

# ***Build and Beyond:*** Bridging the gap

Meeting the challenges of  
healthcare development  
in South East Asia

February 2012



...the first of these is the fact that the ...

...the second of these is the fact that the ...

...the third of these is the fact that the ...

...the fourth of these is the fact that the ...

...the fifth of these is the fact that the ...

...the sixth of these is the fact that the ...

...the seventh of these is the fact that the ...

...the eighth of these is the fact that the ...

...the ninth of these is the fact that the ...

...the tenth of these is the fact that the ...

...the eleventh of these is the fact that the ...

...the twelfth of these is the fact that the ...

...the thirteenth of these is the fact that the ...

...the fourteenth of these is the fact that the ...

...the fifteenth of these is the fact that the ...

...the sixteenth of these is the fact that the ...

...the seventeenth of these is the fact that the ...

...the eighteenth of these is the fact that the ...

## Contents

---

Breathing new life into the region's healthcare	1
Introduction	3
The cost of a nation's health	4
Fully private healthcare – how far can it go?	6
Bridging the healthcare gap	8
Redesigning the region's healthcare systems	12
Financing challenges for PPPs in South East Asia	14
Conclusion – attracting investment into South East Asia	15
Contacts	16

---



---

# Breathing new life into the region's healthcare

*'Build and Beyond: Bridging the gap – Meeting the challenges of healthcare development in South East Asia' is the first in the series of regional supplements following the PwC Thought Leadership paper – Build and Beyond: The (r)evolution of healthcare PPPs which tracks the evolution of healthcare PPPs over time, and explores how the capital and operational structure provided by PPPs can be leveraged more broadly to address government demands for greater efficiency in health spending. For the full publication, please visit <http://www.pwc.com/ppphealth>*

**South East Asia's emerging economies will be increasingly reliant on private finance to help deliver essential healthcare improvements. In the face of continued population growth and rising expectations of care, these countries need to close the gap on the developed world by increasing the proportion of GDP spending on health.**

**Public Private Partnerships (PPPs) can be used to construct or upgrade facilities across the entire care network, adding much-needed capacity and raising quality. They also have the potential to fund a far broader range of clinical services that stretch a long way beyond infrastructure to bring efficiency and additional capacity.**

**As a first step, governments should review their overall healthcare systems to choose the appropriate balance of primary, secondary, tertiary and community care. They also need to attract investors through sound regulatory frameworks, fair and transparent bidding processes, reliable health insurance schemes and an adequate supply of well-trained doctors and nurses.**

**The region has a wide variety of geographic, demographic and economic conditions that require tailored funding solutions to suit each country. Healthcare PPPs in South East Asia will therefore need to adapt the models of more developed nations, and new approaches should emerge in the coming years, with a bigger focus on primary care.**

**As the region invests in economic infrastructure (such as power, water and transport) it will at the same time need to address the challenge of meeting the increasing aspirations of its people through investment in social infrastructure (such as education and healthcare). If South East Asia can achieve this, it will significantly "Bridge the Gap"—not only by being able to meet the health needs of its own populations, but by being able to achieve this at a faster pace than more developed economies have been able to.**



## Introduction

Funding healthcare is an increasing challenge for all South East Asia's developing countries. While health expenditure by their OECD counterparts is forecast to rise from 9.9% of GDP to 14.4% by 2020<sup>1</sup>, emerging nations face an even steeper hike, as they seek to bring down high infant mortality rates, increase longevity and counter disease. Rapid population growth puts an additional burden on already under-resourced healthcare systems.

Affluence brings further challenges in the form of a growing elderly population, chronic diseases, cancer and obesity, and higher expectations of standards of care. Not surprisingly, health spending in developing economies is expected to double in real terms over the next decade, outstripping GDP growth<sup>2</sup>. The global recession has only exacerbated the need to find ways to fund these investments and deliver health services more efficiently.

Over the past two decades, many developed and developing economies have to various degrees financed healthcare through Public-Private Partnerships (PPP), where government contracts out the construction and/or provision of a public service to a private sector provider. England's National Health Service, for example, has built almost 100 new hospitals through such an approach.

PPPs need not be restricted to infrastructure, which only accounts for approximately 5% of all health spending. In the drive for efficiency, many other clinical services could be financed and managed privately, significantly extending the scope of partnerships to stimulate competition, generating long-term savings and raising standards. Performance measurements would have to change accordingly to include operational and clinical benchmarks, workforce productivity, patient outcomes, wait times and patient satisfaction.

