

Sustaining economic momentum in Myanmar

Yangon Office | October 2018



Authored by:
Silke-Susann Otto
Bastien Puech
Sarabjit Singh
Shatetha Terdprisant
Ben Vatterott

Contents

In brief

Introduction

1. Opportunities for government to catalyze growth

- Legacy issues hinder progress 12
- Productivity, markets crucial for growth 12

2. Businesses must lead

- Competition needed for growth 20
- Markets, technologies, talent crucial as competition increases 21

3. Creating a present, future workforce

- Tackling a widening skills gap 33
- Building a strong skills foundation 35

Conclusion: Exploiting opportunities arising from Industry 4.0

- Businesses face a triple transformation 42
- Securing a digital workforce 44

In brief

Economically, Myanmar has demonstrated considerable competence in recent years. A study by the McKinsey Global Institute (MGI), our business and economics research arm, named the country a “recent outperformer,” as it had consistently maintained sufficient growth over the previous 20 years to move up one income band – a feat achieved by only 18 of the 91 economies examined. Such growth has delivered significant benefits to citizens – for instance, GDP per capita rose from \$270 to \$1,484 over the period – and established Myanmar as a lower-middle-income country. Recent reforms have further accelerated economic development, with GDP growing at 7.2 percent a year between 2012 and 2017, and foreign direct investment (FDI) by 49 percent a year.

Maintaining Myanmar’s recent economic momentum, however, will require overcoming challenges both old and new. Along with addressing human rights criticism that could hinder progress, fundamental economic hurdles must be overcome. For instance, ease of doing business in the country ranks 171st out of 190 economies, according to World Bank analysis, while several large firms hold monopolies or near-monopolies. Labor quality is stagnant, and the growth of the labor force is plateauing. Infrastructure deployment is often delayed or canceled despite the significant need to bridge projected gaps.

Both the public and private sectors have roles to play in overcoming these challenges. The state can consider adopting pro-growth policies to catalyze increased capital accumulation and to improve infrastructure, both of which are significant drivers of growth. Further liberalization of markets could also lift and diversify trade flows, broaden FDI sources, and reduce onerous business processes.

Similarly, businesses can create jobs while improving productivity, in part by exploiting Myanmar’s emerging digital infrastructure. In agriculture, for example, crop yields could be improved by as much as 70 percent by 2030, while manufacturing could double its share of GDP. Financial services, by using mobile finance tools, could expand financial inclusion from 26 percent in 2017 to more than 90 percent by 2030. Retail can spur additional consumption through e-commerce that taps pent-up demand and democratizes commerce.

Pivotal to both the public and private sectors will be improving the skills of the country’s workforce. Though recent labor productivity growth has been strong, these improvements have been largely a result of deploying foundational infrastructure and mechanization without addressing underlying workforce skills. Overall labor productivity remains low.

Interventions to improve skills should address the entire talent ecosystem. First, the national education system could be improved through increased funding, learning outcomes aligned with jobs of the future, and student assessments improved to track progress. Furthermore, the state could consider actions to rapidly inject existing talent into the country – for example, attracting foreign professionals, funding overseas education and expanding the role of companies in vocational education.

To further accelerate productivity growth, Myanmar may also consider adopting Industry 4.0 practices, an umbrella term for leveraging big data, automation, and other emerging technologies in manufacturing. The transformation may be challenging. Throughout the Association of Southeast Asian Nations (ASEAN), only 13 percent of companies have launched Industry 4.0 initiatives.

Indeed, moving toward a digital economy will create its own challenges, with one to two million citizens likely to need new skills for workforce transitions taking place as a result of automation. To offset job displacements and provide the skills needed for new jobs in the digital economy, Myanmar should consider programs that improve general digital literacy, provide vocational digital training, encourage corporate retraining, and foster digital start-up ecosystems where talent can be cultivated and nurtured. Such programs can catalyze digital natives (companies that grew up amid new technologies) while stimulating innovation within existing large businesses.

By capturing these opportunities, Myanmar can maintain its trajectory toward a \$200 billion economy by 2030. Through concerted efforts from the state and business, complemented by significant investment in the workforce of tomorrow, Myanmar can sustain its outperforming economic momentum.



Introduction

The economy of Myanmar – a country of 54 million wedged between three economic powerhouses: South Asia, Southeast Asia, and China – has recently demonstrated some of the fastest growth rates in the world. To sustain this momentum, the country will have to adjust to new economic realities and political concerns.

A new report by the McKinsey Global Institute (MGI), our business and economics research arm, found that among 91 countries studied, the Myanmar economy was one of only 11 “recent outperformers” whose GDP grew at 5% per annum or more from 1995 to 2016.¹ During that period, Myanmar grew at more than 5 percent a year. On the back of such dynamic growth, the World Bank in 2015 reclassified Myanmar’s economic category from low income to lower-middle income.²

Taking stock of progress

Such economic improvements in Myanmar have delivered noticeable socioeconomic impact for citizens. For example, the nature of work has begun to shift from the primary sector – agriculture, forestry, and fishing – to manufacturing and services. The share of labor employed in the primary sector fell from 77 percent to 50 percent in the two decades through 2017. In tandem, the country is undergoing significant urbanization. The proportion of Myanmar’s population living in cities rose from 28 percent in 1997 to 35 percent in 2017, and is projected to reach 43% by 2030 (Exhibit 1).³

More recently, first steps at market reform have further accelerated the Myanmar economy. Over the past five years, annual GDP growth has averaged more than 7 percent. Improvements in other economic indicators, such as per capita wealth, foreign investment, and public-health expenditures, also have exhibited some of the fastest growth among Southeast Asia economies, albeit from lower starting points than Myanmar’s peers (Exhibit 2). Such growth is expected to continue in the near term, with the Asian Development Bank forecasting 7.2 percent growth in 2019, the highest among member states of the Association of Southeast Asian Nations (ASEAN).⁴

Behind these improvements, the country has largely followed a strategy of market liberalization over the last five years. While much of the market remains under state control, more than 60 sub-industries have been opened through partial liberalization. In addition, important pieces of legislation, such as the Myanmar Investment Law (2016) and Myanmar Companies Law (2017), have signaled a pro-market, pro-growth agenda (see sidebar “Liberalization in telecommunications,” on page and 10). Special economic zones (SEZs) also have shown early promise, with simplified procedures for investors and favorable tax incentives.

¹ For more details in the full McKinsey Global Institute report, see “Outperformers: High-growth emerging economies and the companies that propel them,” September 2018, on McKinsey.com. The 91 economies studied were selected from the World Bank’s June 2017 list of 218 economies. Advanced economies, countries with fewer than five million people, and those offering insufficient data were excluded from the MGI study.

² *The Data Blog*, “New country classifications,” World Bank, July 2, 2015, blogs.worldbank.org.

³ World Bank’s World Development Indicators, modeled ILO estimate of labor force, 1997–2017.

