ministry of Health, Singapore, "FY2018 Health Budget," 2018. [Online]. Available: https://www.singaporebudget.gov.sg/docs/default-source/budget_2019/download/pdf/35-MOH-2019.pdf. [Accessed 7 Feb 2020].

[20] Springer Nature, "Modeling the Choice Between Risperidone Long-Acting Injectable and Generic Risperidone from the Perspective of a Japanese Hospital," 10 August 2019. [Online]. Available: https://link.springer.com/article/10.1007/s40120-019-0147-y#citeas. [Accessed 7 February 2020].

[21] The World Bank, "Philippines Health Financing Strengthening," 14 Feb 2018. [Online]. Available: http://documents.worldbank.org/curated/en/971061518599247499/pdf/Project-Information-Document-PID-Philippines-Health-Financing-Strengthening-P164949.pdf. [Accessed 7 Feb 2020].

[22] The World Bank , "THE FUTURE OF HEALTH FINANCING IN VIETNAM:: Ensuring Sufficiency, Efficiency, and Sustainability," [Online]. Available: http://documents.worldbank.org/curated/en/222831563548465796/pdf/The-Future-of-Health-Financing-in-Vietnam-Ensuring-Sufficiency-Efficiency-and-Sustainability.pdf. [Accessed 7 Feb 2020].

[23] Health Policy Plus, "Is Indonesia's National Health Insurance Associated with Greater Hospital Efficiency?," Aug 2018. [Online]. Available: http://www.healthpolicyplus.com/ns/pubs/8224-10450_JKNEfficiencyNatHealthInsurance.pdf. [Accessed 7 Feb 2020].

[24] Hukum Online Pro , "Govt. Updates Provisions on Hospital Classifications and Licensing," 2020. [Online]. [Accessed 7 Feb 2020].

[25] Malay Mail, "Amid debate over regulating price of medicine in Malaysia, cost of HIV drugs hits record low," 15 July 2019. [Online]. Available: https://sg.news.yahoo.com/amid-debate-over-regulating-price-230344272.html. [Accessed 7 February 2020].

[26] Statista Research Department, "Pharmaceutical revenue as percent of health expenditure by Asian country 2014," 5 August 2019. [Online]. Available: https://www.statista.com/statistics/417980/pharmaceutical-sales-as-percent-of-health-expenditure-in-asia-by-major-country/. [Accessed 7 February 2020].

[27] Thomas A. Abbott, John A. Vernon, "The Cost of US Pharmaceutical Price Reductions: A Financial Simulation Model of R&D Decisions," 2005. [Online]. Available: https://www.nber.org/papers/w11114. [Accessed 7 February 2020].

[28] KPMG , "The pharmaceutical industry: improving Australian lives through innovative medicines," May 2019. [Online]. [Accessed 7 Feb 2020].

[29] Forbes, "Asia's Healthcare Workforce Is Facing A Shortage. What Will That Mean For Its Aging Populations?," 30 Jan 2018. [Online]. Available: https://www.forbes.com/sites/chentim/2018/01/30/asias-healthcare-workforce-is-facing-a-shortage-what-will-that-mean-for-its-aging-populations/#24b0afd95dfc. [Accessed 7 Feb 2020].

[30] Channel News Asia , "Malaysian health sector in desperate need of manpower boost," 26 Nov 2019. [Online]. Available: https://www.channelnewsasia.com/news/asia/malaysian-health-sector-doctors-overworked-12114348. [Accessed 7 Feb 2020].

[31] The World Bank , "Tax revenue (% of GDP)," 2018. [Online]. Available: https://data.worldbank.org/indicator/GC.TAX.TOTL.GD.ZS. [Accessed 7 Feb 2020].

[32] International Labour Organization, "4.5 Informal economy workers," NA. [Online]. Available: https://www.ilo.org/global/topics/wages/minimum-wages/beneficiaries/WCMS_436492/lang--en/index.htm. [Accessed 7 February 2020].

[33] ASEAN Secretariat News, "ASEAN, ILO host employment analysis course," 25 January 2019. [Online]. Available: https://asean.org/asean-ilo-host-employment-analysis-course/. [Accessed 7 February 2020].

[34] Abdul Latif Jameel Poverty Action Lab, "Enrolling Informal Sector Workers in National Health Insurance in Indonesia," August 2019. [Online]. Available: https://www.povertyactionlab.org/evaluation/enrolling-informal-sector-workers-national-health-insurance-indonesia. [Accessed 7 February 2020].

[35] WHO, "Spending targets for health:," 2016. [Online]. Available: https://apps.who.int/iris/bitstream/handle/10665/250048/WHO-HIS-HGF-HFWorkingPaper-16.1-eng.pdf?sequence=1. [Accessed 7 Feb 2020].

[36] The Philippine Star, "Expanded health care lacks P95 B in 2020 — DOH," 16 October 2019. [Online]. Available: https://www.philstar.com/headlines/2019/10/16/1960585/expanded-health-care-lacks-p95-b-2020-doh. [Accessed 7 February 2020].

[37] BMC Health Services Research, "Evaluating the impact of the national health insurance scheme of Ghana on out of pocket expenditures: a systematic review," 2018. [Online]. Available: https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-018-3249-9. [Accessed 7 February 2020].

[38] The World Bank, Philippines Health Financing Strengthening, "Project Information Document/Identification/Concept Stage (PID)," 21 December 2017. [Online]. Available: http://documents.worldbank.org/curated/en/150911513884099722/pdf/Project-Information-Document-PID-Philippines-Health-Financing-Strengthening-P164949.pdf. [Accessed 7 February 2020].

[39] National Center for Biotechnology Information, "Financial protection from health spending in the Philippines: policies and progress.," 11 April 2016. [Online]. Available: https://www.ncbi.nlm.nih.gov/pubmed/27072948. [Accessed 7 February 2020].

[40] Gavi, "Transitioning out of Gavi support," 2020. [Online]. Available: https://www.gavi.org/types-support/sustainability/transition. [Accessed 7 February 2020].

[41] Semantic Scholar, "3. Pooling Health Funds and Risks," 2012. [Online]. Available:

https://pdfs.semanticscholar.org/ee08/b60cf824fba9e4cb2733b0abaaa26fb52012.pdf. [Accessed 7 February 2020].

[42] WHO, "Universal health coverage and primary care, Thailand," 7 Feb 2019. [Online]. Available: https://www.who.int/bulletin/volumes/97/6/18-223693/en/. [Accessed 7 Feb 2020].

[43] Health Policy Plus, "Financial Sustainability of Indonesia's Jaminan Kesehatan Nasional," May 2019. [Online]. Available: http://www.healthpolicyplus.com/ns/pubs/11317-11576_JKNFinancialSustainability.pdf. [Accessed 7 February 2020].

[44] David E. Bloom, Michael Kuhn, Klaus Prettner, "Health and Economic Growth," November 2018. [Online]. Available: http://ftp.iza.org/dp11939.pdf. [Accessed 7 February 2020].