Although 2010 saw some record-setting PPP healthcare deals in the Americas, Europe and Africa, such activity has been noticeably limited in South East Asia, where private finance has been focused on economic infrastructure such as transport, utilities and telecommunications, with medical provision restricted to private healthcare facilities.

The developing nations in the region—Cambodia, Indonesia, Laos, Malaysia, Philippines, Thailand and Vietnam—have differing needs reflecting their particular cultures, geographies and stages of development. Most however tend to be characterised by limited primary care, outdated clinics and hospitals, a lack of doctors, nurses and hospital beds, and a large private health sector accessible only to the upper-middle class minority. These markets also tend to place insufficient emphasis on prevention, education and public health.

As a contrast, Singapore is a successful example of a strong healthcare system in the region, and the world, that efficiently delivers good health outcomes for a relatively modest outlay. The country's central 'Medisave' scheme gives patients access to subsidised public care and can also be used as part-payment for private hospitals and clinics.

To date, governments in South East Asia have had limited access to capital, but with a combined population of over half a billion, and average annual GDP growth rates of around 7%, the region should offer excellent potential for financing healthcare. However, investors will want to see greater political stability, a lifting of any regulatory restrictions, and evidence of transparent processes, without which PPP initiatives become very difficult to deliver.

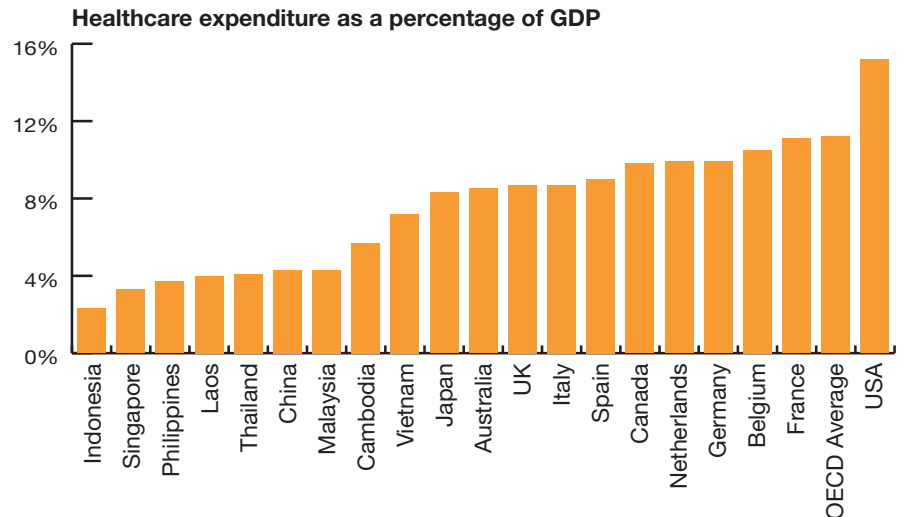
---

<sup>1</sup> PwC estimates. Projections calculated using 2010 US dollars, GDP forecasts from World Bank and PwC projections of countryspecific spending based on most recent health spending growth.

<sup>2</sup> PwC Health Research Institute figures for BRIC nations.