⁴ *Asian Development Outlook 2018*, Asian Development Bank

Exhibit 1

ASEAN economic performance comparison

Category	Economic performance		Productivity drivers			Demand indicators				
	Metric:	GDP growth	GDP per capita growth	Domestic savings growth	Foreign direct investment growth	Ease of Doing Business rank change	Consumption expenditure growth	Industrial production growth	Export growth	Import growth
Unit:	CAGR	CAGR	CAGR	CAGR		CAGR	CAGR	CAGR	CAGR	CAGR
Year:	2012 - 2017	2012 - 2017	2012 - 2017	2012 - 2017	2012 - 2017	2012 - 2017	2012 - 2017	2012 - 2017	2012 - 2017	2012 - 2017
Laos	7.9%	6.5%	7.9%	-3.6%	22			16.3%	13.0%	
Myanmar	7.2%	6.2%	6.2%	49.1%	8	7.7%		5.5%	13.8%	27%
Cambodia	7.1%	5.4%	18.2%		(2)	5.9%		16.5%	8.7%	28%
Philippines	6.6%	4.9%	7.8%	25.6%	25	6.1%	7.0%	5.7%	9.1%	14%
Vietnam	6.2%	5.0%	4.8%	10.5%	31	6.9%	8.0%	13.4%	13.4%	16%
Malaysia	5.2%	3.5%	3.6%	0.7%	(12)	6.6%	4.3%	-0.9%	-0.1%	7%
Indonesia	5.1%	3.9%	5.1%	2.6%	56	5.1%	4.8%	-2.3%	-3.9%	11%
Singapore	3.4%	1.8%	3.5%	11.0%	(1)	3.4%	2.5%	-0.2%	-1.3%	13%
Thailand	2.8%	2.4%	3.6%	-9.2%	(8)	2.0%	0.3%	0.7%	-2.3%	5%

1 Excludes Brunei and Timor Leste.

SOURCE: World Bank, IHS, Indonesia Central Bureau of Statistics, Bank of the Lao PDR, Malaysia Department of Statistics, Philippines Statistics Authority, Singapore Department of Statistics, Vietnam General Statistics Office, Myanmar Central Statistical Organization, Thailand National Statistical Office, Cambodia National Institute of Statistics

Exhibit 2

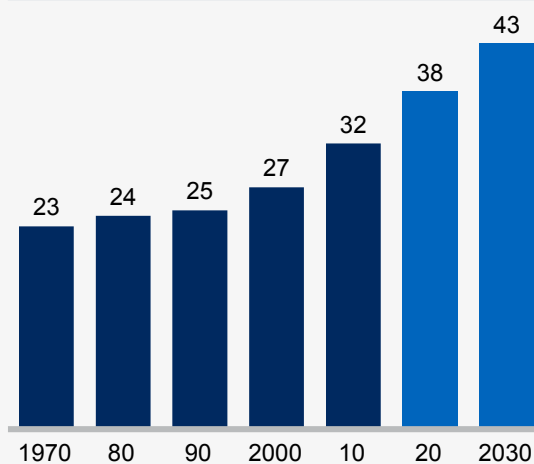
Urbanization is expected to drive economies of scale and productivity, particularly in Yangon and Nay Pyi Taw

Urbanization is expected to accelerate over the next 20 years...

...with Yangon and Nay Pyi Taw expected to experience the largest increases in GDP per capita

Urbanization percentage,

% of total population, 1970 - 2030



Urban population¹, 2014

(Thousand persons)

2017 - 2025 change

in GDP per capita

(PPP dollars 2012)

City	Urban population ¹ , 2014 (Thousand persons)	2017 - 2025 change in GDP per capita (PPP dollars 2012)
Yangon	5,161	1,799
Nay Pyi Taw	375	1,419
Mawlamyine	434	1,349
Mon Ywa	244	1,286
Meikhtilar	178	1,277
Pathein	304	1,275
Sittwe	134	1,262
Myin Chan	168	1,248
Mandalay	1,319	1,213

¹ Population numbers are for urban cores only, and thus exclude broader metropolitan areas

SOURCE: UN Department of Economic and Social Affairs, MGI Cityscope, Team analysis

The progress confirms the analysis included in our 2013 study, *Myanmar's Moment: Unique Opportunities, Major Challenges*.⁵ The McKinsey Global Institute report outlined two potential scenarios for the country. The first assumed the status quo, particularly in terms of historical labor-productivity growth rates, and it projected annual economic growth of around 4 percent. The second scenario envisioned a transition to a market economy with liberalized investment flows, diverse economic activity, and significantly improved labor productivity. Here, the analysis showed Myanmar could reach annual GDP growth rates of up to 8 percent, generate more than \$200 billion in GDP, and create more than ten million non-agricultural jobs by 2030. The country is largely on the path suggested by the high-growth scenario.

Crucial changes create challenges and opportunities

While Myanmar's recent growth has been strong, economic policy can continue to evolve to meet the challenges of a rapidly changing environment. The forces that propelled recent economic progress will lose strength. Growth through liberalization, while still crucial, will have a diminishing impact as business practices and technologies catch up to international standards. Growth through low-wage labor, a significant contributor to Myanmar's recent

⁵ For the full McKinsey Global Institute report, see "Myanmar's moment: Unique opportunities, major challenges," June 2013, on McKinsey.com.

Liberalization in telecommunications

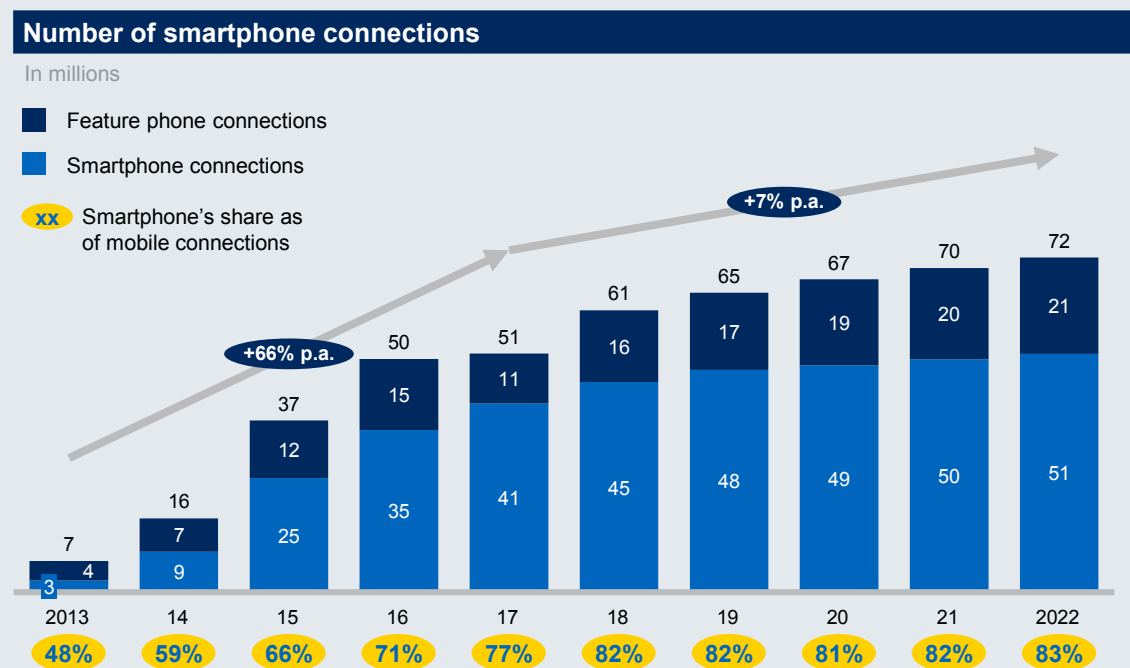
Reform efforts in Myanmar’s telecommunications sector illustrate the socioeconomic benefits that have been delivered through liberalization. In 2013, there were only 4 million mobile subscribers in Myanmar, a penetration rate of about 7 percent, one of the lowest among ASEAN members.¹

