gridlines

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Closing the talent gap in the emerging world

pwc

Infrastructure development in emerging markets: Closing the talent gap

By Richard Abadie

On cover: Headhunting for talent bustles in Shanghai.
Above: Shanghai's Pudong financial district.

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The past decade has witnessed an extraordinary shift in the global balance of economic power. While the developed world has stumbled and stalled, the developing world — led by China, India and Brazil — has prospered, proving remarkably resilient even during the global economic downturn. Over the next decade, this outperformance is expected to continue, with emerging nations accounting for the majority of the world's economic growth and investment spending. Forecasts by Oxford Economics done for *Gridlines* suggest that China and India, despite a recent slowdown and downside risks, are still poised to enjoy average GDP growth of about 8% a year over the coming decade; Mexico, Turkey, Nigeria, Indonesia, Pakistan, Egypt and Vietnam should all average 5% or more.

But success breeds challenges. To sustain their growth and development as they further transform and move up the value chain, emerging nations will need an enormous enhancement of their human capital — a challenge that will require massive investment in education and training, increased talent planning within companies, along with other measures designed to attract and retain both domestic and international talent. Over the next decade, China alone is expected to add 80 million jobs in industry and services.[1] India, the second largest emerging economy after

1 Oxford Economics

It is increasingly apparent that talent will be one of the scarcest resources, with the developed world competing for this finite supply of human capital.

China, is likely to add 65 million industry and services jobs. Finding qualified people for these and tens of millions of other new jobs across the developing world will not be easy, made even more difficult by the need to replace retiring workers.

Indeed, there is already worrisome evidence of a global skills shortage that is particularly acute in the developing world. Last year, Manpower Group's annual Talent Shortage Survey found that 45% of Asia-Pacific employers had difficulty filling job vacancies due to a lack of available talent. In India, 67% of employers reported difficulty, versus a global average of 34%. In Brazil, 57% of employers said they had difficulty in filling positions. In Mexico, the figure was 42%. About three quarters of employers globally cited a lack of experience, skills or knowledge as the primary reason for this struggle to hire appropriate workers.

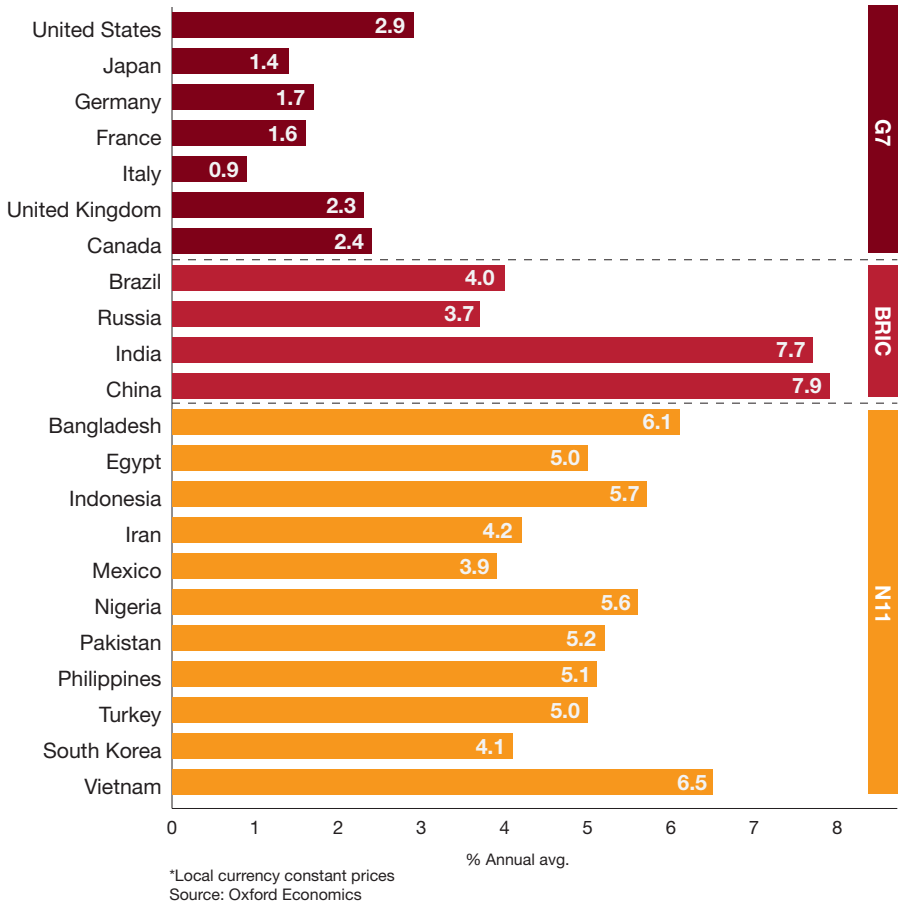
When economists and policymakers attempt to assess future economic risks they often focus on potentially scarce resources such as oil and water. But for the developing world, it's increasingly apparent that talent will be one of the scarcest resources of all, with the developed world also competing for this finite supply of human capital.