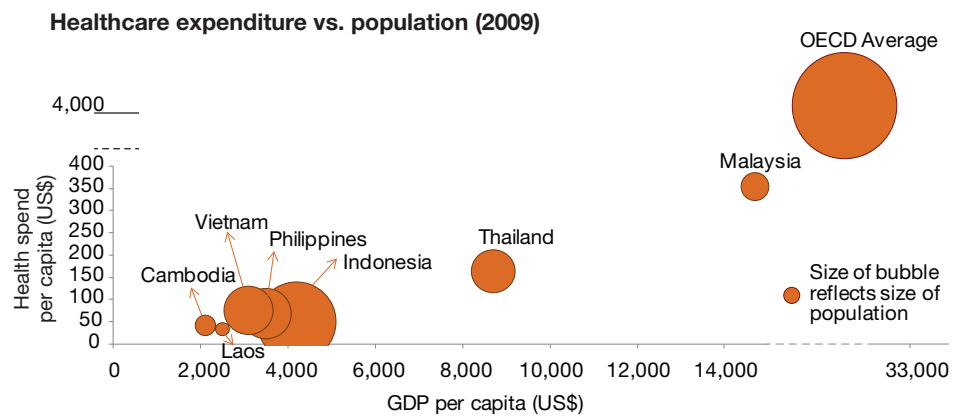
# The cost of a nation's health

With the populations of the developing South East Asian countries growing at an annual rate of around 1-2%, the demand on fragile health infrastructures will continue to increase. The world's more developed economies (Organisation for Economic Co-operation and Development (OECD) members) currently spend on average around 9.9 % of GDP on healthcare. With the exception of Vietnam and Cambodia, none of the other countries in this study manage even half this figure, with the lowest—Indonesia—investing just 2.3% of GDP on the health of its citizens.



Source: World Health Statistics 2011, World Health Organization; PwC Health Research Institute

In absolute terms, as the chart below shows, there is an enormous gulf in healthcare expenditure between the developed and the emerging markets. Malaysia has the highest outlay in the region, spending US\$353 per capita each year, yet even this figure is over eleven times lower than the OECD average of US\$ 4,002. At the bottom of the scale is Laos, with a mere US\$34 spent per person.

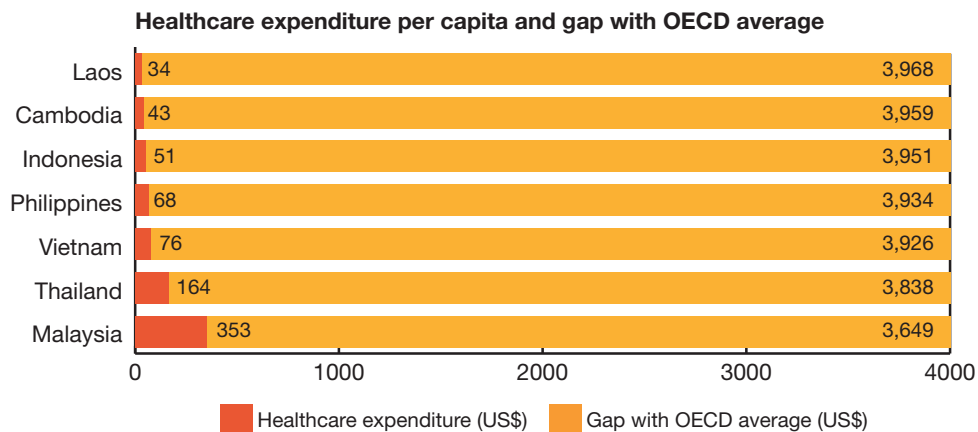


Source: World Health Statistics 2011, World Health Organization; The World Factbook, CIA



Many of the countries in this study will have to double, treble or even quadruple their annual investment in health in order to catch up with average OECD levels. The challenge as we noted in our opening remarks, will be for countries to support their investments in economic infrastructure with investment in healthcare and other socio-economic infrastructure.

In the medium term, healthcare expenditure will become more of a political priority in the wake of growing affluence and higher expectations of care—not just amongst the emerging middle classes but across whole populations. These pressures open up opportunities for the private sector to work with governments to satisfy rising demand.

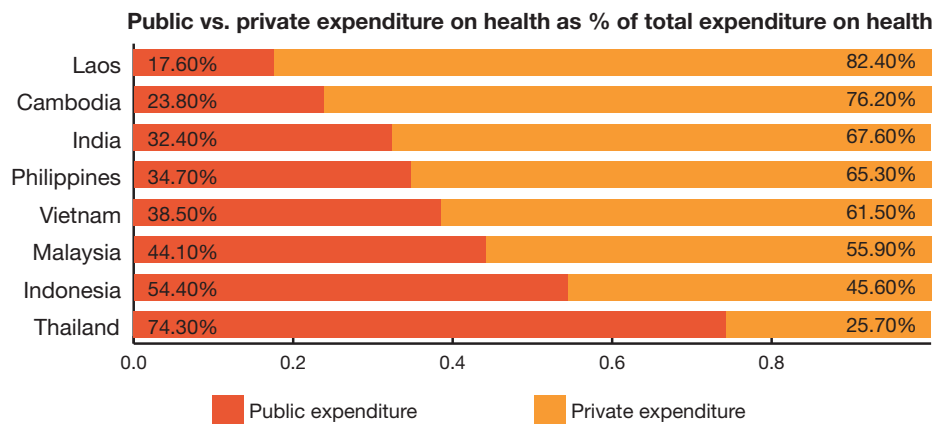


Source: World Health Statistics 2011, World Health Organization

Note: The graph has not been adjusted for the different age structures of South East Asian and OECD countries. In South East Asia, the median age is 27.4 and 8.7% of the population is over 60; in OECD countries the median age is 37.5 years and 19.7% of the population is over 60.

