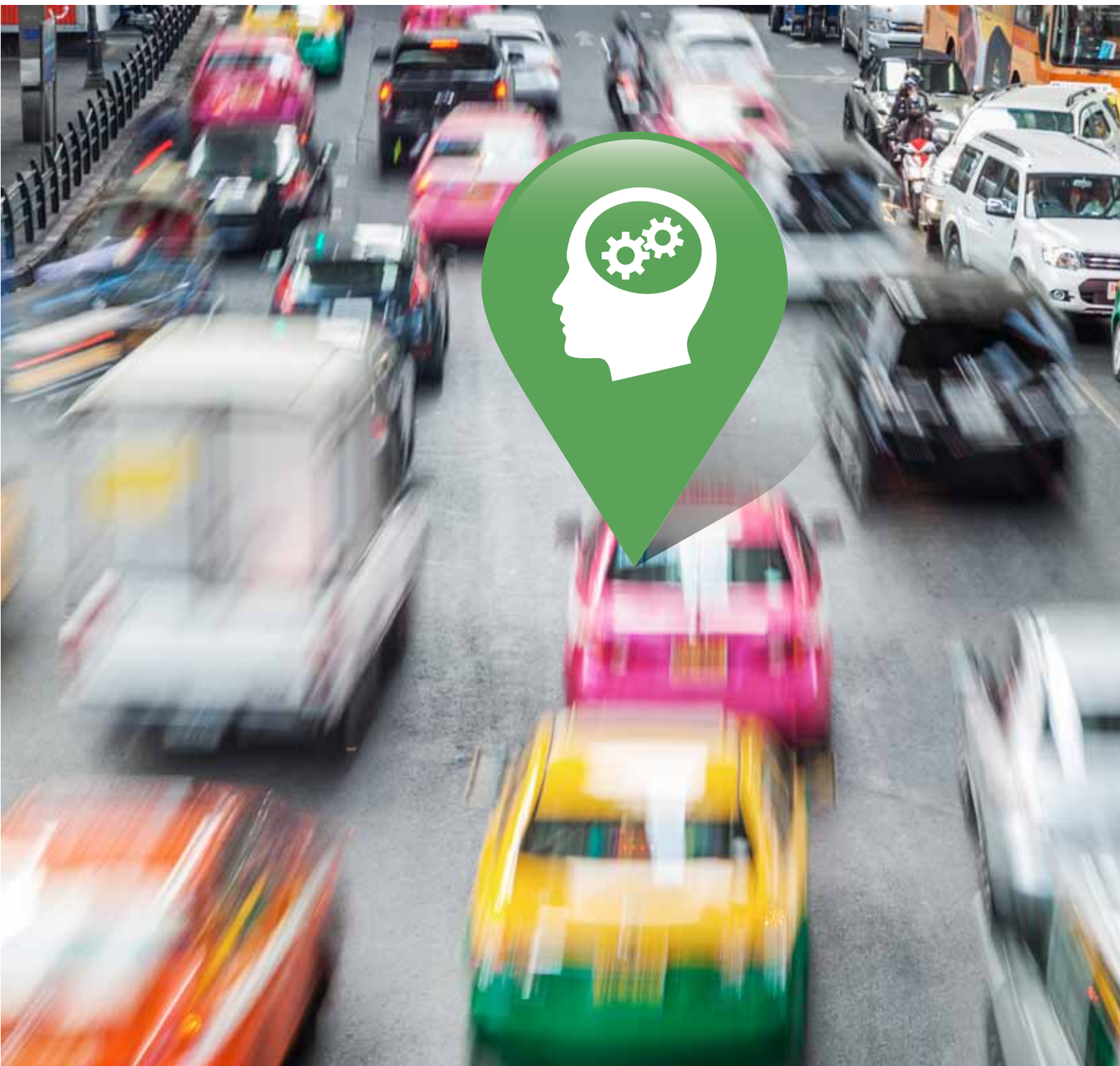


# Engineering In Asia – A Labour Market Perspective 2015



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## 1 State Of The Industry

Asia is likely to continue to be a vibrant one for the engineering sector as its high-growth economies continue to feed the multitude of industries where engineering expertise is required - from aerospace and energy to construction and automotive.

While the performance of each of these subsectors is dependent on its own unique dynamics, underpinning their collective outlook is an expected robust rate of economic growth. The region's share of global gross domestic product (GDP) - as measured by purchasing power parity - has grown from 26.8 per cent in 2001 to 36.6 per cent in 2013. Many market watchers expect this rapid economic expansion to continue, presenting many opportunities for engineers in Asia in areas such as infrastructure development.

The Asian Development Bank estimates that between 2010 and 2020, Asia will need to invest between S\$8 trillion and S\$9 trillion in new infrastructure such as power stations, electricity grids, transport networks, and sewage and water systems.

Demand for infrastructure will be greatest in the energy sector. Energy giant ExxonMobil predicts that, fueled by economic growth, Asia's share of global energy consumption will rise from 38 per cent in 2010 to 45 per cent by 2040. This will require massive investment in power stations and electricity grids, as well as upstream activities in oil and gas and alternative energy sources like solar and wind power.