The talent shortage impact on infrastructure growth

The infrastructure sector offers a perfect example of this problem. Booming metropolises from Mumbai to São Paulo have an almost inexhaustible need for new

Economic growth in developing nations will outpace that of developed nations over the next decade

G7, BRIC and N11: GDP growth (2011-2020)*



*Local currency constant prices
Source: Oxford Economics

roads, pipelines, power plants, sewers, water recycling facilities, ports, airports, schools, hospitals, housing and other vital infrastructure. To plan, build and maintain this infrastructure, developing nations will need millions of highly skilled workers, including civil engineers, electrical and mechanical engineers, architects, designers, surveyors and project managers. They will also require a burgeoning army of low-to-medium skilled workers, including technicians, drivers, laborers, construction workers and machine operators.

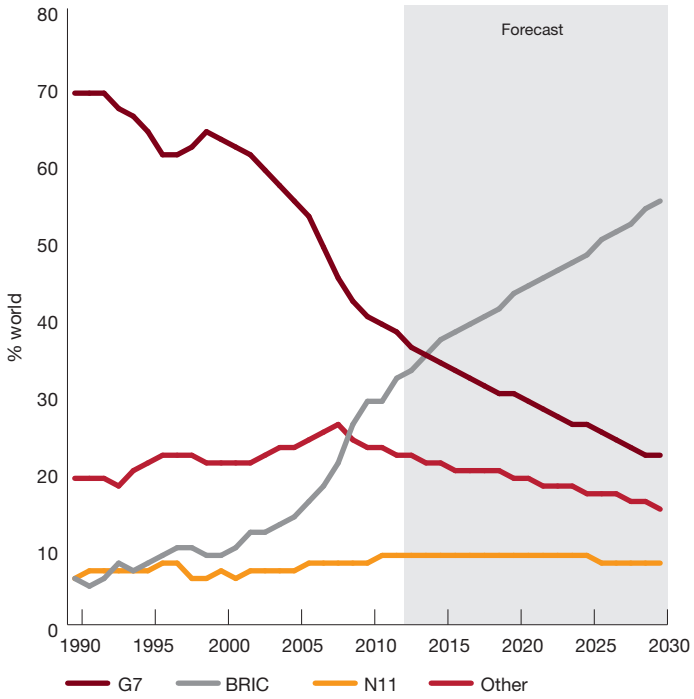
The stakes are huge. Developing countries cannot fulfill their economic potential without this infrastructure — and without the increasingly capable workforce that will be needed to provide it. But the infrastructure sector is already facing significant talent shortages. According to Manpower Group, the top five jobs that proved most difficult for global employers to fill in 2011 included technicians, engineers, skilled trade workers, and laborers — all critical to the infrastructure sector.

"Given the enormous appetite for talent in emerging markets, many companies have no choice but to import employees from the developed world," said Dennis Finn, Global Human Capital Leader for PwC. "However the cost of doing so quickly adds up, given relocation, housing, transportation, and repatriation costs. Expats also need reassurance that when they return to home base, they will be reassimilated."

Finn added that companies are becoming more savvy about repatriating their employees because corporate leadership has become more globally focused. He said, "Today's corporate leadership worldwide has a global mindset honed by time spent on extended expat assignments. Living and working in an emerging market opens the door to new ways of working and new possibilities as resource constraints demand flexibility and openness to change."