## Fully private healthcare—how far can it go?

Private healthcare in the emerging nations of South East Asia accounts for a higher proportion of total health expenditure, compared to many other regions, with continued growth being seen in the market.



Source: World Health Statistics 2011, World Health Organization

The main beneficiaries of private healthcare has been the middle class, with the mass population being unable to afford private clinicians either directly or through insurance. This latter group is therefore reliant on public healthcare, where standards are generally lower due to: excess demand; a shortage of professional clinicians; and, under-funded facilities.

Although the situation is changing and a combination of rising wealth and private sector innovation is putting private healthcare within the reach of greater numbers of people - Malaysia's Pantai Hospitals and the Bangkok Chain of Hospitals in Thailand are two excellent examples of affordable, cost-effective private care. There are still however, a number of significant challenges which remain in the access and development of private healthcare:

**1. Insurance:** Lack of universal health insurance (either privately or through state taxes) reduces the resources of providers which in turn challenge them to look at their delivery and cost models. However, although private insurance has historically been limited in availability, a number of private sector insurance providers are now looking to expand rapidly in many parts of the region (albeit from a small base).

Both the Philippines and Indonesian governments have already made firm commitments to introduce a level of universal healthcare coverage. Over time, these initiatives will increase the demand for private healthcare treatment, but governments will expect transparency of pricing and very good value for money.

**2. Staffing:** South East Asia's developing markets suffer from a dearth of trained staff. Although private hospitals can tempt clinicians and nurses with higher salaries and better working conditions, even this sector suffers from a scarcity of talent, which in turn deters investment in new facilities. Private healthcare providers are starting to look more seriously at training medical staff to meet demand and as part of their broader social responsibility.

**3. Restrictions on Practice:** In some countries the medical profession has contributed to the shortfall of practitioners by creating onerous conditions for qualification in order to protect its exclusivity. In Indonesia, for example, a doctor has to spend over a decade in training, while overseas diplomas are not recognised. There are signs of change however, with specialists being allowed to practice on limited two-year passes.

**4. Medical Tourism:** Singapore, Malaysia and Thailand are hot spots for "medical tourism," where foreign citizens travel for cheaper treatment whilst receiving high standards of care. While this phenomenon does bring much wanted currency into the country, it has also hastened the exodus of physicians and nurses to private providers, further weakening the public health network. In response, several governments have restricted their public sector clinicians from working privately.

Given all their other pressing priorities, governments are unlikely to have the necessary resources available to bring public care up to required levels and it is unrealistic to expect the private sector to simply make up the shortfall. In this environment, PPPs appear well-placed to bridge the funding gap.

## Bridging the healthcare gap

To date, the number of PPP deals of any type in the region has been limited, particularly in the healthcare sector. Investors, in healthcare, have tended to concentrate on private tertiary care, with a small number of groups dominating the scene. Providers such as Parkway, Fortis and the Bangkok General Group have over time built up considerable expertise and experience in India, Singapore, Malaysia and Thailand.

The market for greenfield development has been limited as it is perceived as higher risk, with a longer payback period than many financiers are seeking. Private equity houses in particular are concerned that the initial planning, licensing and construction can take four or five years, making it hard to realise adequate returns within their typical six-to-eight-year investment horizons.

Consequently mature operating assets have tended to attract greater interest, enabling healthcare operators and investors to create value by enhancing the existing structure or building additional capacity. Although this has led to an active mergers and acquisitions market, opportunities are still relatively scarce, as the industry consolidates and assets are restructured or pass into the hands of the large groups.

However, we are starting to see the consideration of potential healthcare PPP projects and programmes in South East Asia, which are building on lessons from economic infrastructure PPP projects in the region and the lessons learnt from healthcare PPP projects around the world. There is growing recognition by many governments, private sector healthcare providers and leaders that to address the needs of the population, as a government and achieve sustained growth, as a business—well structured healthcare PPPs have a prominent role to play.