[45] KPMG, "Ayushman Bharat - A big leap towards Universal Health Coverage in India," December 2019. [Online]. Available: https://assets.kpmg/content/dam/kpmg/in/pdf/2019/12/universal-health-coverage-ayushman-bharat.pdf. [Accessed 7 February 2020].

[46] World Economic Forum , "What can Africa learn from East Asia's boom?," 5 Jan 2015. [Online]. Available: https://www.weforum.org/agenda/2015/01/what-can-africa-learn-from-east-asias-boom/. [Accessed 7 February 2020].

[47] Today, "Singaporeans living longer but spending more time in ill health: Study," 21 June 2019. [Online]. Available: https://www.todayonline.com/singapore/singaporeans-living-longer-spending-greater-proportion-time-ill-health-study. [Accessed 7 February 2020].

[48] KPMG, "Golden opportunities from the graying population," [Online]. Available: https://assets.kpmg/content/dam/kpmg/pdf/2016/07/kr-gtl-golden-opportunities-from-the-graying-population.pdf. [Accessed 7 Feb 2020].

[49] Harvard University, "Harvard Ministerial Leadership Program," [Online]. Available: https://ministerialleadership.harvard.edu/the-program/. [Accessed 7 February 2020].

[50] The World Bank, "High-Performance Health-Financing for Universal Health Coverage: Driving Sustainable, Inclusive Growth in the 21st Century," 27 June 2019. [Online]. Available: https://www.worldbank.org/en/topic/universalhealthcoverage/publication/high-performance-health-financing-for-universal-health-coverage-driving-sustainable-inclusive-growth-in-the-21st-century. [Accessed 7 February 2020].

[51] Ministry of Finance Singapore, "Finance Minister Bios," [Online]. Available: https://www.mof.gov.sg/about-us/finance-minister-bios. [Accessed 7 February 2020].

[52] New Zealand Government, "The Wellbeing Budget," 30 May 2019. [Online]. Available: https://treasury.govt.nz/sites/default/files/2019-05/b19-wellbeing-budget.pdf. [Accessed 7 February 2020].

[53] National Center for Chronic Disease Prevention and Health Promotion , "The Power of Prevention," 2009. [Online]. Available: https://www.cdc.gov/chronicdisease/pdf/2009-Power-of-Prevention.pdf. [Accessed 7 Feb 2020].

[54] National Center for Biotechnology Information, "Health expenditures spent for prevention, economic performance, and social welfare," 21 September 2016. [Online]. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5031586/. [Accessed 7 February 2020].

[55] Vanessa Rémy, PharmD, MSc, York Zöllner, PharmD, MSc, PhD, and Ulrike Heckmann, "Vaccination: the cornerstone of an efficient healthcare system," [Online]. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4802703/. [Accessed 7 February 2020].

[56] Nikkei Asian Review, "Southeast Asia scrambles to contain measles outbreak," 8 May 2019. [Online]. Available: https://asia.nikkei.com/Economy/Southeast-Asia-scrambles-to-contain-measles-outbreak. [Accessed 7 February 2020].

[57] WHO, "Immunization," 5 Dec 2019. [Online]. Available: https://www.who.int/news-room/facts-in-pictures/detail/immunization. [Accessed 7 Feb 2020].

[58] National Center for Biotechnology Information, "Changing Priorities in Vaccinology: Antibiotic Resistance Moving to the Top," 30 May 2018. [Online]. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5992407/. [Accessed 7 February 2020].

[59] World Health Organization, "Estimated economic impact of vaccinations in 73 low- and middle-income countries, 2001–2020," 27 June 2017. [Online]. Available: https://www.who.int/bulletin/volumes/95/9/16-178475/en/. [Accessed 7 February 2020].

[60] Vaccines Today, "Value of Vaccines? Fighting Superbugs," 14 November 2018. [Online]. Available: https://www.vaccinestoday.eu/stories/value-of-vaccines-fighting-superbugs/. [Accessed 7 February 2020].

[61] WHO, "Global Influenza Strategy 2019-2030," 2019. [Online]. Available: https://www.who.int/influenza/Global_Influenza_Strategy_2019_2030_Summary_English.pdf?ua=1. [Accessed 7 Feb 2020].

[62] Soewarta Kosen, Endang Indriasih, Tita Rosita, Vivi Setiawaty, "Influenza disease burden and cost estimates in Indonesia," Aug 2019. [Online]. Available: https://www.researchgate.net/publication/336671944_Influenza_disease_burden_and_cost_estimates_in_Indonesia. [Accessed 7 Feb 2020].

[63] Annals of the Academy of Medicine, Singapore, "Influenza in Singapore: Assessing the burden of illness in the community," 2002. [Online]. Available: https://www.researchgate.net/publication/11408907_Influenza_in_Singapore_Assessing_the_burden_of_illness_in_the_community. [Accessed 7 Feb 2020].

[64] InfoMed Malaysia , "Health and Wealth of Nations," [Online]. [Accessed 7 Feb 2020].

[65] VoxEU, "Japan's age wave: Challenges and solutions," 3 December 2018. [Online]. Available: https://voxeu.org/article/japan-s-age-wave-challenges-and-solutions. [Accessed 7 February 2020].

[66] Australian Government Department of Social Services , "Immunisation and Health Check requirements for Family Tax Benefit," 2018. [Online]. Available: https://www.dss.gov.au/our-responsibilities/families-and-children/benefits-payments/strengthening-immunisation-for-young-children. [Accessed 7 Feb 2020].

[67] World Health Organization, "Preventing noncommunicable diseases," [Online]. Available: https://www.who.int/activities/preventing-noncommunicable-diseases. [Accessed 7 February 2020].

[68] The Straits Times , "Singapore 'has 2nd-highest proportion of diabetics"," 2 Dec 2015. [Online]. Available: https://www.straitstimes.com/singapore/health/singapore-has-2nd-highest-proportion-of-diabetics. [Accessed 7 February 2020].

[69] Singapore Management University, "Pay for social and impact bonds in Singapore," 2017. [Online]. Available: https://ink.library.smu.edu.sg/cgi/viewcontent.cgi?article=1154&context=lien_research. [Accessed 7 February 2020].

[70] The Straits Times, "The '3 Beyonds': Singapore's strategy to sustain quality healthcare as demand rises," 30 November 2017. [Online]. Available: https://www.straitstimes.com/singapore/health/the-3-beyonds-singapores-strategy-to-sustain-quality-healthcare-as-demand-rises. [Accessed 7 February 2020].

[71] World Health Organization, "Early cancer diagnosis saves lives, cuts treatment costs," 3 February 2017. [Online]. Available: https://www.who.int/news-room/detail/03-02-2017-early-cancer-diagnosis-saves-lives-cuts-treatment-costs. [Accessed 7 February 2020].

[72] World Health Organization, "Advancing the science and practice of primary health care as a foundation for universal health coverage: a call for papers," August 2019. [Online]. Available: https://www.who.int/bulletin/volumes/97/8/19-239889/en/. [Accessed 7 February 2020].

[73] OECD, "Israel: excellent primary health care, but hospitals must improve," 14 10 2012. [Online]. Available: https://www.oecd.org/health/israelexcellentprimaryhealthcarebuthospitalsmustimprove.htm. [Accessed 7 Feb 2020].