That year, the state began liberalizing the telecommunications market by creating an inter-ministerial committee to envision a new industry landscape and design the reform. Working closely with the Ministry of Telecommunications, the committee launched a tender that brought Norway’s Telenor and Qatar’s Ooredoo into the market. It also encouraged state-owned Myanma Posts and Telecommunications(MPT) to find international partners – eventually Japan’s KDDI and Sumitomo – to help steer major technical, talent, and commercial transformations. In addition, it paved the way for a fourth, Mytel, to join the market.

The effort had quick success. Within a year, the penetration rate had almost doubled, and by 2017, it had reached 94 percent, primarily smartphones (Exhibit A). At the same time, prices fell significantly for subscriptions and voice and data use. In addition, by 2018, the fastest mobile internet speed in Myanmar was second only to that of Singapore among ASEAN markets (Exhibit B).

Exhibit A

There has been an explosion of smartphone adoption in Myanmar and majority of mobile subscribers are connected using a smartphone

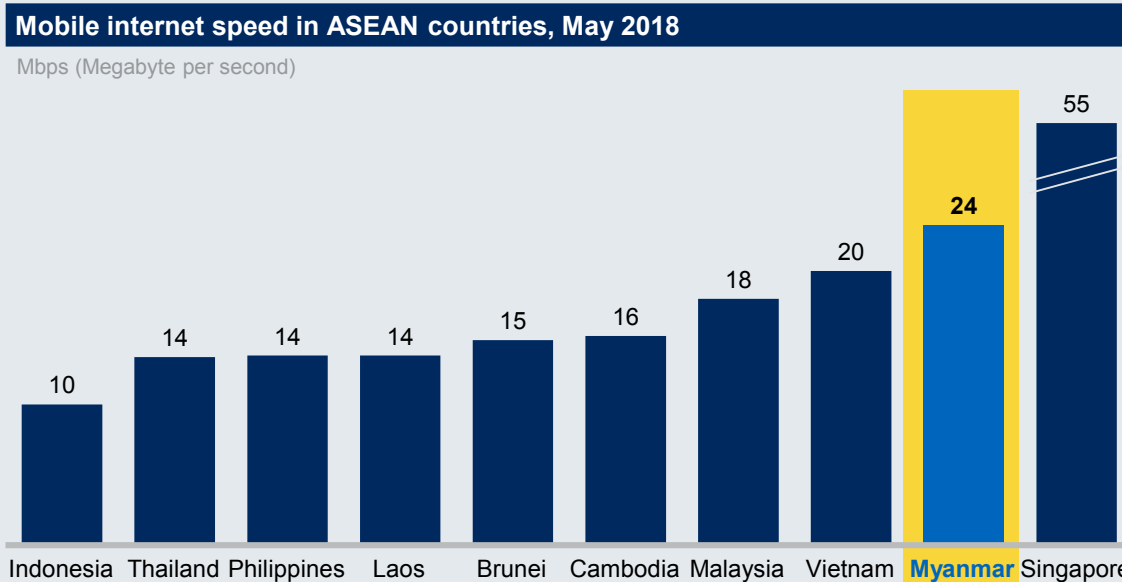


SOURCE: Analysys Mason

¹ Myanmar telecoms market report 2018, Analysys Mason

Exhibit B

Among ASEAN countries, Myanmar's mobile internet speed is second only to Singapore



SOURCE: OpenSignal "State of Mobile Networks: Myanmar (May 2018)"

These rapid improvements are delivering benefits beyond the country's telecommunications sector. By providing a strong digital foundation, the reforms allow companies in other sectors such as finance to move quickly into new technologies and potentially leapfrog their competition. The reforms also open new opportunities for companies to reach a broader pool of domestic and international customers.

"outperformer" status over the past 20 years, will be harder to achieve as incomes rise. Growth through urbanization is beginning to strain municipal infrastructure, creating diseconomies of scale. In parallel, recent fluctuations in foreign-exchange rates have concerned investors and could lead to reduced FDI as well as increased international supply chains costs for local businesses.

Amid these changes are significant economic opportunities. Though total population growth is plateauing, the country's age dependency ratio⁶ is projected to remain below that of the United States and Europe until at least 2050.⁷ An estimated six million workers will enter the country's industrial and services sectors between 2017 and 2030, offering an opportunity to directly train workers in advanced technologies generally grouped under the label Industry 4.0. A small but rapidly growing consumer class is creating new consumption,

⁶ The ratio of dependents (defined as people younger than 15 years or older than 64) to the working-age population (those between ages 15 and 64).

⁷ World Bank's World Development Indicators, population ages 15-64 (% of total), 2017-2050

while sectors such as agriculture, energy, and banking have clear opportunities to increase yield, output, and penetration. And the absence of legacy technologies can allow many companies to move directly to digital infrastructure, bypassing intermediary technologies that often burden companies in other geographies.

In this study, we examine the roles that the state, businesses, and the workforce played in propelling Myanmar's economic progress to date. Drawing from the examples of leading regional countries, particularly Singapore and Malaysia, the study pinpointed some efforts that could help Myanmar sustain its promising economic momentum.

1. Opportunities for government to catalyze growth

For many decades, the government has played an oversized role in Myanmar's economy. Although recent policies have begun to liberalize some industries, immediate prospects for rapid, sustained growth will be more reliant on government policy in Myanmar than in many peer countries.

Despite the dissolution of the military junta in 2011 and partial market liberalization by subsequent administrations, virtually every economic sector in the country remains touched by state-owned enterprises (SOEs) or conglomerates linked to the state. In aggregate, these SOEs employ roughly 145,000 people and collect more than 12 percent of GDP in fiscal revenue.⁸ Any effort to sustain or accelerate economic growth will require these corporations to play a leading role.