### PPP funds new Malaysian hospital

In a US\$ 130 million (RM 400 million) private financing initiative, a large teaching hospital is to be built in the city of Kuantan

### Case study: PPP projects emerging in South East Asia

*With 300 beds and capacity for 735 students, this impressive new facility is to feature various medical disciplines including surgical and medical sub-specialties such as internal medicine, surgery, oncology, cardiology, neuroscience, obstetrics, gynaecology and paediatrics. It will also serve as the primary clinical and tertiary facility for the Medical Faculty of the International Islamic University Malaysia's (IIUM) teaching hospital.*

*The IIUM will be developed by Peninsular Medical Sdn Bhd (PenMedic), a wholly-owned subsidiary of Ahmad Zaki Resources Berhad's (AZRB).*

*After an open tender in May 2010 issued by the Public Private Partnership Unit (3PU), a unit under the Prime Minister's Department, AZRB was awarded the contract in September 2011. Under the 25 year concession, PenMedic will build the hospital within three-and-a-half years and maintain it for 21.5 years, with the responsibility for design, build, lease, maintenance and transfer, as well as asset management services.*

*Building work is expected to begin in January 2012 completion expected in June 2015, after which Malaysia's Ministry of Higher Education and IIUM will pay PenMedic the construction cost and maintenance services to through monthly availability charges and asset management services charges.*

#### Sources:

- IIUM teaching hospital is the first hospital under PFI, *The Sun daily*, 22/9/2011
- AZRB to build teaching hospital in Kuantan, *Business Time*, 22/9/2011
- Ahmad Zaki Resources Berhad, Noorlida Jelani, Group Strategy Department

PPPs in other parts of the world are slowly evolving from infrastructure-only projects to embrace a broader range of services. Both the UK and Spain have examples of private sector involvement in clinical services, while there are also cases in developing countries. The Caribbean island of Turks and Caicos has had hospitals built and serviced fully by private operators, while an ambitious project in the Brazilian city of Belo Horizonte will soon see 160 primary care clinics run privately.

---

### **Case study: Private sector involvement in delivery of clinical services**

*Drawing upon lessons learned from cases abroad, the Brazilian government has begun employing PPPs to better leverage its public funding and attract social capital to its struggling public system.*

*Brazil's first ever PPP is improving emergency and hospital services for one million people. Located in one of the most under-served districts of Salvador, Bahia, the Hospital do Subúrbio is the first hospital construction in this metropolitan area in 20 years, having been in operation since August 2010.*

*A private consortium between Promedica and Dalkia is responsible for equipping, maintaining, and operating both clinical and non-clinical services at the hospital for ten years. They will invest around US\$32 million in equipment alone, with US\$22 million provided in the first year. This ground-breaking hospital PPP is creating upwards of 1,600 new jobs and will treat 175,000 patients annually<sup>3</sup>.*

*The hospital reached 80% occupancy within just one month of opening – testament to the high latent demand. According to Bahia's Secretary of Health, this initiative is a big step forward for healthcare and offers private operators the opportunity to show they can bring greater efficiency in clinical services, in order to challenge the existing status quo of state-provided care.*

*Meanwhile in the city of Belo Horizonte, two important PPPs are underway, the first involving the construction of the Hospital Metropolitano. The second programme, currently at procurement stage, covers the complete infrastructure build and non-clinical services for 160 primary care clinics that form the basis of the city's entire public health system. These clinics are the main access point for over four million people, either via the facilities or through community outreach.*

*Although the public sector will supply the workforce and manage clinical services, the private consortium will be expected to provide a flexible health IT solution that can eventually integrate with the rest of Belo Horizonte's tertiary care system.*

---

### **A step forward for Brazilian healthcare**

**Drawing upon lessons learned from cases abroad, the Brazilian government has begun employing PPPs to better leverage its public funding and attract social capital to its struggling public system**

---

<sup>3</sup> Brazil: Hospital do Subúrbio, IFC Infrastructure Advisory

## *Broadening the scope of PPP in the Turks and Caicos Islands*

In 2005 the government of this small UK dependent territory in the Caribbean became one of the first in the world to award a PPP contract that included both the construction and subsequent clinical services for two new hospitals