[74] The Straits Times, "Demand for elderly care facilities on the rise," 26 April 2017. [Online]. Available: https://www.straitstimes.com/business/companies-markets/demand-for-elderly-care-facilities-on-the-rise. [Accessed 7 February 2020].

[75] ChannelNewAsia, "340 GP clinics join primary care scheme, providing better care of chronic conditions," 15 January 2018. [Online]. Available: https://www.channelnewsasia.com/news/singapore/340-gp-clinics-join-primary-care-scheme-providing-better-care-of-9862626. [Accessed 7 February 2020].

[76] thejapantimes, "Tax break for OTC drugs seeks to get Jaanese managing their health, not swarming clinics," February 2017. [Online]. Available: https://www.japantimes.co.jp/news/2017/02/27/reference/tax-break-otc-drugs-seeks-get-japanese-managing-health-not-swarming-clinics/#.Xl3Ob6gzY2x [Accessed 7 February 2020].

[77] Consumer Healthcare Products Association, "New Study: Over-the-Counter (OTC) Products Used by Millions of Americans Saves Healthcare System Billions Annually," 18 March 2019. [Online]. Available: https://www.chpa.org/OTCValue2019.aspx. [Accessed 7 February 2020].

[78] National Center for Biotechnology Information, "Reasons for the preference of clinic visits to self-medication by common cold patients in Japan," December 2017. [Online]. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5729384/. [Accessed 7 February 2020].

[79] KPMG, "Social and Economic Impact Assessment of Innovative Pharmaceutical Industry in Vietnam," 2020. [Online]. [Accessed 7 Feb 2020].

[80] Proprietary Association of Great Britain, "Spotlight: Self Care - A Global Priority," 2 October 2019. [Online]. Available: https://www.pagb.co.uk/latest-news/spotlight-100-yrs-gsf/. [Accessed 7 February 2020].

[81] Public Library of Science, "Widening Consumer Access to Medicines through Switching Medicines to Non-Prescription: A Six Country Comparison," 24 September 2014. [Online]. Available: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0107726. [Accessed 7 February 2020].

[82] Thomson Reuters, "Distribution and marketing of drugs in Japan: overview," 1 September 2019. [Online]. Available: https://uk.practicallaw.thomsonreuters.com/5-618-3562?transitionType=Default&contextData=(sc.Default)&firstPage=true&bhcp=1. [Accessed 7 February 2020].

[83] Prudential , “pulse,” [Online]. Available: https://www.wedopulse.com/hk/en/personal-health-assistant.html. [Accessed 7 Feb 2020].

[84] World Health Organization, “WHO launches first World report on vision,” 8 October 2019. [Online]. Available: https://www.who.int/news-room/detail/08-10-2019-who-launches-first-world-report-on-vision. [Accessed 7 February 2020].

[85] Healio, “High-tech access to eye care in rural areas reduces cost and stress,” December 2008. [Online]. Available: https://www.healio.com/ophthalmology/cataract-surgery/news/print/ocular-surgery-news-india-edition/%7B3b78c957-2dd1-4f9c-adb5-29d57410615f%7D/high-tech-access-to-eye-care-in-rural-areas-reduces-cost-and-stress . [Accessed 7 February 2020].

[86] telenor group, “Tonic is the New Face of Digital Health Services for Telenor,” [Online]. Available: https://www.telenor.com/media/inside-telenor/2016/tonic-is-the-new-face-of-digital-health-services-for-telenor. [Accessed 7 Feb 2020].

[87] Diabetes In Control , ““My Dose Coach” App to Optimize Basal Insulin Dosing,” 6 May 2017. [Online]. Available: http://www.diabetesincontrol.com/my-dose-coach-app-to-optimize-basal-insulin-dosing/. [Accessed 7 Feb 2020].

[88] Tech in Asia, “How one Thai startup is tackling the mental illness stigma,” 23 December 2019. [Online]. Available: https://www.techinasia.com/thai-startup-tackling-mental-illness-stigma. [Accessed 7 February 2020].

[89] GenT, “Kanpassorn Suriyasangpetch,” 2018. [Online]. Available: https://generationt.asia/people/kanpassorn-suriyasangpetch. [Accessed 7 Feb 2020].

[90] World Health Organization, “Triple Impact: How developing nursing will improve health, promote gender equality and support economic growth.,” October 2016. [Online]. Available: https://www.who.int/hrh/com-heeg/digital-APPG_triple-impact.pdf. [Accessed 7 February 2020].

[91] WHO, “Nursing Now Campaign,” [Online]. Available: https://www.who.int/hrh/news/2018/nursing_now_campaign/en/. [Accessed 7 Feb 2020].

[92] Hospital Authority, “HA Nurse Clinics,” 16 May 2017. [Online]. Available: http://www3.ha.org.hk/haconvention/hac2017/proceedings/downloads/PS3.3.pdf. [Accessed 7 February 2020].

[93] International Pharmaceutical Federation , “An overview of current pharmacy impact on immunisation,” 2016. [Online]. Available: https://www.fip.org/www/streamfile.php?filename=fip/publications/FIP_report_on_Immunisation.pdf. [Accessed 7 Feb 2020].

[94] The Pharmacy Guild of Australia, “Frequently Asked Questions about medicine scheduling,” May 2016. [Online]. Available: https://www.guild.org.au/__data/assets/pdf_file/0024/5973/frequently-asked-questions-about-medicine-scheduling.pdf. [Accessed 7 Feb 2020].

[95] BMC Health Services Research, “Effects of mixed provider payment systems and aligned cost sharing practices on expenditure growth management, efficiency, and equity: a structured review of the literature,” 27 December 2018. [Online]. Available: https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-018-3779-1. [Accessed 7 February 2020].

[96] BMC Health Services Research, “Additional file 1: of Effects of mixed provider payment systems and aligned cost sharing practices on expenditure growth management, efficiency, and equity: a structured review of the literature,” 27 December 2018. [Online]. Available: https://figshare.com/articles/Additional_file_1_of_Effects_of_mixed_provider_payment_systems_and_aligned_cost_sharing_practices_on_expenditure_growth_management_efficiency_and_equity_a_structured_review_of_the_literature/7523786/1. [Accessed 7 February 2020].

[97] National Center for Biotechnology Information, “Will Bundled Payments Change Health Care? Examining the Evidence Thus Far in Cardiovascular Care,” 16 June 2015. [Online]. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4471872/pdf/nihms643998.pdf. [Accessed 7 February 2020].

[98] Institute of Health Economics, “Gainsharing and shared savings strategies in the healthcare setting: Evidence for effectiveness,” 18 November 2016. [Online]. Available: https://www.ihe.ca/advanced-search/gainsharing-and-shared-savings-strategies-in-the-healthcare-setting-evidence-for-effectiveness. [Accessed 7 February 2020].

[99] Ministry of Health Singapore, “MEDISHIELD LIFE COVERAGE,” 15 Jan 2019. [Online]. Available: https://www.moh.gov.sg/news-highlights/details/medishield-life-coverage. [Accessed 7 Feb 2020].