Developing nations will attract the greatest share of global investment spending

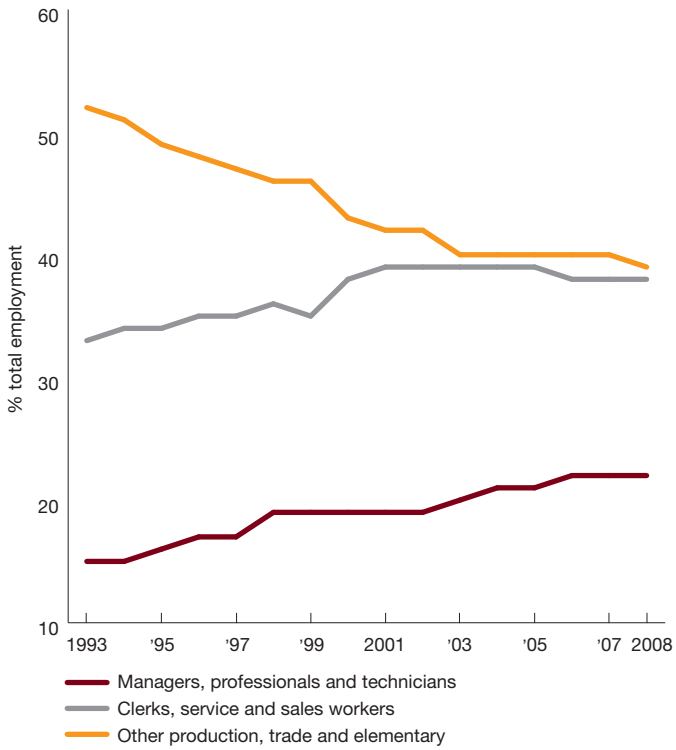
G7, BRIC and N11: Share of world investment*



*Nominal US$ investment
Source: Haver Analytics, Oxford Economics

South Korea provides a model as skills and jobs grow increasingly sophisticated

South Korea: Occupation employment structure

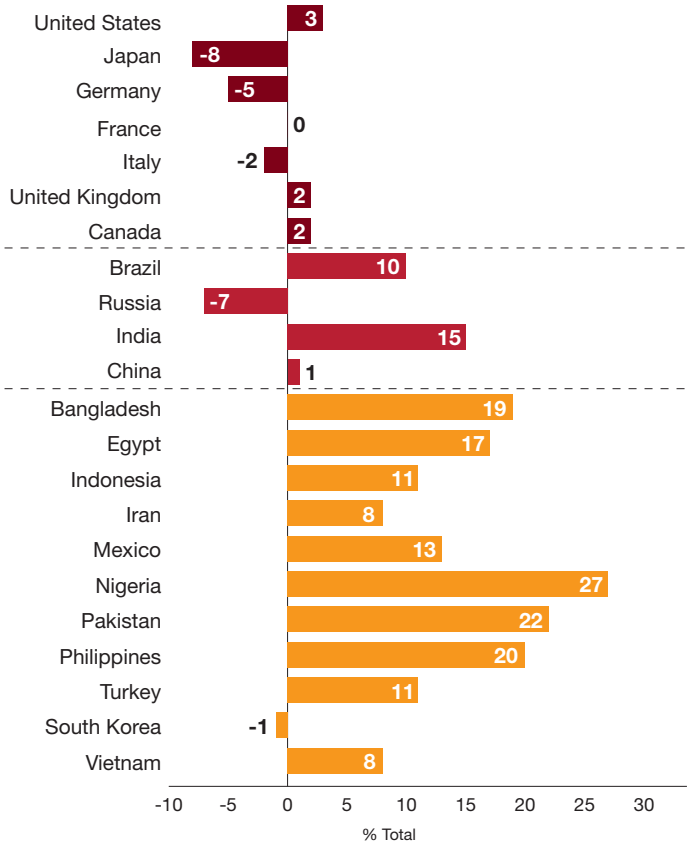


Source: ILO, Oxford Economics

According to Manpower Group, the top five jobs that proved most difficult for global employers to fill in 2011 included technicians, engineers, skilled trade workers, and laborers — all critical to the infrastructure sector.