Legacy issues hinder progress

Myanmar's challenging conditions are well documented. The country ranks 171st out of 190 economies in World Bank's *Ease of Doing Business Report*, the lowest in Southeast Asia.⁹ Among the most persistent issues, those identified as severest by the World Bank are "enforcing contracts," with Myanmar ranked 188th in the study, and "protecting minority interests," where Myanmar ranks 183rd.

According to recent research by the Renaissance Institute, continuing economic challenges are linked largely to policies that allow officials to act on their own discretion when awarding contracts, with few checks and balances. Such practices hamper the state's ability to provide public services that will be critical to future growth.¹⁰

Productivity, markets crucial for growth

In seeking ways to sustain economic growth, Myanmar can learn from efforts that have succeeded in other countries. Our research covering ASEAN has shown that outperforming member states accelerate development by focusing macroeconomic policies on productivity and market access.

To improve productivity, Myanmar could adopt policies designed to stimulate capital accumulation, traditionally the greatest driver of growth, and improve urban infrastructure, providing better foundations for private investment. In addition, Myanmar could develop domestic markets by encouraging greater competition to spur growth, innovation, and ultimately wealth pools. The state could also ease access to international markets for local companies, opening a larger customer pool while benefiting from inbound knowledge and income transfers.

Two themes to boost productivity

Increased labor productivity is essential to sustain economic growth, especially in economies like Myanmar's, where the growth of the labor force is expected to slow from 1.4 percent a year in 2018 to 0.5 percent by 2030.¹¹ Indeed, our research has shown that

⁸ Andrew Bauer, Arkar Hein, Khin Saw Htay, Matthew Hamilton, and Paul Shortell, *State-owned economic enterprise reform in Myanmar: The case of natural resource enterprises*, Renaissance Institute, January 2018, resourcegovernance.org.

⁹ *2018 Ease of Doing Business Report*, World Bank, September 2017.

¹⁰ *State-Owned Economic Enterprise Reform in Myanmar: The Case of Natural Resource Enterprises*, Renaissance Institute, July 2018

¹¹ World Bank's World Development Indicators, total population ages 15-64, 2017-2030.

recent economic growth in Southeast Asia has been driven largely by improvements in labor productivity. Looking more deeply, capital accumulation – investments in tangible means of increasing production, such as factories, machines, or other assets – is a powerful tool for increasing labor productivity.

Myanmar has benefited from this link, recording exceptional capital accumulation rates between 1990 and 2015 (Exhibit 3). During these 25 years, Myanmar has averaged capital accumulation rates equal to 6.2 percent of annual GDP growth, above the ASEAN average of 4.9 percent and the average rates of global long-term outperformers and other emerging markets.

Myanmar should take care to maintain these attractive capital accumulation rates. Beyond the impact on growth, domestic capital accumulation also makes the country less dependent on volatile foreign-investment flows.

One method used by other countries is to institutionalize domestic savings, currently at about 30 percent of Myanmar's GDP. Singaporeans saved the equivalent of 51 percent of GDP between 2000 and 2015, and Malaysians 40 percent, rates that are among the highest in the world. These rates resulted from policies such as mandatory pension and savings plans and from the judicious use of sovereign-wealth funds. For example, workers in Malaysia must contribute between 5 and 11 percent of their wages to a pension fund managed by the state, which holds about \$200 billion in assets, the equivalent of roughly 60 percent of GDP. Implementing such programs in Myanmar would likely require bringing more people into the formal financial systems. The country's financial-inclusion rate, which was 26 percent in 2017, can be bolstered by wider adoption of digital finance.¹²

Perhaps more importantly, Myanmar can also examine ways to ensure accumulated capital is deployed productively, such as policies that encourage savings to be used for investment. Currently, for example, SOEs in Myanmar must hold at least 55 percent of their profits in inaccessible special accounts. This reduces funds available for reinvestment and creates unreachable cash surpluses in high-profit SOEs like Myanma Oil and Gas Enterprise while companies like Inland Water Transport, with lower profits, suffer from cash shortages.

More appropriate policies would make it easier for state companies to reinvest in the local economy. In Malaysia, the Ministry of Finance oversees all state assets, giving it effective control over equity stakes that in 2015 amounted to almost half the equity in the Kuala Lumpur Composite Index.¹³ To ensure coherence, the ministry adopted a series of control mechanisms governing, for instance, the transfer of assets to professionally managed state funds, strong central oversight teams, and appointments to boards of directors at strategic companies.

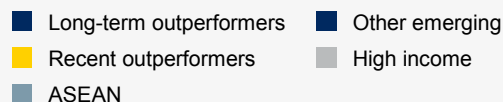
Beyond addressing accumulated capital, Myanmar could capture productivity improvements by correcting shortfalls in urban infrastructure, which have become more pressing as cities have grown. Yangon – by far the country's most populous city, with 4.5 million people – dominates the country's economy, contributing about a fifth of the

¹²Further details are included in the Banking subsection within Chapter 2 of this paper.

¹³Edmund Terence Gomez et al., *Minister of Finance Incorporated: Ownership and Control of Corporate Malaysia*, Palgrave Macmillan, 2018.