[100] WHO, “2015 Global Survey on Health Technology Assessment by National Authorities,” 2015. [Online]. Available: https://www.who.int/health-technology-assessment/MD_HTA_oct2015_final_web2.pdf?ua=1. [Accessed 7 Feb 2020].

[101] World Health Organization, “Cost–effectiveness thresholds: pros and cons,” 19 September 2016. [Online]. Available: https://www.who.int/bulletin/volumes/94/12/15-164418/en/. [Accessed 7 February 2020].

[102] WHO, “Health Technology Assessment Country profile,” 2015. [Online]. Available: https://www.who.int/health-technology-assessment/country-profile/en/. [Accessed 7 Feb 2020].

[103] Dr. Trung Quang Vo, “Health Technology Assessment in Developing Countries: A Brief Introduction for Vietnamese Health-care Policymakers,” August 2018. [Online]. Available: https://www.researchgate.net/publication/326736531_Health_Technology_Assessment_in_Developing_Countries_A_Brief_Introduction_for_Vietnamese_Health-care_Policymakers. [Accessed 7 February 2020].

[104] World Health Organization, “Health Technology Assessment Country profile: Philippines,” [Online]. Available: https://www.who.int/health-technology-assessment/country-profile/htaph.pdf?ua=1. [Accessed 7 February 2020].

[105] OECD iLibrary, “A forward-looking assessment of social protection needs,” 2018. [Online]. Available: https://www.oecd-ilibrary.org/sites/3860c253-en/index.html?itemId=/content/component/3860c253-en. [Accessed 7 February 2020].

[106] TheJakartaPost, “Q&A: BPJS Kesehatan, health for all Indonesians,” 7 Apr 2018. [Online]. Available: https://www.thejakartapost.com/academia/2018/04/06/qa-bpjs-kesehatan-health-for-all-indonesians.html. [Accessed 7 Feb 2020].

[107] WHO, “UHC Act in the Philippines: a new dawn for health care,” 14 Mar 2019. [Online]. Available: https://www.who.int/philippines/news/feature-stories/detail/uhc-act-in-the-philippines-a-new-dawn-for-health-care. [Accessed 7 Feb 2020].

[108] National Center for Biotechnology Information, “The role of national health insurance for achieving UHC in the Philippines: a mixed methods analysis,” 19 June 2018. [Online]. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6008596/. [Accessed 7 February 2020].

[109] The World Bank, “Universal Health Coverage and the Challenge of Informal Employment: Lessons from Developing Countries,” January 2014. [Online]. Available: http://documents.worldbank.org/curated/en/698041468180275003/pdf/870770REVISED00mal0Employment0FINAL.pdf. [Accessed 7 February 2020].

[110] EU-ASEAN Business Council , “Inclusive Insurance Ecosystem: Long-term Investment, Digital Innovation and Health Management,” 2020. [Online].

[111] EU-ASEAN Business Council, “Advancing Insurance: Digital Growth and Sustainable Investment,” 2019.

[112] KPMG, “What Works - The Triple Win, Rethinking public private partnerships for universal healthcare,” [Online]. Available: https://assets.kpmg/content/dam/kpmg/xx/pdf/2017/08/what-works-the-triple-win.pdf. [Accessed 7 Feb 2020].

[113] KPMG, “What Works: The triple win - Rethinking public private partnerships for universal healthcare,” January 2018. [Online]. Available: https://assets.kpmg/content/dam/kpmg/xx/pdf/2017/08/what-works-the-triple-win.pdf. [Accessed 7 February 2020].

[114] TheStar, “Medical partnership to help all,” 11 Feb 2019. [Online]. Available: https://www.thestar.com.my/news/nation/2019/02/11/medical-partnership-to-help-all-tieup-between-public-private-healthcare-sectors-must-be-well-thought. [Accessed 7 Feb 2020].

[115] Social Finance, “World’s 1st Social Impact Bond shown to cut reoffending and to make impact investors a return,” 27 July 2017. [Online]. Available: https://www.socialfinance.org.uk/sites/default/files/news/final-press-release-pb-july-2017.pdf. [Accessed 7 February 2020].

[116] Social Finance, “Impact Bond Global Database,” [Online]. Available: https://sibdatabase.socialfinance.org.uk/. [Accessed 7 February 2020].

[117] World Economic Forum , “7 ways the private sector can contribute to universal health coverage,” 7 Sep 2019. [Online]. Available: https://www.weforum.org/agenda/2019/09/7-ways-the-private-sector-can-contribute-to-universal-health-coverage/. [Accessed 7 Feb 2020].

[118] Central Provident Fund Board , “MediSave,” [Online]. Available: https://www.cpf.gov.sg/Members/Schemes/schemes/healthcare/medisave. [Accessed 7 Feb 2020].

[119] CBINSIGHTS, “9 Ways The WeChat Super App Is Becoming The Front Door To Chinese Healthcare,” 19 Feb 2020. [Online]. Available: https://www.cbinsights.com/research/wechat-digital-health-china/. [Accessed 7 Feb 2020].

[120] KPMG, “R&D 2030 - Reinvent innovation and become an R&D front-runner by 2030,” 2018. [Online]. Available: https://assets.kpmg/content/dam/kpmg/xx/pdf/2018/11/r-and-d-2030-thriving-on-disruption-series.pdf. [Accessed 7 Feb 2020].

[121] Ministry of Health, Singapore, “RARE DISEASE FUND TO PROVIDE FINANCIAL SUPPORT TO SINGAPOREANS WITH RARE DISEASES,” [Online]. Available: https://www.moh.gov.sg/news-highlights/details/rare-disease-fund-to-provide-financial-support-to-singaporeans-with-rare-diseases. [Accessed 7 Feb 2020].

[122] Taiwan Today, “Aging in Place,” 1 March 2017. [Online]. Available: https://taiwantoday.tw/news.php?post=111820&unit=12,33. [Accessed 7 February 2020].

[123] Japan Health Policy NOW, “Long-term Care Insurance,” 2015. [Online]. Available: http://japanhpn.org/en/longtermcare/. [Accessed 7 February 2020].

[124] Central Provident Fund Board, “ElderShield,” [Online]. Available: https://www.cpf.gov.sg/members/FAQ/schemes/healthcare/eldershield/FAQDetails?category=healthcare&group=ElderShield&ajfaqid=3964333&folderid=19004. [Accessed 7 Feb 2020].

[125] ACCESS Health International, “Report on roundtables in Singapore: Innovative funding models for cancer treatment in Asia,” November 2018. [Online]. Available: https://healthfutures.sg/wp-content/uploads/2019/11/roundtable-report-innovative-funding-models-for-cancer-treatment-final-2018.pdf. [Accessed 7 February 2020].

[126] WHO, “POPULATION FACT SHEETS,” [Online]. Available: http://gco.iarc.fr/today/fact-sheets-populations. [Accessed 7 Feb 2020].

[127] Andrew J. Cowan, MD, Christine Allen, BA, [...], and Christina Fitzmaurice, MD, MPH, “Global Burden of Multiple Myeloma,” 2018. [Online]. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6143021/. [Accessed 7 Feb 2020].