### **Case study: Private sector involvement in delivery of clinical services**

*Two special purpose vehicles (SPVs) were set up for the building and clinical elements of the initiative, reducing the risk to the investors by separating the two activities (if the clinical SPV failed, the construction SPV would not be affected). Mandatory health insurance was put in place to fund the clinical services, while the government retains responsibility for paying for the infrastructure, giving financiers greater certainty of a return on investment.*

*Risks were shared in a fixed-price 25-year contract. The public sector is responsible for ensuring sufficient numbers enrol in the insurance scheme, while the private provider has to budget correctly to cope with the volume of patients. The private sector receives a per capita payment for every individual registered under the mandatory health insurance scheme.*

*The structure of this innovative deal means that the public sector deals primarily with one single supplier, reducing complexity and helping the Turks and Caicos Islands improve healthcare in a cost-effective manner.*

It is uncertain whether the developing economies of South East Asia will follow a similar model, as many of the region's governments have relatively little experience of large infrastructure initiatives and needs differ from country to country so any funding has to be directed where it can bring the maximum benefit. The Philippines requires over 152,000 new hospital beds to serve its population<sup>4</sup>, while in other countries there are sufficient beds, but buildings are ageing and dysfunctional.

Comprehensive private-sector township development is prevalent in countries such as Indonesia and Vietnam, where it is not unusual to see whole communities built by private companies, including factories, offices, housing, schools and medical facilities. PT Lippo Karawaci TBK, which owns the Siloam Hospital Group, is at the forefront of this phenomenon in Indonesia, responding to the country's buoyant economic growth. Standards are high, with the flagship hospital in the Lippo Village development being one of the first to achieve international JCI accreditation.

Township programmes are likely to continue across the region, with developers obliged to provide healthcare facilities that may be funded as overheads, to support broader developments. These projects offer some natural opportunities for public-private sector collaboration to help meet growing healthcare demand.

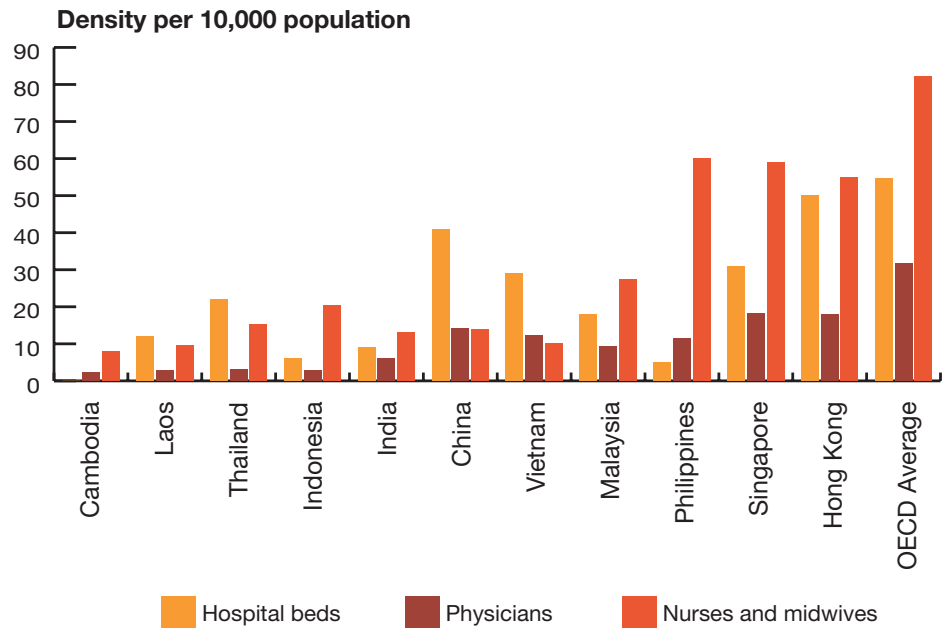
---

<sup>4</sup> *The Global Brand of Philippine Medical Services*, Jaime Z. Galvez, executive director, National Institutes of Health Philippines.



## Re-designing the region's healthcare systems

Healthcare systems that accurately reflect the unique health needs of a nation are more likely to improve life expectancy and reduce rates of disease and infant mortality. As the chart below shows, the region's healthcare resources are well below those of OECD countries. In order to get the most out of these limited means, governments should establish sound health planning at national, regional or city levels, finding the right balance between primary, secondary and tertiary care to suit their demographic and geographic circumstances.