Many emerging nations have the demographic advantage of expanding workforces

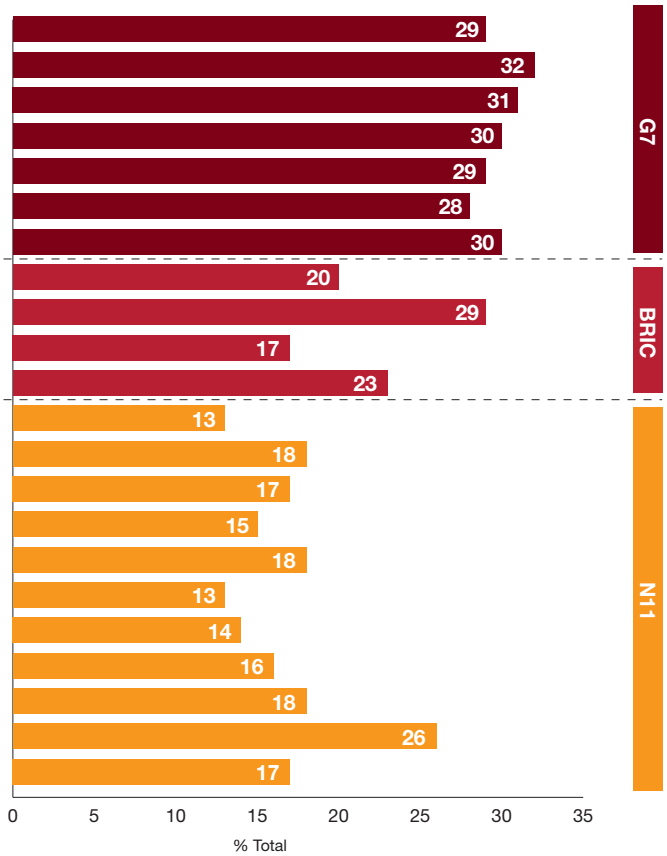
G7, BRIC and N11: Working age population change (2011-2020)



*Local currency constant prices
Source: Haver Analytics, Oxford Economics

Countries with aging workforces will be at a demographic disadvantage

G7, BRIC and N11: Working age population structure – 50-64 (2011)



Source: UN Population Division

University education expands among emerging nations

G7, BRIC and N11: Advanced economies are still home to world's best universities

	Ratio		Millions			Number of universities in world top 500	
	2011	2020	2011	2020	Change		
US	90%	92%	19.7	20.0	0.3	95	G7
Japan	60%	65%	3.8	3.8	0.0	25	G7
Germany	52%	54%	2.3	2.0	-0.3	44	G7
France	55%	56%	2.2	2.2	0.0	21	G7
Italy	66%	68%	1.9	1.8	-0.1	14	G7
UK	59%	59%	2.3	2.2	-0.1	52	G7
Canada	63%	66%	1.5	1.4	-0.1	19	G7
Brazil	40%	55%	6.6	9.2	2.6	5	BRIC
Russia	78%	87%	8.5	6.3	-2.2	7	BRIC
India	17%	23%	20.7	27.8	7.1	7	BRIC
China	27%	38%	32.3	37.4	5.1	16	BRIC
Bangladesh	12%	16%	1.8	2.4	0.7	–	N11
Egypt	31%	34%	2.6	2.8	0.2	–	N11
Indonesia	24%	35%	5.4	7.7	2.3	2	N11
Iran	43%	63%	3.6	3.8	0.1	–	N11
Mexico	29%	34%	2.9	3.5	0.6	2	N11
Nigeria	14%	18%	2.2	3.6	1.4	–	N11
Pakistan	6%	8%	1.2	1.6	0.4	1	N11
Philippines	30%	32%	2.9	3.6	0.7	2	N11
Turkey	49%	60%	3.2	3.8	0.7	3	N11
South Korea	107%	109%	3.3	3.0	-0.3	12	N11
Vietnam	21%	26%	1.8	1.7	-0.2	–	N11

Source: UNESCO, QS world university rankings, Oxford Economics

Low → High

Emerging countries as factories of talent

For emerging nations such as China, India and Brazil, the risk of talent shortages is exacerbated by the fact that they are entering a new stage in their development. China became an economic powerhouse by serving as a factory to the world, deploying its vast reserves of cheap labor to produce sneakers, toys, electronics and countless other low-cost exports. But China is now moving up the value chain in the manufacturing industry, while also becoming more prominent in sectors such us healthcare, IT, leisure and professional services. Indeed, *PwC's Cities of Opportunity 2012* research predicts that Beijing alone will add 3.9 million service sector jobs by 2025.

Other emerging countries share this ambition of becoming factories of talent — not just factories for inexpensive manufactured goods. But the market for talent has become remarkably global and competitive: nowadays, Indian software designers and Chinese engineers can easily go West to Silicon Valley and other alluring talent magnets, just as Western architects can relocate to Shanghai. As a result, companies will be obliged to compete both domestically and internationally for a finite supply of talent.

The situations and strategies vary as countries grapple with the talent challenge

One country that has shown the way is South Korea, which has already undergone a significant transition from an industrial economy to one that is more service-oriented. In the past 15 years, managerial, professional and technical workers have risen from 15% to 22% of South Korea's workforce. Meanwhile, clerks, service and sales workers have risen from 33% to 38% of the nation's workforce.[2] If the same structural change were to occur in China, this would create a demand for 60 million new managerial, professional and technical workers, along with 40 million additional clerks, service and sales workers. South Korea has developed its highly skilled workforce largely through massive investment in higher education over the past three decades, with parents also significantly topping up the state's investment in the sector. It's also telling that an outsized portion of South Korean university graduates has studied engineering and manufacturing.