[128] Mayo Foundation for Medical Education and Research, “Multiple myeloma,” 12 June 2019. [Online]. Available: https://www.mayoclinic.org/diseases-conditions/multiple-myeloma/symptoms-causes/syc-20353378. [Accessed 7 February 2020].

[129] CancerTherapyAdvisor, “Global Burden of Myeloma Increasing, Access to Treatments Lacking,” 21 June 2018. [Online]. Available: https://www.cancertherapyadvisor.com/home/cancer-topics/multiple-myeloma/global-burden-of-myeloma-increasing-access-to-treatments-lacking/. [Accessed 7 February 2020].

[130] KPMG, “Cell Therapy in the Asia Pacific — Solution to the Cancer Challenge?,” 2019. [Online]. Available: https://assets.kpmg/content/dam/kpmg/sg/pdf/2019/07/cell-therapy-in-the-asia-pacific.pdf. [Accessed 7 February 2020].

[131] Phamaceutical Technology , “The UK’s Cancer Drugs Fund: a model for access and reimbursement?,” 30 Oct 2019. [Online]. Available: https://www.pharmaceutical-technology.com/features/cancer-drugs-fund-nhs-reimbursement/. [Accessed 7 Feb 2020].

[132] NHS, “Cancer Drugs Fund,” [Online]. Available: https://www.england.nhs.uk/cancer/cdf/. [Accessed 7 Feb 2020].

[133] NHS, “NHS England strikes deal for ground breaking cancer treatment in a new European first,” 5 Oct 2018. [Online]. Available: https://www.england.nhs.uk/2018/10/nhs-england-strikes-deal-for-ground-breaking-cancer-treatment-in-a-new-european-first/. [Accessed 7 Feb 2020].

[134] IHME, “Measuring what matters,” 2017. [Online]. Available: http://www.healthdata.org/indonesia. [Accessed 7 Feb 2020].

[135] International Diabetes Federation , “Indonesia Country report 2010 - 2045,” 2019. [Online]. Available: https://www.diabetesatlas.org/data/en/country/94/id.html. [Accessed 7 Feb 2020].

[136] South China Morning Post, “Measles cases spike in Indonesia, Malaysia and Philippines as anti-vaxxers take to social media,” 29 Mar 2019. [Online]. Available: https://www.scmp.com/week-asia/health-environment/article/3003734/measles-vaccine-preventable-diseases-rise-southeast. [Accessed 7 Feb 2020].

[137] The Guardian , “Indonesia's universal health scheme: one year on, what's the verdict?,” 2015. [Online]. Available: https://www.theguardian.com/global-development-professionals-network/2015/may/15/indonesias-universal-healthcare-insurance-verdict. [Accessed 7 Feb 2020].

[138] The Jakarta Post, “Taking JKN for granted,” 9 Jan 2019. [Online]. Available: https://www.thejakartapost.com/academia/2019/01/09/taking-jkn-for-granted.html. [Accessed 7 Feb 2020].

[139] Asia Pacific Observatory on Health Systems and Policies , “The Republic of Indonesia Health System Review,” 2017. [Online]. Available: https://apps.who.int/iris/bitstream/handle/10665/254716/9789290225164-eng.pdf. [Accessed 7 Feb 2020].

[140] World Health Organization, “WHO vaccine-preventable diseases: monitoring system 2019 global summary,” 10 December 2019. [Online]. Available: http://apps.who.int/immunization_monitoring/globalsummary/timeseries/tscoveragedtp3.html. [Accessed 7 February 2020].

[141] South China Morning Post , “‘Non-halal’ measles-rubella vaccine hits resistance in Muslim Indonesia,” 1 Sep 2018. [Online]. Available: https://www.scmp.com/week-asia/society/article/2162079/non-halal-measles-rubella-vaccine-hits-resistance-muslim-indonesia. [Accessed 7 Feb 2020].

[142] Science, “Indonesian ‘vaccine fatwa’ sends measles immunization rates plummeting,” 7 Nov 2018. [Online]. Available: https://www.sciencemag.org/news/2018/11/indonesian-vaccine-fatwa-sends-measles-immunization-rates-plummeting. [Accessed 7 Feb 2020].

[143] Immunization Financing , “Indonesia: The Challenge of Protecting Immunization in the Transition to Universal Health Coverage,” [Online]. Available: https://www.immunizationfinancing.org/en/country-case-studies/indonesia-the-challenge-of-protecting-immunization-in-the-transition-to-universal-health-coverage#!. [Accessed 7 Feb 2020].

[144] Gavi , “Indonesian Government to immunise 70 million children against measles and rubella,” [Online]. Available: https://www.gavi.org/news/media-room/indonesian-government-immunise-70-million-children-against-measles-and-rubella. [Accessed 7 Feb 2020].

[145] DBS, “Indonesia Healthcare: New regulation to improve JKN’s deficit,” 10 February 2020. [Online]. [Accessed 28 Feb 2020].

[146] Center for Health Services and Technology Research National Institute of Health Research and Development Ministry of Health Indonesia, “The Prices People Have to Pay for Medicines in Indonesia,” 2005. [Online]. Available: http://apps.who.int/medicinedocs/documents/s18013en/s18013en.pdf. [Accessed 7 Feb 2020].

[147] Ministry of Health Republic of Indonesia, “Health Technology Assessment (HTA) Guideline,” 2017. [Online]. Available: http://www.gear4health.com/uploads/files/file-15-5a441f38c8992.pdf. [Accessed 7 Feb 2020].

[148] iDSI, “iDSI,” [Online]. Available: https://idsihealth.org/our-impact/indonesia/. [Accessed 7 Feb 2020].

[149] WHO, “Indonesia: Lower Middle Income Country,” [Online]. Available: https://www.who.int/health-technology-assessment/country-profile/htaid.pdf?ua=1. [Accessed 7 Feb 2020].

[150] NIKKEI Asian Review, “Indonesia struggles to pay for huge universal health care program,” 14 Aug 2019. [Online]. Available: https://asia.nikkei.com/Economy/Indonesia-struggles-to-pay-for-huge-universal-health-care-program. [Accessed 10 Feb 2020].

[151] Indonesia-Investments, “Unemployment in Indonesia,” [Online]. Available: https://www.indonesia-investments.com/finance/macroeconomic-indicators/unemployment/item255. [Accessed 7 Feb 2020].

[152] Shreeshant Prabhakaran, Arin Dutta, Thomas Fagan, and Megan Ginivan, “Financial Sustainability of Indonesia's Jaminan Kesehatan Nasional (Performance, prospects, and policy options),” May 2019. [Online]. Available: http://www.healthpolicyplus.com/ns/pubs/11317-11576_JKNFinancialSustainability.pdf. [Accessed 7 Feb 2020].

[153] Channel News Asia, “Hike in premiums for Indonesia's public health insurance a worry for the poor, but experts say this is necessary,” 12 Nov 2019. [Online]. Available: https://www.channelnewsasia.com/news/asia/indonesia-public-healthcare-insurance-jkn-premium-hike-12074902. [Accessed 7 Feb 2020].