Source: World Health Statistics 2011, World Health Organization, Hong Kong Food and Health Bureau

A well-planned healthcare strategy will also attract private investors, who look for robust health systems that lessen the risks of their outlays. They will be seeking strong evidence of: a commitment to health education and prevention; training of sufficient numbers of doctors and nurses; a robust and flexible system for health records; the appropriate degree of primary, tertiary and secondary provision; and, payment mechanisms that encourage efficient and cost-effective integrated delivery of care.

There are some encouraging signs of system redesign, for example in the field of primary care, where the private sector is responding to rapid population growth by providing less costly models to suit the pockets of the masses. Such vertical integration is appropriate to the geography of South East Asian countries like Vietnam, where a dispersed, rural population cannot afford to travel to the city hospitals.

However, much further change is required, including more rehabilitation facilities to prevent patients from taking up scarce hospital beds needed for more serious cases. Much of the region is currently served by an inefficient network of small, independent healthcare providers. While private players see an opportunity for consolidation and wider health management of a population, PPPs will only work if there's some kind of social insurance plan to fund the development of facilities.



*Alzira – managing primary and secondary care for a region in Spain*

**With excellent health outcomes and a significant reduction in costs compared to other public sector providers, this initiative has made a very positive impact**

---

### **Case study: Integrated care**

*In the late 1990s the existing hospital in Valencia, Spain had become obsolete and needed replacement, but budget constraints forced the regional government to look for innovative solutions. Eventually the construction and operation of the hospital was contracted out to private companies.*

*The successful private sector parties were responsible for the construction of the hospital as well as the provision of all primary, secondary and tertiary care services for the defined catchment area.*

*Payments are based upon a capitation fee and the providers are measured on health outcomes, which have been evaluated as equal to, or better than, other public hospitals. Importantly, services have been delivered at 25% less cost, with the model proving profitable for all involved in the public health service including the government, the company running the services and the people of Valencia.*

---

## Financing challenges for PPPs in South East Asia

The growing trend for economic infrastructure PPPs throughout South East Asia suggests there should be a similar appetite for private finance initiatives in healthcare. For these to succeed however, investors will want some assurance of a reasonable return on 20 to 30-year contracts.

This throws up a number of challenges, not least the difficulty of accurately calculating social infrastructure payment streams. The complexity of healthcare systems calls for multi-party cooperation throughout all stages of a development, in order to gain greater certainty over the availability of staff and the vehicles for payment. The region's widespread shortage of clinicians and nurses, along with the limited private and government medical insurance and tax revenues could prove to be a deterrent to some.

In addition, with their dispersed populations, many South East Asian countries require a distributed system of smaller primary care facilities rather than the large urban hospital projects that typify most healthcare PPPs. Again, investors must think beyond the traditional view of a PPP and look to more innovative examples for inspiration.

Indeed, a range of alternative approaches are already emerging. In Vietnam and Indonesia, private providers are purchasing and managing large pieces of equipment such as MRI scanners, which are placed in public sector hospitals and paid for over a period several years. Meanwhile a hospital in the Kingdom of Brunei is managed as a joint-venture between the government and the private operator Parkway, bringing down costs substantially.

Looking forward, capital appears to be available for well-structured and well-procured projects, but this has to compete with other, more established sectors, so must satisfy a number of pre-requisites:

- An established legal and regulatory framework
- Political support
- A pipeline of clearly defined and adequately structured projects
- Transparent and efficient procurement structures
- Strong government counterparties
- Capacity within government to deliver

Such factors are particularly relevant to international investors, who are expected to play an important role in PPP programmes, so governments should be aware of ticking the right boxes to attract these funders.

Potential financiers will want to understand the strength of the local banking and capital markets, as well as the availability of other sources of finance such as donor and multilateral finance. Given the uncertainties over the payment streams and the low level of per capita spend on healthcare; projects will probably need some form of government support. Government therefore must be the ultimate underwriter of key risks and demonstrate sound credit credentials, backed up by a robust system of capitation. In the current financing market they may have to underwrite the refinancing of debt, as debt periods beyond 10-15 years are unlikely to be available.

Finally, the long-term nature of PPP contracts means that interested parties will seek reassurance that they will be protected from political interference (such as policy changes), and that there is adequate redress in the event of governments defaulting on the agreements.