Less advanced nations will need to follow a similar path, dramatically improving their education systems, the employability of their university graduates, and the quality of their training. Countries that succeed in doing this will be well positioned to thrive in growing sectors such as infrastructure, IT and professional services, which rely more on well-honed skills than on cheap labor or abundant natural resources. Strong management skills will become a particularly prized asset as these countries continue to shift away from agriculture and low-end manufacturing toward the service sector and more advanced manufacturing. The US regularly ranks at the top of global league tables for management practices, while China and India have lagged far behind. Developing nations will have to narrow this gap, producing more workers capable of doing talent-intensive jobs that require higher qualifications. Talent will also be required to develop and implement new technologies such as energy-efficient power plants that consume less of Asia's scarce water resources.

In the race for talent, China has significant strengths. Its centralized government has an impressive track record when it comes to the strategic planning required to meet great economic challenges such as urbanization or the need to build roads, railways and office towers on an unprecedented scale. The country also has the fiscal muscle to invest heavily in talent development. Already, the government has made major improvements in education at all levels, and China now has more university students than any other country.

2 International Labor Organisation

Emerging countries share the ambition of becoming factories of talent — not just factories for cheap manufactured goods.

At Beijing's Huadong Musical Instrument Company, finding and training skilled craftspersons to make violins is a job in itself.

Chinese engineers can easily go West to Silicon Valley and other alluring talent magnets, just as Western architects can relocate to Shanghai. As a result, companies will be obliged to compete both domestically and internationally for a finite supply of talent.

Future talent demand and supply factors

Demand

	China	India	Brazil	Mexico
GDP growth (annual average 2011-2020)	7.9%	7.7%	4.0%	3.9%
Investment growth (annual average 2011-2020)	7.1%	8.4%	5.6%	5.1%
Manufacturing net employment growth (millions 2011-2020)	16.6	18.2	3.7	-0.9
Construction net employment growth (millions 2011-2020)	8.6	17.5	1.8	0.7
Services net employment growth (millions 2011-2020)	50.8	28.5	11.3	7.8
50-64 share of working age population (2020)	29%	19%	23%	21%

Source: Oxford Economics

Supply

	China	India	Brazil	Mexico
Demographics				
Working age population	Talent supply weakness	Talent supply strength	Talent supply strength	Talent supply strength
Tertiary enrollments	Neither a major talent supply strength or weakness	Talent supply strength	Talent supply strength	Talent supply strength
Quality				
Tertiary enrollment rate	Neither a major talent supply strength or weakness	Talent supply weakness	Neither a major talent supply strength or weakness	Neither a major talent supply strength or weakness
Working age graduates	Talent supply weakness	Talent supply weakness	Talent supply weakness	Talent supply weakness
PISA education scores	Neither a major talent supply strength or weakness	Talent supply weakness	Talent supply weakness	Neither a major talent supply strength or weakness
University global ranking	Talent supply weakness	Talent supply weakness	Talent supply weakness	Talent supply weakness
Graduate employability	Talent supply weakness	Talent supply weakness	Neither a major talent supply strength or weakness	Neither a major talent supply strength or weakness
International talent	Talent supply weakness	Talent supply weakness	Neither a major talent supply strength or weakness	Talent supply weakness
Brain drain	Neither a major talent supply strength or weakness	Talent supply weakness	Neither a major talent supply strength or weakness	Talent supply weakness
Critical mass	Talent supply strength	Talent supply strength	Neither a major talent supply strength or weakness	Neither a major talent supply strength or weakness
Labour force participation	Talent supply strength	Talent supply weakness	Neither a major talent supply strength or weakness	Talent supply weakness
Specialisations				
Engineering	Talent supply strength	Talent supply weakness	Talent supply weakness	Neither a major talent supply strength or weakness
IT	Talent supply weakness	Talent supply strength	Talent supply weakness	Talent supply weakness
Other tradable service subject areas	Talent supply weakness	Talent supply weakness	Talent supply strength	Neither a major talent supply strength or weakness

- Talent supply strength
- Neither a major talent supply strength or weakness
- Talent supply weakness

A new generation of well-trained talent — from engineers to project managers — will be required to address India's chronic infrastructure problems.