[154] ACCESS health international , “Innovative funding models for cancer treatment in Asia, A landscape study of funding trends and innovations,” July 2018. [Online]. Available: https://accessh.org/wp-content/uploads/2018/07/innovative-fundraising-models-report.pdf. [Accessed 7 Feb 2020].

[155] IHME, “Measuring what matters - Malaysia,” 2017. [Online]. Available: http://www.healthdata.org/malaysia. [Accessed 7 Feb 2020].

[156] TheStar , “Heart attack leading cause of death,” 31 Oct 2019. [Online]. Available: https://www.thestar.com.my/news/nation/2019/10/31/heart-attack-leading-cause-of-death. [Accessed 7 Feb 2020].

[157] New Straits Times, “Winning the fight against pneumonia,” 12 Nov 2019. [Online]. Available: https://www.nst.com.my/lifestyle/heal/2019/11/537836/winning-fight-against-pneumonia. [Accessed 7 Feb 2020].

[158] Channel News Asia, “Concerned parents in Malaysia on hunt for influenza vaccine as stocks run low,” 16 January 2020. [Online]. Available: https://www.channelnewsasia.com/news/asia/malaysia-influenza-outbreak-vaccine-low-stocks-parents-concerned-12267062. [Accessed 7 February 2020].

[159] WHO, “The Malaysian Health Care System: A Review,” July 2014. [Online]. Available: https://www.researchgate.net/publication/237409933_The_Malaysian_Health_Care_System_A_Review. [Accessed 7 Feb 2020].

[160] New Straits Times, “Health Ministry: Moving towards promotive, preventive health services,” 27 Aug 2019. [Online]. Available: https://www.nst.com.my/news/nation/2019/08/516553/health-ministry-moving-towards-promotive-preventive-health-services. [Accessed 7 Feb 2020].

[161] World Health Organization, Organization for Economic Co-operation and Development, 2019. [Online]. Available: https://www.oecd.org/health/health-systems/OECD-WHO-Price-Setting-Summary-Report.pdf. [Accessed 7 February 2020].

[162] malaymail , “Cabinet approves drug price controls,” 2 May 2019. [Online]. Available: https://www.malaymail.com/news/malaysia/2019/05/02/cabinet-approves-drug-price-controls/1748959. [Accessed 7 Feb 2020].

[163] FMT news, “Thumbs up for new medicine procurement policy for hospitals,” 12 Oct 2019. [Online]. Available: https://www.freemalaysiatoday.com/category/nation/2019/10/12/thumbs-up-for-new-medicine-procurement-policy-for-hospitals/. [Accessed 7 Feb 2020].

[164] INAHTA, “MaHTAS – Health Technology Assessment Section, Ministry of Health Malaysia,” [Online]. Available: http://www.inahta.org/members/mahtas/. [Accessed 7 Feb 2020].

[165] SAGE journals, “Quality use of medicine in a developing economy: Measures to overcome challenges in the Malaysian healthcare system,” 22 July 2015. [Online]. Available:

https://journals.sagepub.com/doi/full/10.1177/20503121155596864. [Accessed 7 Feb 2020].

[166] The World Bank, "Tax revenue (% of GDP)," [Online]. Available: https://data.worldbank.org/indicator/GC.TAX.TOTL.GD.ZS. [Accessed 7 February 2020].

[167] WHO, "Philippines embraces efforts to step up cardiovascular disease care," 28 Sep 2017. [Online]. Available: https://www.who.int/news-room/feature-stories/detail/philippines-embraces-efforts-to-step-up-cardiovascular-disease-care. [Accessed 7 Feb 2020].

[168] Manila Times, "The truth about heart diseases, stroke," 12 Jan 2019. [Online]. Available: https://www.manilatimes.net/2019/01/12/business/health-industry/the-truth-about-heart-diseases-stroke/495379/. [Accessed 7 Feb 2020].

[169] DW, "Philippines struggling to cope with back-to-back disease outbreaks," [Online]. Available: https://www.dw.com/en/philippines-struggling-to-cope-with-back-to-back-disease-outbreaks/a-51084152. [Accessed 7 Feb 2020].

[170] Philhealth , "Agency's Mandate And Functions," [Online]. Available: https://www.philhealth.gov.ph/about_us/mandate.html. [Accessed 7 Feb 2020].

[171] Healthcare IT News, "Universal healthcare act in the Philippines signed into law by President Duterte," 26 Feb 2019. [Online]. Available: https://www.healthcareitnews.com/news/universal-healthcare-act-philippines-signed-law-president-duterte. [Accessed 7 Feb 2020].

[172] PhilHealth , "PhilHealth sets new contribution schedule; assures immediate eligibility to benefits," 2 Dec 2019. [Online]. Available: https://www.philhealth.gov.ph/news/2019/new_contri.php. [Accessed 7 Feb 2020].

[173] Philhealth , "PhilHealth shows stronger performance in 2018; gears up for Universal Health Care," 16 Jan 2019. [Online]. Available: https://www.philhealth.gov.ph/news/2019/gears_up.php. [Accessed 7 Feb 2020].

[174] WHO, "Development of a sweetened beverage tax, Philippines," 1 Dec 2018. [Online]. Available: https://www.who.int/bulletin/volumes/97/2/18-220459/en/. [Accessed 7 Feb 2020].

[175] Reuters, "Philippine taxes on sugary drinks could avert thousands of deaths, WHO study says," 5 Dec 2018. [Online]. Available: https://www.reuters.com/article/us-philippines-health/philippine-taxes-on-sugary-drinks-could-avert-thousands-of-deaths-who-study-says-idUSKBN1O41NP. [Accessed 7 Feb 2020].

[176] Republic of the Philippines , "DOH IDENTIFIES VACCINE HESITANCY AS ONE OF THE REASONS FOR MEASLES OUTBREAK," [Online]. Available: https://www.doh.gov.ph/node/16721. [Accessed 7 Feb 2020].

[177] NPR, "The Philippines Is Fighting One Of The World's Worst Measles Outbreaks," 23 May 2019. [Online]. Available: https://www.npr.org/sections/goatsandsoda/2019/05/23/725726094/the-philippines-is-fighting-one-of-the-worlds-worst-measles-outbreaks. [Accessed 7 Feb 2020].

[178] The World Bank , "Philippines Health Financing Strengthening," 21 Dec 2017. [Online]. Available: http://documents.worldbank.org/curated/en/150911513884099722/pdf/Project-Information-Document-PID-Philippines-Health-Financing-Strengthening-P164949.pdf. [Accessed 7 Feb 2020].

[179] philstar, "Duque insists on inclusion of 122 meds under MDRP," 15 Dec 2019. [Online]. Available: https://www.philstar.com/headlines/2019/12/15/1977072/duque-insists-inclusion-122-meds-under-mdrp. [Accessed 7 Feb 2020].

[180] KPMG, "Philippines pharma: All set for continuous growth," 11 Feb 2019. [Online]. Available: https://home.kpmg/ph/en/home/insights/2019/02/philippines-pharma-all-set-for-continuous-growth.html. [Accessed 10 Feb 2020].