## **Conclusion – attracting investment into South East Asia**

South East Asia's emerging economies are becoming increasingly familiar and comfortable with utilising private sector capital to help fund their infrastructure. The use of PPPs is rising, not just to attract investment but also to provide greater value for money and thereby reduce the burden on the public finances.

Over time healthcare will become more of a political priority as populations increase their wealth and aspirations. Cooperation between the public and private sectors will grow, both to build infrastructure and manage services, creating more and varied options for the private sector and investors – especially those prepared to innovate. Additional support may come from multilateral agencies and development banks such as the Asian Development Bank, the World Bank and the International Finance Corporation.

Capital is available but only if the conditions are right, so South East Asian governments have to put in place the right conditions to attract such investment, balancing risk between the private and public sectors. This is particularly important where international investors are needed or sought, and where projects extend beyond construction into clinical services. If PPPs and similar private ventures are to flourish, governments in the region must build capacity.

Infrastructure only represents a small proportion (estimated around 5%) of total health spending so there is a large untapped potential for improving public sector clinical services through private investment and management, with government's role shifting from provider to regulator, and private health providers utilising their skills and experience in partnership.

The exact shape of the future healthcare market in South East Asia is uncertain, but it is unlikely to replicate the Western experience and the opportunity for new models of PPP will undoubtedly emerge.

To make sure that healthcare PPP succeed it is clear that the conditions may be right, Governments need both political will and the right frameworks to be in place, likewise the private sector has to be clear about how it can deliver affordable effective care and meet the requirements of investors.

## About PwC

PwC ([www.pwc.com](http://www.pwc.com)) provides industry-focused assurance, tax and advisory services to build public trust and enhance value for our clients and their stakeholders. More than 169,000 people in 158 countries across our network share their thinking, experience and solutions to develop fresh perspectives and practical advice.

## Contacts

To have a deeper conversation on this subject, please contact:

**Roger Thompson**

Asia PPP/Hospital Development  
+852 2289 1988  
[roger.m.thompson@hk.pwc.com](mailto:roger.m.thompson@hk.pwc.com)

**Nancy Park**

Asia PPP/Hospital Development  
+852 2289 2951  
[nancy.park@hk.pwc.com](mailto:nancy.park@hk.pwc.com)

**Mark Rathbone**

Asia Capital Projects and  
Infrastructure  
+65 6236 4190  
[mark.rathbone@sg.pwc.com](mailto:mark.rathbone@sg.pwc.com)

**Andrew Chan**

Malaysia, Thailand, Vietnam,  
Cambodia and Laos - Capital Projects  
and Infrastructure  
+603 2173 1219  
[andrew.yh.chan@my.pwc.com](mailto:andrew.yh.chan@my.pwc.com)

**Ian Wootton**

Global PPP Leader  
+44 (0) 20 780 45735  
[ian.wootton@uk.pwc.com](mailto:ian.wootton@uk.pwc.com)

**Paul da Rita**

Global PPP Director  
+44 (0) 20 721 25932  
[paul.da.rita@uk.pwc.com](mailto:paul.da.rita@uk.pwc.com)

**Dr. David Levy**

Global Healthcare Leader  
+1 646 471 1070  
[david.l.levy@us.pwc.com](mailto:david.l.levy@us.pwc.com)

**Dr. Ronald Ling**

Asia Healthcare Leader  
+65 6236 4021  
[ronald.jw.ling@sg.pwc.com](mailto:ronald.jw.ling@sg.pwc.com)

*This publication has been prepared for general guidance on matters of interest only, and does not constitute professional advice. You should not act upon the information contained in this publication without obtaining specific professional advice. No representation or warranty (express or implied) is given as to the accuracy or completeness of the information contained in this publication, and, to the extent permitted by law, PricewaterhouseCoopers does not accept or assume any liability, responsibility or duty of care for any consequences of you or anyone else acting, or refraining to act, in reliance on the information contained in this publication or for any decision based on it.*

© 2012 PwC. All rights reserved.

PwC refers to the PwC network and/or one or more of its member firms, each of which is a separate legal entity. Please see [www.pwc.com/structure](http://www.pwc.com/structure) for further details.

*This content is for general information purposes only, and should not be used as a substitute for consultation with professional advisors.*

BS-12-0225.1211.jgh