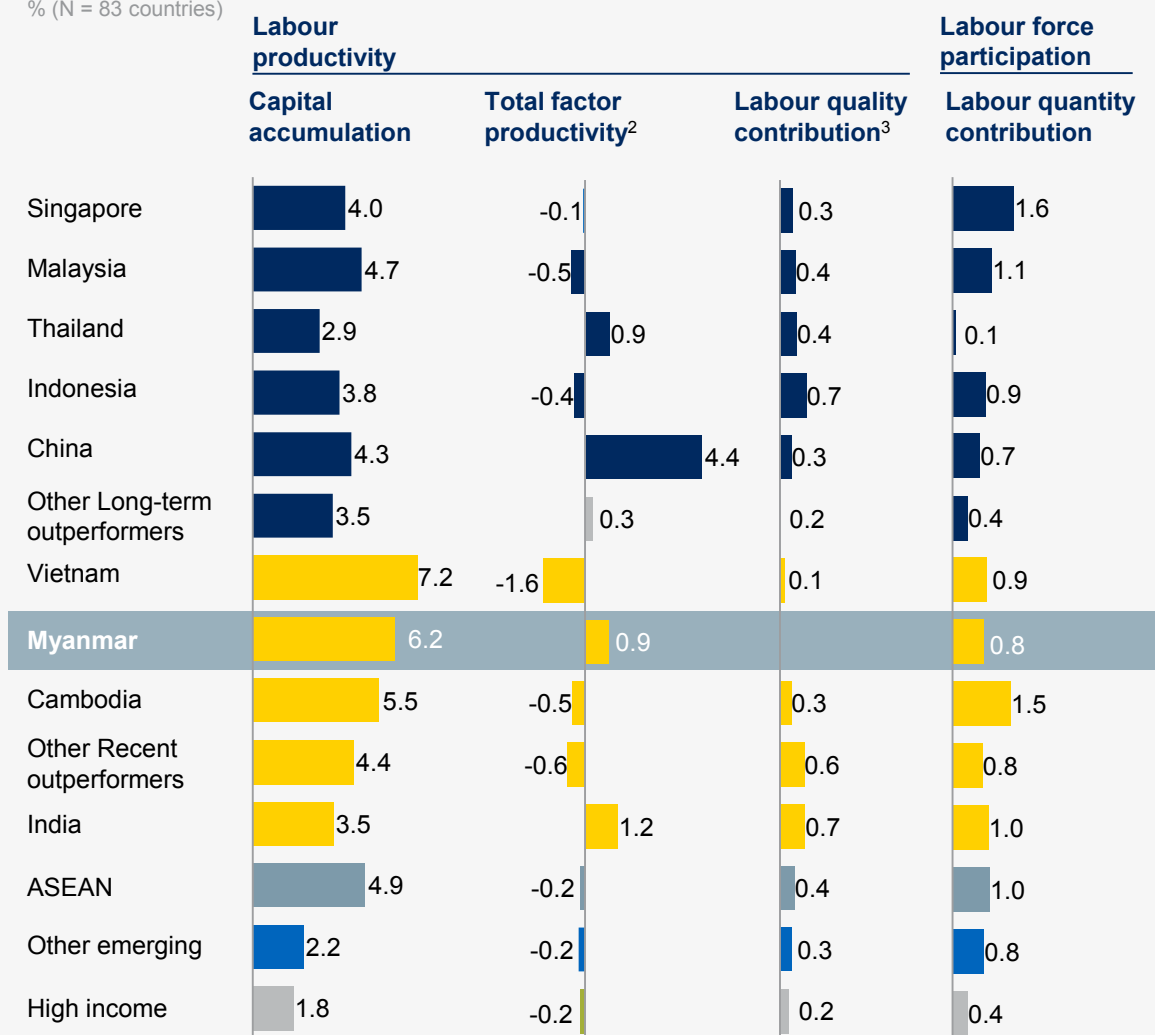
Exhibit 3

Capital accumulation has been the major factor input for economic growth in ASEAN



GDP growth decomposition

Contribution to real GDP growth, 1990–2015¹
 % (N = 83 countries)



1 Simple average across economies within cohorts and across years within countries. 1995–2015 for Recent outperformers.

2 Long-term outperformers' low rate of total factor productivity growth was caused, in part, by the 1997 Asian financial crisis. Further, capital accumulation and total factor productivity was likely lower for Long-term outperformers over this period as the growth accelerations in these economies commenced prior to 1990. For example, from 1965 to 1990, South Korea's average growth of output attributable to total factor productivity is estimated to be 2.39%, while capital's contribution was 4.27% compared to total output growth averaging 8.78% per year (Nirvikar, Singh, and Hung Trieu, 1996).

3 Labour quality or contribution data are constructed using data on employment and compensation by educational attainment. These data are collected from various sources, including Eurostat, World Input Output Database (WIOD) and various country-specific KLEMS (capital, labour, energy, material and services) databases.

SOURCE: Economics Analytics Platform; World Bank; The Conference Board Total Economy Database; McKinsey Global Institute analysis

nation's GDP.¹⁴ As witnessed in other large Southeast Asian cities, productivity in Yangon is beginning to suffer from urban sprawl and crowding, creating problems such as pollution, traffic congestion, and insufficient municipal services. Nationally, we estimate that Myanmar will require an infrastructure investment (excluding real estate) of \$150 billion over the next 15 years, equivalent to about 9 percent of forecasted cumulative GDP (see sidebar "Infrastructure needed to support growth," on page 16 and 17).

Clear challenges exist. For example, over the five years to 2017, the number of vehicles registered in Yangon more than tripled to more than 800,000, exceeding the design capacity of major roads and creating traffic problems.¹⁵ Capital cities in Latin American and Southeast Asia have tackled similar problems by actively promoting denser development, which allows efficient delivery of city services, and encouraging development in other cities.¹⁶ For example, some megacities have attempted to reduce congestion in the city center by building dense business districts on the periphery. To follow these examples, Myanmar would have to create long-term urban development and funding plans. The recently released New Yangon Socioeconomic Masterplan is a promising start, and other cities in Myanmar should consider following this example.

Opening markets at home and abroad

A more accommodating attitude toward foreign markets also is needed to sustain economic growth in Myanmar. Among their priorities, policy makers should consider working toward broadening the scope of export destinations served by the country's businesses. They should also create an appropriate domestic business environment for local and foreign companies alike.

Economic powerhouses of Southeast Asia, including Singapore and Malaysia, have built their successes by tapping into external trade flows. Usually they began with strong export-oriented policies, such as trade deals, preferential tariffs, and incentives for foreign investment that encouraged knowledge transfers and employment of local talent. Among other benefits, the measures helped local manufacturers tap into global supply chains and become world-class exporters in their own right.

Myanmar would have to adjust such measures to its own context, which includes very concentrated trade flows and a legacy of isolationist policies. Three-quarters of Myanmar's trade flows are with its top five partners,¹⁷ compared with a Southeast Asian average of about 60 percent. Non-Asian trade accounts for a paltry 2 percent of flows. The country has begun expanding its trade network – for example, by negotiating with the European Union – and should consider continuing such efforts to broaden global market access for domestic companies.

¹⁴*The state of local governance: trends in Yangon*, UNDP, February 2015

¹⁵Myanmar Motor Vehicle Statistics, CEIC Data, accessed September 2018.

¹⁶For the full McKinsey Global Institute reports, see "Building globally competitive cities: The key to Latin American growth," August 2011; "Urban world: Cities and the rise of the consuming class," June 2012; and "Three paths to sustained economic growth in Southeast Asia," November 2014, all on McKinsey.com.

¹⁷China, Thailand, Singapore, Japan, and India, according to the Central Statistical Organization of Myanmar.

Infrastructure needed to support growth

Traditional infrastructure – roads, utilities, and ports, for example – form the backbone of any economy. Our analysis shows that Myanmar has fallen behind in providing the infrastructure needed for sustained growth and is struggling to catch up. Also, as economies rely more and more on advanced infrastructure, such as universal high-speed internet, these gaps could become an even greater hindrance.

Using a base of comparable economies, our estimates suggested that Myanmar's required infrastructure investment will double to \$150 billion between 2016 and 2030 (Exhibit A). About half of this will be needed in transportation infrastructure, because of expected traffic increases, and about a third in power, driven by the need to bring electricity to more households and consumption growth linked to higher incomes.

Critically, Myanmar is already struggling to meet its infrastructure needs. A McKinsey survey of 7,786 infrastructure projects in Southeast Asia from 2007 to 2017 found that in Myanmar, 10 percent of announced projects were canceled or delayed indefinitely, the highest proportion in the region (Exhibit B). While the reasons for these setbacks varied, a common theme was that designs or revenue agreements made these projects economically unfeasible. Internal rates of return were often half of the 15 to 30 percent that investors expect in developing countries.