Engineers at a newly completed Petrobras platform in Brazil.

The country currently produces over two million engineering graduates each year — six times the number produced in the US, the UK and Germany combined.

This shift toward a more service-oriented economy will create huge demand for managerial and professional expertise. To succeed in these growing sectors, China will need to groom a new generation of well-educated workers with a wide range of soft skills such as communication, negotiation and conflict resolution, which the Chinese economy hasn't previously required on this vast scale.

China faces other considerable challenges. Over the past 20 years, its working-age population has expanded by more than 200 million. But the demographic outlook is becoming less favorable as the effects of the one-child policy filter through. The Chinese workforce is growing older, which will mean that a new generation of talent needs to be developed rapidly to replace millions of retiring workers. Meanwhile, the number of people of university age is expected to fall by 20% over the next decade, and the growth rate of university enrolments will slow.[3] The country also has a relatively small population of proficient English speakers. The quality of its universities is relatively low compared to Western countries such as the US, Britain and Germany. China's cities also struggle to attract sufficient foreign talent. According to PwC's *Cities of Opportunity* report for 2012, Chinese cities rank in the bottom third globally for cultural vibrancy and city living, as well as for health, safety and security.

Demographically, India is relatively well positioned. Over the next decade, the nation's working-age population is projected to expand by a staggering 120 million,[4] and seven million more Indians are expected to enroll in universities compared to today — a larger expansion than in any other country.[5] India also has a younger workforce than China, so it won't face such extreme pressure to replace retiring workers. Meanwhile, India has developed a bountiful supply of youthful IT talent, which has helped to transform the city of Bangalore into a global hub for outsourcing.

However, India also faces major obstacles. The Indian government has a mixed record when it comes to confronting long-range strategic challenges, and the country is fiscally constrained at a time when considerable investment in education is needed. A new generation of well-trained talent — from engineers to project managers — will be required to address India's chronic infrastructure problems. But the nation's education system is still lacking. Only seven of the world's top 500 universities are in India, according to the QS World University Rankings; and India's enrolment rate in tertiary education trails that of China, Brazil, Indonesia, and Vietnam. India's workforce will also need to improve its soft skills as the economy continues its shift toward industry and services. It doesn't help that India's supply of gifted workers is depleted by a steady brain drain to the West.

The challenges are similar in other developing countries. With strong growth forecast for the next decade, Brazil is expected to create 17 million new jobs in industry and services. As the nation

3 United Nations
4 United Nations
5 Oxford Economics

Countries that hope to win this global talent war will not only need to invest wisely in education and training — they will also have to enhance the quality of life, improving everything from urban safety to public transport and green spaces.

deepens its involvement in advanced manufacturing and services, there will be intense demand for sophisticated workers.

Brazil boasts a relatively healthy supply of graduates in business, law and social sciences, which will help to support this transition. It already has a much higher rate of enrolment in tertiary education than China or India[6], and Brazilian enrolments are expected to surge by 40% in the next 10 years.[7] However, Brazil has a serious dearth of engineering graduates, given the level of investment that it's expected to make in infrastructure, construction and oil. While Brazil has a better record of attracting international talent than China or India, it will have to improve the safety and security of its cities in order to draw more professionals from overseas.

In Mexico, the number of engineering graduates is impressively high. What's more, the country's working-age population is expected to grow by almost 10 million in the next decade,[8] and its tertiary enrolments are projected to rise by 20%.[9] This will help as Mexico pushes further into service sectors like finance and tourism, adding nearly eight million service jobs in the next 10 years. But there is a steady drain of Mexican talent to the US, and problems with urban safety and security have not helped to attract foreign workers. Meanwhile, the country will need to train a lot of additional talent, given its ambitious investment plans in areas such as oil and gas, roads, railways, airports, and waste treatment.

Balancing investments to meet talent goals

What will it take for emerging countries to meet these burgeoning talent needs? Intelligent investment in education is clearly of critical importance. South Korea provides a compelling example of a nation that has dramatically raised its education standards, catapulting itself to the very top of the OECD's PISA world education rankings for math, science and reading. The share of South Korea's population that has received tertiary education has also risen sharply. Other countries must follow this lead, continuing to expand their supply of education to more students, without compromising the overall quality and employability of graduates.