[181] ABS-CBN, "What you need to know about the new price cap on medicines," 18 Feb 2020. [Online]. Available: https://news.abs-cbn.com/news/02/18/20/what-you-need-to-know-about-the-new-price-cap-on-medicines. [Accessed 24 Feb 2020].

[182] WHO, "Philippines - Lower middle income country," 2015. [Online]. Available: https://www.who.int/health-technology-assessment/country-profile/htaph.pdf?ua=1. [Accessed 7 Feb 2020].

[183] Konrad Obermann, Matthew Jowett, and Soonman Kwon, "The role of national health insurance for achieving UHC in the Philippines: a mixed methods analysis," 2018. [Online]. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6008596/. [Accessed 7 Feb 2020].

[184] philstar Global , "Expanded health care lacks P95 B in 2020 — DOH," 16 Oct 2019. [Online]. Available: https://www.philstar.com/headlines/2019/10/16/1960585/expanded-health-care-lacks-p95-b-2020-doh. [Accessed 7 Feb 2020].

[185] Health Hub , "Principal Causes of Death," [Online]. Available: https://www.healthhub.sg/a-z/health-statistics/4/principal-causes-of-death. [Accessed 7 Feb 2020].

[186] MOH, "Overview of Diseases Updates," [Online]. Available: https://www.moh.gov.sg/docs/librariesprovider5/diseases-updates/overview2017d7b7ffa561474b9baeb09f3fc8e655a3.pdf. [Accessed 7 Feb 2020].

[187] Ministry of Health , "Affordable Health Care," 1993. [Online]. Available: https://www.moh.gov.sg/docs/librariesprovider5/resources-statistics/information-papers/affordable_health_care.pdf. [Accessed 7 Feb 2020].

[188] Central Provident Fund Board, "MediShield Life," [Online]. Available: https://www.cpf.gov.sg/Members/Schemes/schemes/healthcare/medishield-life. [Accessed 7 Feb 2020].

[189] Ministry of Health Singapore, "Medifund," [Online]. Available: https://www.moh.gov.sg/cost-financing/healthcare-schemes-subsidies/medifund. [Accessed 7 Feb 2020].

[190] The Straits Times , "More than 365,000 people will benefit from revised healthcare subsidies like Chas by October," 27 July 2019. [Online]. Available: https://www.straitstimes.com/singapore/health/revised-healthcare-subsidy-criteria-will-benefit-more-than-365000-people-from. [Accessed 7 Feb 2020].

[191] Ministry of Health Singapore, "COMMUNITY HEALTH ASSIST SCHEME," [Online]. Available: https://www.moh.gov.sg/cost-financing/healthcare-schemes-subsidies/community-health-assist-scheme. [Accessed 7 Feb 2020].

[192] Singapore Management University , "Pay for social and impact bonds in Singapore," 2017 . [Online]. Available: https://ink.library.smu.edu.sg/cgi/viewcontent.cgi?article=1154&context=lien_research. [Accessed 7 Feb 2020].

[193] Ministry of Health, Singapore , "War on Diabetes," [Online]. Available: https://www.moh.gov.sg/wodcj. [Accessed 7 Feb 2020].

[194] Health Promotion Board , "Healthier Dining Programme," [Online]. Available: https://www.hpb.gov.sg/healthy-living/food-beverage/healthier-dining-programme. [Accessed 7 Feb 2020].

[195] Ministry of Health, Singapore, "Childhood Immunisation," [Online]. Available: https://www.moh.gov.sg/docs/librariesprovider5/resources-statistics/reports/childhood-immunisation.pdf. [Accessed 7 Feb 2020].

[196] Channel News Asia , "All childhood vaccinations to be subsidised at polyclinics and CHAS GPs by end of 2020," 28 Aug 2019. [Online]. Available: https://www.channelnewsasia.com/news/singapore/childhood-vaccinations-subsidies-polyclinics-chas-gp-moh-11848774. [Accessed 7 Feb 2020].

[197] TODAY, "Why is Singapore's adult vaccination rate so low?," 18 Aug 2019. [Online]. Available: https://www.todayonline.com/commentary/why-singapores-adult-vaccination-rate-so-low. [Accessed 7 Feb 2020].

[198] Ministry of Health, Singapore, "MOH ESTABLISHES NATIONAL ADULT IMMUNISATION SCHEDULE; EXTENDS USE OF MEDISAVE FOR VACCINES UNDER THE SCHEDULE," 21 Oct 2017. [Online]. Available: https://www.moh.gov.sg/news-highlights/details/moh-establishes-national-adult-immunisation-schedule-extends-use-of-medisave-for-vaccines-under-the-schedule. [Accessed 7 Feb 2020].

[199] William A. Haseltine , "Affordable Excellence, The Singapore Healthcare Story," [Online]. Available: https://accessh.org/wp-content/uploads/2014/08/Affordable-Excellence-the-Singapore-Healthcare-Story.pdf. [Accessed 7 Feb 2020].

[200] National Healthcare Group, "About Us.," [Online]. Available: https://www.gpo.nhg.com.sg/. [Accessed 7 Feb 2020].

[201] Ministry of Health, Singapore, "Fee Benchmarks and Bill Amount Information," [Online]. Available: https://www.moh.gov.sg/cost-financing/fee-benchmarks-and-bill-amount-information. [Accessed 7 Feb 2020].

[202] ACE, Agency for care effectiveness , "Driving Better Decision-Making," [Online]. Available: http://www.ace-hta.gov.sg/index.html. [Accessed 7 Feb 2020].

[203] Fiona Pearce, MPH, Liang Lin, MSc(IHTA), Elaine Teo, MSc, Kwong Ng, MClinPharm, MPH,, "HTA and Its Use in Drug Policies: Singapore," June 2018. [Online]. Available: https://www.researchgate.net/publication/325979148_HTA_and_Its_Use_in_Drug_Policies_Singapore. [Accessed 7 Feb 2020].

[204] IHME, "Measuring what matters - Thailand," 2017. [Online]. Available: http://www.healthdata.org/thailand. [Accessed 7 Feb 2020].

[205] The Straits Times , "Smoking at home to soon become a punishable offence in Thailand," 24 June 2019. [Online]. Available: https://www.straitstimes.com/asia/se-asia/smoking-at-home-to-soon-become-a-punishable-offence-in-thailand. [Accessed 7 Feb 2020].

[206] Bangkok Post , "Cancer in the Thailand workplace," 22 Oct 2019. [Online]. Available: https://www.bangkokpost.com/business/1777564/cancer-in-the-thailand-workplace. [Accessed 7 Feb 2020].

[207] The World Bank, "Thailand: Sustaining Health Protection for All," 20 Aug 2012. [Online]. Available: https://www.worldbank.org/en/news/feature/2012/08/20/thailand-sustaining-health-protection-for-all. [Accessed 7 Feb 2020].

[208] Centre for Global Development , "Thailand's Universal Coverage Scheme," [Online]. Available: http://millionssaved.cgdev.org/case-studies/thailands-universal-coverage-scheme. [Accessed 7 Feb 2020].