Another key trend that will boost demand for engineering services in Asia is urbanisation. The United Nations estimates that only 42 per cent of Asia's people were urbanised in 2009, compared to the global average of 50.5 per cent. Rising incomes in Asia's cities have also led to greater calls for a higher standard of living among their urban dwellers.

The region's ongoing industrialisation and the growth of its auto and aviation sectors will also drive the engineering sector's growth.

As Asian economies and companies move up the value chain and develop world class engineering capabilities, the region is emerging as a major centre of research and development (R&D). More multinational companies are shifting their R&D activities here to take advantage of the region's growing pool of engineering talent.

Taken together, these trends paint a picture of robust demand for engineers going forward. However, this will also result in a shortage of skilled engineers that could hamper growth in Asia.

*"The talent shortfall in engineering will be felt across all sectors,"* said Serge Shine, Managing Director, Spring Professional Asia (Ex-Japan).

The problem will be particularly acute in Singapore, which is already facing an overall tight labour market. The problem is exacerbated by "leakage" from the engineering profession, where a growing number of engineers are leaving the profession for more lucrative fields like banking.

*"The challenge is to get more people to stay in the profession. The real worry in Singapore is like what's happening in the U.S. and U.K.,"* said Andrew Smith, manufacturing director for Shell Eastern Petroleum, at the Global Entrepolis Singapore conference held late last year.

*"Governments in Asia are now much more focused on turning cities into liveable environments. They want better transport systems, better designed buildings, more efficient power grids, more reliable water and sanitation, and for all these things to be planned in an integrated way,"* says Scott Dunn, director in Asia for land use consultancy AECOM.





## 2 Trends

### Demand for Infrastructure

Asia's growing share of global economic growth will result in huge demand for infrastructure. An estimated US\$8 trillion to US\$9 trillion in new infrastructure will be needed to keep the region's economies growing at current rates. The energy sector will create the most demand for infrastructure in the form of power stations and electricity grids as growing economic output fuels demand for energy.

### Urbanisation

Economic growth will also drive the ongoing urbanisation of Asia, with many countries in the region still largely rural. This will drive demand for engineering expertise.

This process is most pronounced in China, which is seeing a massive movement of its people from the countryside to the cities. In the three decades since China started to liberalise its economy, the country's urban population has risen by more than 500 million. China's cities are already home to more than half the country's people, and by 2030 they will contain around a billion people—about 70 per cent of the country's population.

More cities are also sprouting across the region. In 2009, the United Nations identified 958 cities around the world that have a population of 500,000 or more, with 52 per cent located in Asia. As the region's city dwellers enjoy rising incomes, they are also

demanding better urban planning that will require more sophisticated engineering services.

### Industrialisation

Asia's share of global manufacturing continues to rise as it industrialises, leading to strong demand for engineers. The region accounted for 31.8 per cent of global manufacturing in 1990, rising to 41.7 per cent by 2010. Newly developing countries such as Vietnam and Myanmar are also just starting to grow their industrial base, while others like Malaysia, Thailand and China are upgrading their industrial base as they move up the manufacturing value chain.

### R&D shifts to Asia

Asia's share of global R&D expenditure has risen from 27.2 per cent in 2002 to 33 per cent in 2009, more than either North America or Europe, according to data provided by UNESCO.

Much of the R&D work in Asia used to be low-end and western companies chose to base their activities here because of the cost advantages. However, as the wages of Asia's engineers has closed the gap with their western counterparts, this labour cost arbitrage is no longer as attractive. However, the rising sophistication of the region's engineering talent pool means that the rationale for MNCs to invest in R&D in Asia is no longer about cost, but competencies.

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### 3 Industry Development

The ongoing infrastructure boom in Asia will present the biggest opportunities to engineers in the region. In particular, those with experience and specialised skills linked to the energy sector will be most in demand.

Countries like Myanmar will require a huge increase in power generating capacity as its economy opens up. Meanwhile, many companies in Malaysia and Singapore actively serve the oil and gas sectors, and will continue to feed demand for high end engineering services.

The development of transport infrastructure such as high-speed rail networks across Asia will also see the need for specialised engineering talent in that area. China is expected to have 18,000 km of high-speed rail network by the end of 2015, up from 10,000 km in 2012. Meanwhile, a high-speed rail connecting

Singapore and Kuala Lumpur is expected to be completed by 2020.

Specialised skills aside, employers are also looking to engineers to take charge and lead the processes they are involved in. This requires them to possess softer skills such as communication, project management and a strong business acumen.

And while education is important engineers are also now required to have real world hands on experience.

*"Be hands on, but not as a team member where you could always rely on someone else to assist, but from an ownership point of view where you own your particular process. Clients don't want pencil pushers, no matter the level. They want to see business owners at all levels."*

*"Clients want engineers who have hands-on ownership skills and can take charge and lead the process. Being a "member" of the team is no longer sufficient. Now more and more roles are individual sole contributors and they want engineers who can really own it," adds Serge.*

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### 4 The Future

While the global economy remains uncertain, the robust growth of Asian economies and the need to build infrastructure to support that growth will fuel demand for engineering expertise in the region over the next few years.

However, there is a risk that there will be a shortage of engineering talent necessary to support this growth. This shortfall of talent will continue to give an advantage to employees in the labour market and make it the ability for companies to secure the talent they need a key competitive advantage in the region.