Meanwhile, corporations also need to make talent planning a strategic priority. The leading businesses benefit from communicating their talent needs

6 UNESCO
7 Oxford Economics
8 United Nations
9 Oxford Economics

to education providers, recruiting from broader pools of talent, and encouraging internal mobility to locations with potential shortages. Companies frequently complain about the lack of experience among potential new hires, so it's also crucial to improve the training of employees. Governments can use incentives to encourage companies to do more in this area. Singapore has a Skills Development Fund to subsidize training, and it has operated a skills and technology transfer program with foreign governments and foreign direct investors to improve training. As talent shortages deepen, businesses will also find that they have to pay more to retain the most competent employees. But in the longer term, paying excessive premiums for talent threatens to erode the competitiveness both of companies and economies.

With global competition on the rise, governments need to invest shrewdly in expanding their domestic supply of talent. But they also need to attract suitable foreign workers. Singapore has proven particularly successful in drawing talent from overseas in sectors as diverse as offshore banking and biotechnology. The city-state's immigration regulations, low tax rates, bureaucratic efficiency, and high levels of safety and security have all helped to make it an attractive location for accomplished foreign workers. Singapore's government also has an unusually sophisticated and deeply embedded process of planning for growth, structural change and demographic shifts. Every six months, the government updates its skills forecasts, ensuring that it has a precise gauge of future demand for talent.

In the future, competition between countries to attract the best talent in sectors such as professional services and infrastructure will only intensify, with technological advances making it easier for people to pick and choose where to live and work. Countries that hope to win this global talent war will not only need to invest wisely in education and training — they will also have to enhance the quality of life, improving everything from urban safety to public transport and green spaces. That's good news for the world's increasingly mobile workforce. But for policymakers and corporate recruiters alike, enormous challenges lie ahead.

Hong Kong's business district.

A quick comparison of China, India, Brazil and Mexico

In articles and analysis to follow in *Gridlines'* emerging markets infrastructure series, we focus on three nations at the center of the traditional BRICs — Brazil, India and China. But we also look at Mexico, Latin America's second biggest economy, for an interesting counterpoint on a nation that is growing steadily with open world trade and increasing sophistication.

China

Challenges

Demographics
China's working-age population, which grew by more than 200 million in the last 20 years, will not continue to expand at this impressive rate. The number of young Chinese of university age will fall by about 23 million, or 20%, as the effects of the one-child policy filter through. Chinese university enrolments are expected to rise by a relatively modest 5 million in the next decade, compared with an increase of 20 million over the last decade. China has benefited from the massive influx of rural workers to cities, but this migration is also expected to slow in the next decade, diminishing the supply of cheap labor on which the economy's success has been built.

Quality
China has significantly improved its educational system, but an extremely low share of its working-age population is qualified to tertiary level — about one tenth of the share in South Korea. While China has more university students than any other country, it has only 16 of the world's 500 top universities, versus almost 100 for the United States. The standard of Chinese graduates is also highly uneven. A growing number of Chinese are learning English, but the overall population still has low English proficiency.

International talent
China is not tapping international talent as much as most other leading economies. According to PwC *Cities of Opportunity* 2012 research, Chinese cities rank in the bottom third globally for cultural vibrancy and city living, as well as health, safety and security — important factors in attracting global talent. Immigration regulations could also be more supportive in drawing accomplished foreign workers to China.

Strengths

Critical mass
In 2020, China will still have the world's largest working-age population, and will also have more young people in university than any other country. Already, China produces more graduates in business, law and social sciences than the US, which will help its economy to become more service-oriented. China is second in the world — behind the US — in the number of young people of working age with university-level qualifications. China is also ahead of many other emerging economies in its female employment rate.

Quality
The proportion of young Chinese who are entering tertiary education doubled in the past decade, and this will continue rising. The number of foreign language graduates has also doubled in just five years. In international PISA tests, 15-year-olds from Shanghai (a proxy for China as a whole) performed exceptionally in math, science and reading; China surpassed dozens of advanced countries, and was way ahead of emerging economic powerhouses like India.

Engineering
China boasts one-third of the world's engineering graduates, easily surpassing any other country in the world. Indeed, China currently produces over 2 million engineering graduates each year — six times the total produced by the US, the UK and Germany combined. This is a major positive for the infrastructure sector, though it also poses challenges: as the economy grows more service-oriented, universities will need to rebalance, producing more graduates in business, law, finance, science and languages.

Left to right: Housing expands near the Three Gorges Dam on the Yangtze River; Xiaolangdi Dam on the Yellow River in Luoyang; Startup Village in southern India hopes to help engineers develop 1,000 Internet and mobile companies in the next 10 years.