[209] Charung Muangchana, Pitanit Thamapornpilas, Opart Karnkawinpong, "Immunization policy development in Thailand: The role of the Advisory Committee on Immunization Practice," Aprl 2010. [Online]. Available: https://www.researchgate.net/publication/43298606_Immunization_policy_development_in_Thailand_The_role_of_the_Advisory_Committee_on_Immunization_Practice. [Accessed 7 Feb 2020].

[210] unicef, "Thailand - Statistics," 2015. [Online]. Available: https://www.unicef.org/infobycountry/Thailand_statistics.html. [Accessed 7 Feb 2020].

[211] Healthcare Asia, "Thailand's rising pharmaceutical price pressures hamper multinational drugmakers' opportunities," 30 Jan 2019. [Online]. Available: https://healthcareasiamagazine.com/healthcare/news/thailands-rising-pharmaceutical-price-pressures-hamper-multinational-drugmakers-oppo. [Accessed 7 Feb 2020].

[212] Bangkok Post , "Medical supplies, services, drugs now under price control," 9 Jan 2019. [Online]. Available: https://www.bangkokpost.com/thailand/general/1608246/medical-supplies-services-drugs-now-under-price-control. [Accessed 7 Feb 2020].

[213] Bnagkok Post , "Price controls 'will hit healthcare'," 15 Jan 2019. [Online]. Available: https://www.bangkokpost.com/business/1611138/price-controls-will-hit-healthcare. [Accessed 7 Feb 2020].

[214] thaivisa-The Nation , "Commerce Ministry announces drug price control measures," 1 June 2019. [Online]. Available: https://forum.thaivisa.com/topic/1104123-commerce-ministry-announces-drug-price-control-measures/. [Accessed 7 Feb 2020].

[215] Yot Teerawattananon, "The CE threshold(s) in Thailand," 2018. [Online]. Available: https://www.ispor.org/docs/default-source/conference-ap-2018/teerawattananon-ispor_panel-ce_threshold-v3.pdf?sfvrsn=e628b328_0. [Accessed 24 Feb 2020].

[216] WHO, "Vietnam," 2018. [Online]. Available: https://www.who.int/nmh/countries/2018/vnm_en.pdf?ua=1. [Accessed 7 Feb 2020].

[217] WHO, "Smoking causes 40 000 deaths in Viet Nam each year," 27 May 2018. [Online]. Available: https://www.who.int/vietnam/news/detail/27-05-2018-smoking-causes-40-000-deaths-in-viet-nam-each-year. [Accessed 7 Feb 2020].

[218] Lan Hoang Nguyen and Anh Thuan Duc Hoang, "Willingness to Pay for Social Health Insurance in Central Vietnam," 2017. [Online]. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5403811/. [Accessed 7 Feb 2020].

[219] WHO, "Health financing in Vietnam," [Online]. Available: https://www.who.int/vietnam/health-topics/health-financing. [Accessed 7 Feb 2020].

[220] The World Bank, "Moving Towards UHC - Vietnam," [Online]. Available: http://documents.worldbank.org/curated/en/464111513160157867/pdf/BRI-Moving-Toward-UHC-series-PUBLIC-WorldBank-UHC-Viet-Nam-FINAL-Nov30.pdf. [Accessed 7 Feb 2020].

[221] UNICEF, "Immunization," [Online]. Available: https://www.unicef.org/vietnam/immunization. [Accessed 7 Feb 2020].

[222] Social-Protection Organization , "Vietnam Health Insurance," [Online]. Available: https://www.social-protection.org/gimi/RessourcePDF.action;jsessionid=qtFfChQyx4HKdTU2aQ2F8cNn7PLo3aJvO_9JQIq2zI7xQfKPZhER!2015759462?id=54588. [Accessed 7 Feb 2020].

[223] Trung Quang Vo, Tran Thi Huyen Pham , "Health Technology Assessment in Developing Countries: A Brief Introduction for Vietnamese Health-care Policymakers," Aug 2018. [Online]. Available: https://www.researchgate.net/publication/326736531_Health_Technology_Assessment_in_Developing_Countries_A_Brief_Introduction_for_Vietnamese_Health-care_Policymakers. [Accessed 7 Feb 2020].

[224] WHO, "Vietnam," 2015. [Online]. Available: https://www.who.int/health-technology-assessment/country-profile/htavn.pdf?ua=1. [Accessed 7 Feb 2020].

[225] World Bank Group, "Universal Health Coverage for Inclusive and Sustainable Development - Country Summary Report for Vietnam," Sep 2014. [Online]. Available: http://documents.worldbank.org/curated/en/827041468329937967/pdf/912220WP0UHC0C0Box385329B00PUBLIC0.pdf. [Accessed 7 Feb 2020].

9 About the EU-ASEAN Business Council

The EU-ASEAN Business Council (EU-ABC) is the primary voice for European business within the ASEAN region. It is formally recognised by the European Commission and accredited under Annex 2 of the ASEAN Charter as an entity associated with ASEAN.

Independent of both bodies, the Council has been established to help promote the interests of European businesses operating within ASEAN and to advocate for changes in policies and regulations which would help promote trade and investment between Europe and the ASEAN region. As such, the Council works on a sectorial and cross-industry basis to help improve the investment and trading conditions for European businesses in the ASEAN region through influencing policy and decision makers throughout the region and in the EU, as well as acting as a platform for the exchange of information and ideas amongst its members and regional players within the ASEAN region.

The EU-ABC conducts its activities through a series of advocacy groups focused on particular industry sectors and cross-industry issues. These groups, usually chaired by a multi-national corporation, draw on the views of the entire membership of the EU-ABC as well as the relevant committees from our European Chamber of Commerce membership, allowing the EU-ABC to reflect the views and concerns of European business in general. Groups cover, amongst other areas, Insurance, Automotive, Agri-Food & FMCG, IPR & Illicit Trade, Market Access & Non-Tariff Barriers to Trade, Customs & Trade Facilitation and Pharmaceuticals.

9.1 Executive Board

The EU-ABC is overseen by an elected Executive Board consisting of corporate leaders representing a range of important industry sectors and representatives of the European Chambers of Commerce in South East Asia.

9.2 Membership

The EU-ABC's membership consists of large European Multi-National Corporations and the eight European Chambers of Commerce from around South East Asia. As such, the EU-ABC represents a diverse range of European industries cutting across almost every commercial sphere from car manufacturing through to financial services and including Fast Moving Consumer Goods and high-end electronics and communications. Our members all have a common interest in enhancing trade, commerce and investment between Europe and ASEAN.

9.3 EU-ABC Healthcare Advocacy Group

The EU-ABC's Healthcare Advocacy Group consists of: RB Health; Novartis; GSK; Roche; Sanofi; Bayer; Zuellig Pharma; PwC; and KPMG

To find out more about the benefits of Membership and how to join the EU-ASEAN Business Council please either visit www.eu-asean.eu or write to info@eu-asean.eu .

Issued by the EU-ASEAN Business Council

19/F Singapore Land Tower
50 Raffles Place
Singapore 048623

info@eu-asean.eu