The reasons for these failures varied. For instance, some had commercial hurdles, such as poor project economics or unfavorable contract arrangements linked to misaligned incentives for SOEs. Others faced technical bottlenecks, such as project briefs that failed to meet technical rigor or regulatory hurdles connected to land acquisition and permits.

Of course, Myanmar is not alone in facing challenges in financing and executing infrastructure projects. Across Southeast Asia, the capacity for new projects is limited by capital and institutional constraints. Myanmar can draw from the experiences of others that overcame these challenges.

Fact-based project selection, streamlined delivery with proper preparation, and tight project management can reduce infrastructure costs by about 25 percent.¹ Among the successful programs in Southeast Asia, Vietnam has used in-kind payments such as land to complete intra-city transit projects. Malaysia has used an innovative form of public-private partnerships called Project Delivery Partnerships to build urban rapid-transit systems. Myanmar has implemented several initiatives to screen, prioritize, and fund infrastructure projects. Continuing to adapt these programs to Myanmar's unique situation will help push infrastructure improvements forward.

Some countries have also used the power of their SOEs to create efficiencies in building infrastructure. Petronas, Malaysia's state-owned oil and gas company, began a Vendor Development Program to spur development of a local supplier network for oil and gas technologies. The effort offered select local suppliers support including guaranteed contracts, secondment of engineers, extended credit lines, and access to public research institutes. Among the alumni of the program, Serba Dinamik became a leading provider of maintenance, repair, and operations services for rotating equipment to the oil and gas sector. In 2018, Petronas extended the program to include other business areas such as business development, financial management, engineering, and information and communications technology.

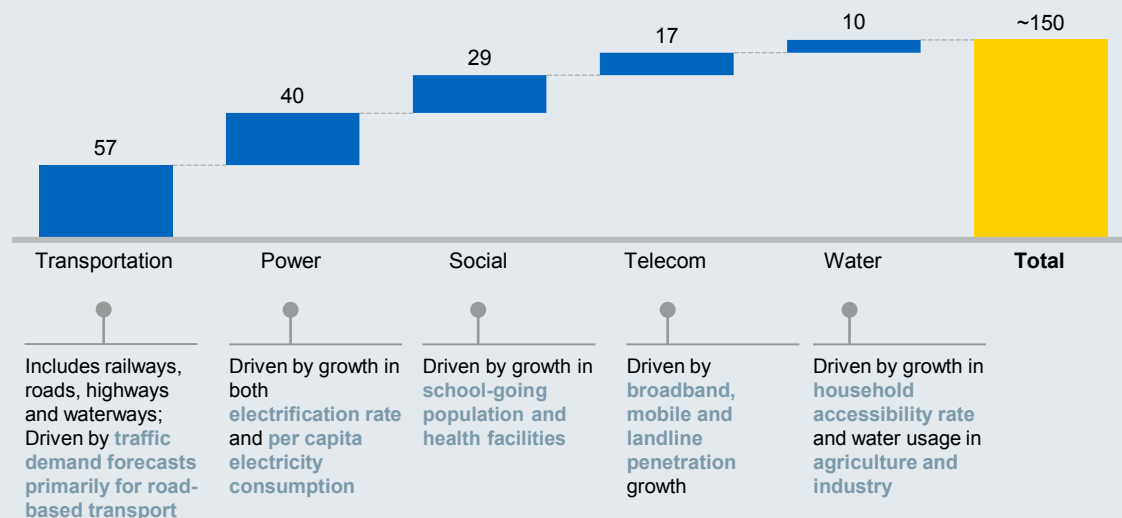
¹ For more, see "Bridging infrastructure gaps: Has the world made progress?," McKinsey Global Institute in collaboration with the Capital Projects and Infrastructure Practice, October 2017, on [McKinsey.com](https://www.mckinsey.com).

Exhibit A

Approximately USD 150 billion will be needed to fill Myanmar’s infrastructure gap over the next 15 years

Public infrastructure¹ investment needed (2016 – 2030)

\$ billion



¹ Excludes real estate, which is estimated to require an additional \$167 billion driven overall construction activity

SOURCE: McKinsey, IHS

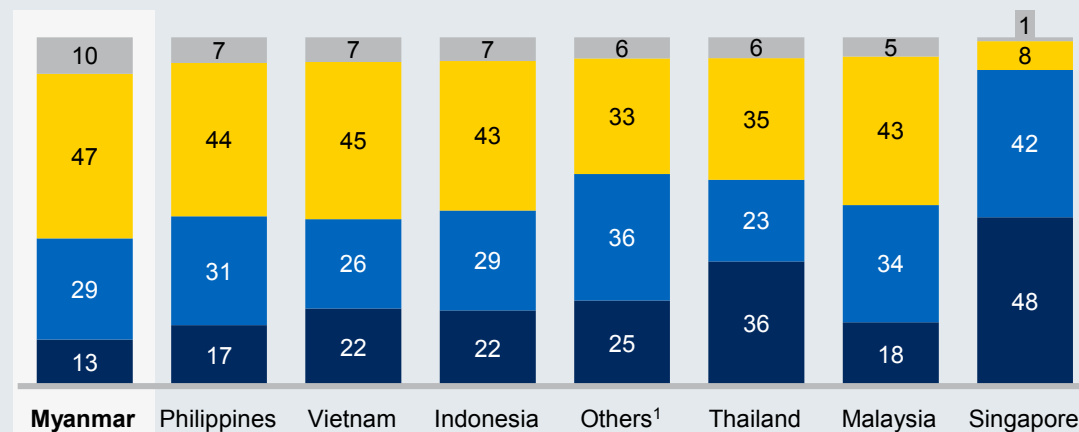
Exhibit B

Within ASEAN, Myanmar has the highest rate of project cancellations – and lowest rate of project completion

■ Cancelled/On hold ■ Execution
■ Study and design ■ Complete

Major infrastructure projects in ASEAN, by stage of completion, 2007–2017²

% of projects



¹ Includes Cambodia, Laos and Brunei

² Survey of 7,786 projects in Southeast Asia

SOURCE: McKinsey

A robust external trade system, however, is just a part of the solution. Myanmar can also create a domestic business environment that supports economic growth. Foreign and domestic companies both face challenges under the current structure.

Like in other Southeast Asian countries, anticompetitive practices and overly bureaucratic policies, such as onerous processes to secure import licenses, place unnecessary burdens on nascent domestic companies trying to build market share. In addition, foreign companies in Myanmar face institutional discrimination, such as preferential treatment for local companies and direct restrictions on their business activities.