India

Challenges

Quality
India's education system remains a serious challenge, particularly for a country with such a rapidly expanding young population on which its future hinges. India has scored poorly in international PISA tests, lagging behind many other emerging nations. The country also has a lower tertiary enrolment rate than nations like China, Brazil, Indonesia and Vietnam. Meanwhile, only seven of the world's top universities are located in India, compared with 16 in China. India's universities have succeeded in taking on many more graduates in recent years, but this has exacerbated the difficulty of maintaining consistently high standards, and employers complain about the uneven quality of graduates. While India is renowned for its world-class IT graduates, it also suffers from a brain drain, with top Indian talent dispersed as far afield as Silicon Valley and London. India also needs to produce more engineering graduates to help the country address its severe infrastructure deficit.

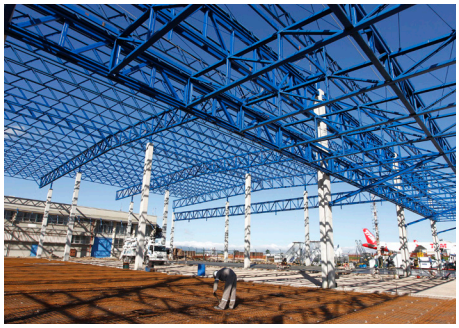
International talent
Even booming cities such as Mumbai have struggled to attract sufficient international talent. Problems with infrastructure — including the erratic supply of electricity, traffic logjams, and environmental challenges such as a lack of clean water — have made it difficult to draw top-level talent from overseas.

Strengths

Demographics
India's working-age population is projected to expand by a staggering 120 million in the next decade, equivalent in scale to the population of Mexico today. This will significantly increase the available labor supply, especially if female participation improves. Rapid urbanization is also expected to continue, with millions of rural workers flocking to India's rapidly expanding cities and providing a vast supply of low-cost labor.

Education
India is expected to enjoy a greater rate of university enrolment expansion than any other country, with seven million more Indians enrolling over the next decade above today's level.

IT
India has developed an enviable critical mass of young IT talent, helping to make Bangalore a major global hub for technology-driven outsourcing. This kind of expertise is also making India a flourishing business environment for tradable services. In IT service exports, India has an impressive lead over China and other emerging nations.



Left to right: Expanding the Afonso Pena airport in Curitiba, Brazil; Curitiba boasts the world's longest bus at 28 metres; the new Mexican air carrier Interjet moves toward biofuels.

Brazil

Challenges

Quality
Despite the remarkable progress of Brazil's economy, the country lags behind advanced nations in the quality of its human capital. This is evident in Brazil's relatively weak PISA education scores; in the fact that only five of its universities rank in the top 500 worldwide; and in the low share of the working-age population that is qualified at tertiary level.

Science and engineering
Brazil's share of science and engineering graduates is alarmingly low, given the talent requirements of the infrastructure sector and industry.

Strengths

Demographics
Brazil's working-age population is projected to rise by 13 million in a decade. Female employment rates are also higher than in Mexico and India, indicating better use of available talent.

Education
Brazil has a much higher tertiary enrolment rate than either China or India, and a greater share of its working-age population is qualified to tertiary level. Brazil's tertiary education enrolments are also expected to surge by 40% over the next decade. Brazil produces a healthy supply of graduates in business, law and social sciences, which should also help the country in its bid to boost its domestic service economy and its tradable services sector.

International talent
Brazil has had some success in attracting international talent, though it still needs to improve the safety and security of its major cities.

Mexico

Challenges

Quality
Mexico lags far behind advanced economies in terms of overall talent quality. As in Brazil, this is evident in Mexico's relatively weak scores on international PISA education tests and in the low share of working-age people who are qualified to tertiary level. Mexico also has only two universities that rank among the top 500 in the world.

International talent
Mexico has suffered from a brain drain of talent to the US, and it has a mixed record in attracting international talent. Despite some progress, Mexico's image as an appealing place to work has been tarnished by a wave of drug-related crime.

Strengths

Demographics
Mexico's working-age population is expected to grow by almost 10 million in the next decade, considerably boosting the supply of available talent.

Quality
Mexico has a higher tertiary enrolment rate than either China or India, and a higher share of its working-age population is qualified to tertiary level. Moreover, tertiary enrolments are expected to rise by 20% in Mexico over the next decade.

Engineering
Mexico's share of engineering graduates is impressively high, which should help the country meet future demand for talent in the infrastructure sector.

To discuss the issues

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