In recent years, the government has begun addressing some of these issues – for instance, by removing the majority of state monopolies on international trade and eliminating licensing requirements from more than 160 commodities. It has also focused on reforming the telecom and retail sectors while increasing consumer protections. Recently established special economic zones also show promise, with one-stop shops for investors and tax incentives. These could be enhanced with targeted and bespoke programs to attract more investors.

Continued improvements and investment by the state are crucial to sustaining Myanmar's growth trajectory. Because SOEs and companies linked to the state feature so prominently in Myanmar's economy, the state has leverage to act to help sustain economic expansion. In the following chapter, we will examine the complementary role of companies to improve productivity and competitiveness, both at home and abroad.

2. Businesses must lead

McKinsey Global Institute research has shown that large companies (those with annual revenue of at least \$500 million) have a pivotal role in generating growth in developing countries.¹⁸ In the early stages of a country's development, large companies tend to grow faster than the overall economy, encourage the development of local supply chains, and reinvest capital and technology in the local economy. Their dominance is particularly striking in Southeast Asia, where revenues equal 37 percent of GDP, compared with 28 percent on average in other regions.

Between SOEs and large private-sector conglomerates, market concentration is a defining feature of Myanmar's corporate landscape. SOEs play an especially dominant role with their contribution to state revenues, accounting for 40 to 60 percent of total government intake.

Having benefited from Myanmar's past economic policies, the country's large companies now have a responsibility to help sustain economic growth rates. For most, this will mean innovating and streamlining operations in the face of greater competition, with some losing their leadership positions in their respective industries. To prepare for the changing climate, Myanmar's SOEs and large private-sector companies will likely need to understand markets better, deploy improved technology and best practices, and develop talent.

Competition needed for growth

Increased competition, with companies vying for market leadership in individual sectors, is a crucial feature of most outperforming economies. Competition and the fear of losing market share drive companies to seek innovation and dynamically redistribute value among players in an industry.

Competition can also lead to frequent changes in industry leadership, a dynamism that has been historically absent in Myanmar. McKinsey research has shown that in outperforming economies, only about 45 percent of the companies that were in the top quintile of their industries between 2001 and 2005 were still among the leaders a decade later. The turnover in leadership was much more rapid than in high income countries, where about two-thirds of companies stayed in the top quintile over that period. The findings held for almost all the industries studied, including those that generally gravitate toward monopolies.

In Myanmar, market structures historically have not encouraged contested industry leadership in large parts of the economy. Several of the largest firms, primarily SOEs, hold monopolies or near-monopolies endorsed by the state, virtually ruling out any real market competition. Perpetuating the situation, many companies choose suppliers and other partners based on political or personal considerations, rather than competitive tenders or clear analysis.¹⁹

Assuming the state continues to take steps to liberalize domestic markets, competition and contested industry leadership will inevitably rise. Policies that distort markets, such as state subsidies and protectionist licensing practices, are being phased out. Restrictive regulations, such as capital controls, are being updated or rescinded. If these changes

¹⁸For the full McKinsey Global Institute report, see "Outperformers: High-growth emerging economies and the companies that propel them," September 2018, on [McKinsey.com](https://www.mckinsey.com).

¹⁹Andrew Bauer, Arkar Hein, Khin Saw Htay, Matthew Hamilton, and Paul Shortell, *State-owned economic enterprise reform in Myanmar: The case of natural resource enterprises*, Renaissance Institute and National Resource Governance Institute, July 2018, resourcegovernance.org.

continue, incumbents will not be able to rely on past protectionist policies to secure their market positions but instead must prepare for a more competitive environment.

Markets, technologies, talent crucial as competition increases

While multiple studies have shown that corporate competition drives overall economic growth, today's market leaders are not guaranteed a top place in the new order. As disruptions move through industries, companies will have to compete to maintain their market share. Some will lose their leadership positions, and others might disappear entirely.

Incumbents in Myanmar – SOEs and private-sector players alike – will need to prepare for a more competitive environment by broadening their markets, deploying technology and best practices, and enhancing their talent development processes.

Gaining strength from expanding markets

Companies exposed to international markets and multinational partners tend to be more productive.²⁰ These companies capture a myriad of benefits, including exposure to different production and managerial practices and economies of scale, as they begin serving a larger pool of customers. Myanmar companies, which came of age in a period of isolationist policies, stand to capture great value from broadened experiences.

In addition, relatively low domestic wages provide Myanmar companies with a solid competitive advantage while exploring new markets, if they can control other factors contributing to total cost of production that are specific to Myanmar, such as the costs of backup generators and inefficient logistics (Exhibit 4). Further, with trade focused almost solely within Asia, Myanmar can gain from the region's projected economic growth, which is expected to continue outpacing the global average.

Capturing the full benefits of international exposure is a long-term strategy, and Myanmar could draw lessons from the experiences of other Southeast Asia countries. Using the textile and electronics industries as examples, Asian countries such as Singapore and Thailand began the process by serving as trusted suppliers to foreign companies with domestic facilities. As they gained experience, knowledge, capital, customers, and supply networks, these companies became independent exporters, serving wider markets. The successful companies themselves became multinationals, opening production bases abroad.

The process is exemplified by companies like equipment maker Pentamaster and electronics supplier ViTrox Technologies, both from Malaysia, which began as suppliers to global manufacturers with plants in Malaysia and have since become global, publicly listed companies and significant contributors to the domestic electronics industry.

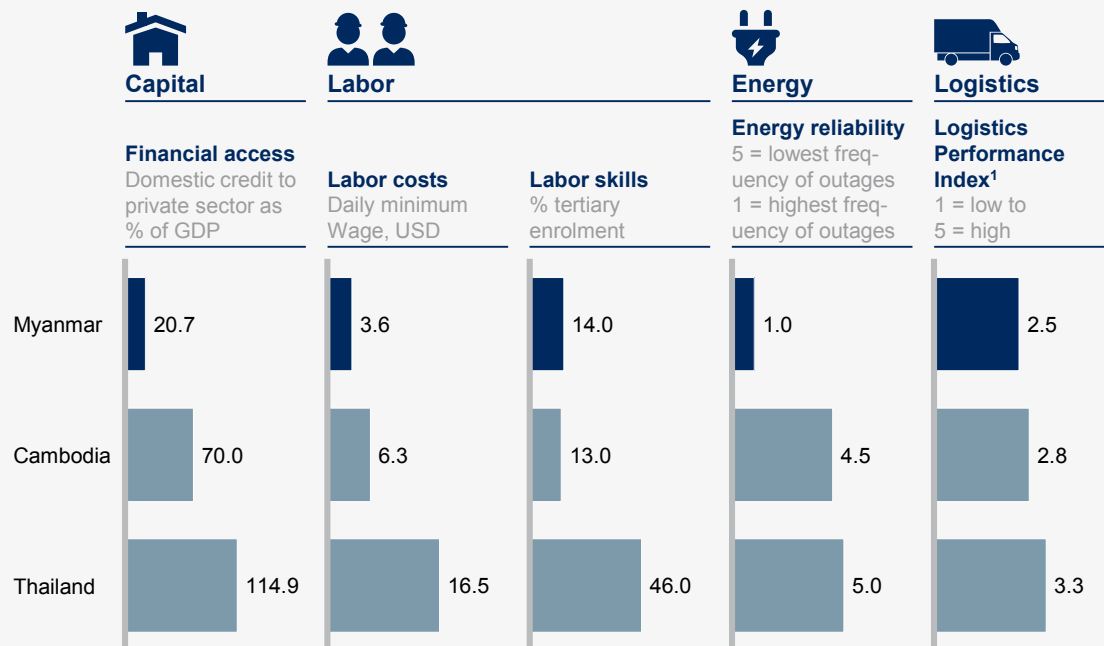
Deploying technology and global best practices

By international standards, much of the Myanmar's industry remains rudimentary, and significant value can still be captured, in particular by adopting readily available technologies. Each industry, of course, starts from a unique position. As part of our analysis, we closely examined six industries that together make up 75 percent of Myanmar's economy – agriculture, energy, manufacturing, construction, financial services, and retail

²⁰Bee Yan Aw, Sukkyun Chung, and Mark J. Roberts, "Productivity and turnover in the export market: Micro-level evidence from the Republic of Korea and Taiwan," *World Bank Economic Review*, January 2000, Volume 14, Number 1, worldbank.org.

Exhibit 4 Myanmar's competitive advantages

2016 (or earliest available)



¹ World Bank index based on surveys of logistics companies. Overall score reflects perceptions of a country's logistics based on six dimensions: efficiency of customs clearance process, quality of trade- and transport-related infrastructure, ease of arranging competitively priced shipments, quality of logistics services, ability to track and trace consignments, and frequency with which shipments reach the consignee within the scheduled time

SOURCE: Energy Planning Department (Ministry of Energy); Myanmar Oil and Gas Enterprise (Ministry of Energy); Index Mundi; ADB; IEA

– and looked for themes suggesting how to deliver rapid improvements. Adopting such practices will allow Myanmar to maintain its recent economic momentum and trajectory toward a \$200 billion economy by 2030, as projected in our 2013 study *Myanmar's Moment*.

1. Agriculture

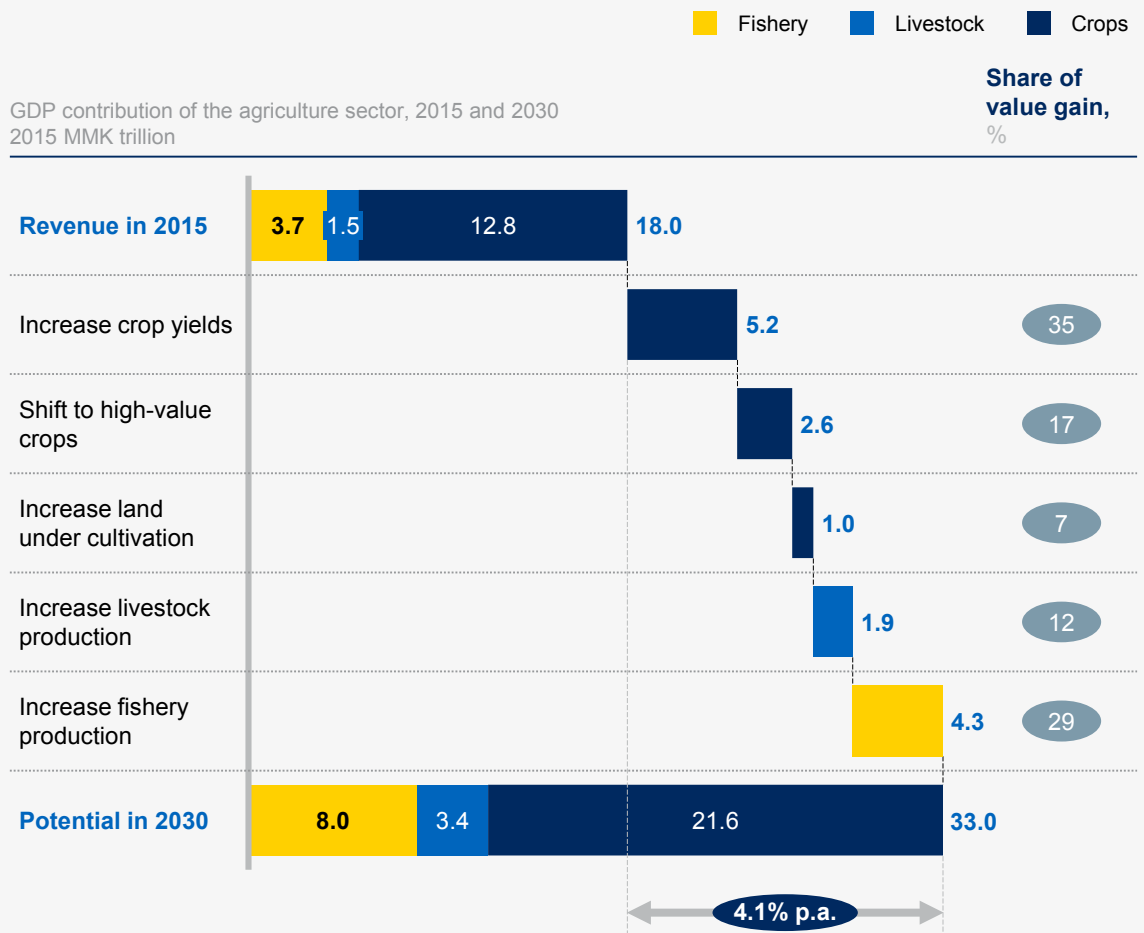
Agriculture is the dominant sector in Myanmar, accounting for about 27 percent of the country's GDP and employing roughly half of the country's labor force – some 13 million people. The sector has admirable room to grow, with markets of half a billion people at its doorstep and domestic demand expected to rise as incomes expand. Rapidly increasing global food prices (135 percent over the past decade) also open an opportunity to increase volume and revenues.

MGI has estimated that Myanmar's agriculture sector, excluding forestry, could grow at an average rate of 4.1 percent a year through 2030, reaching a total contribution to GDP of about MMK 33 trillion, or about USD 21.5 billion²¹ (Exhibit 5). By leveraging its large tracts of arable land, which equal those in Germany, the country has the potential to develop an agriculture sector serving the neighboring food-hungry markets of China, India, and Thailand, or even further abroad to countries such as Japan.

²¹Exchange rate as of October 2018

Exhibit 5

By 2030, Myanmar's agriculture sector GDP could almost double in value



SOURCE: McKinsey Global Institute analysis

Growth is expected to come from a variety of factors, with improved yields the strongest force, accounting for about a third of the estimated gains. MGI has estimated that yields could improve by about 70 percent by 2030, largely through straightforward advances, such as higher-quality seeds, increased mechanization, and improved irrigation.

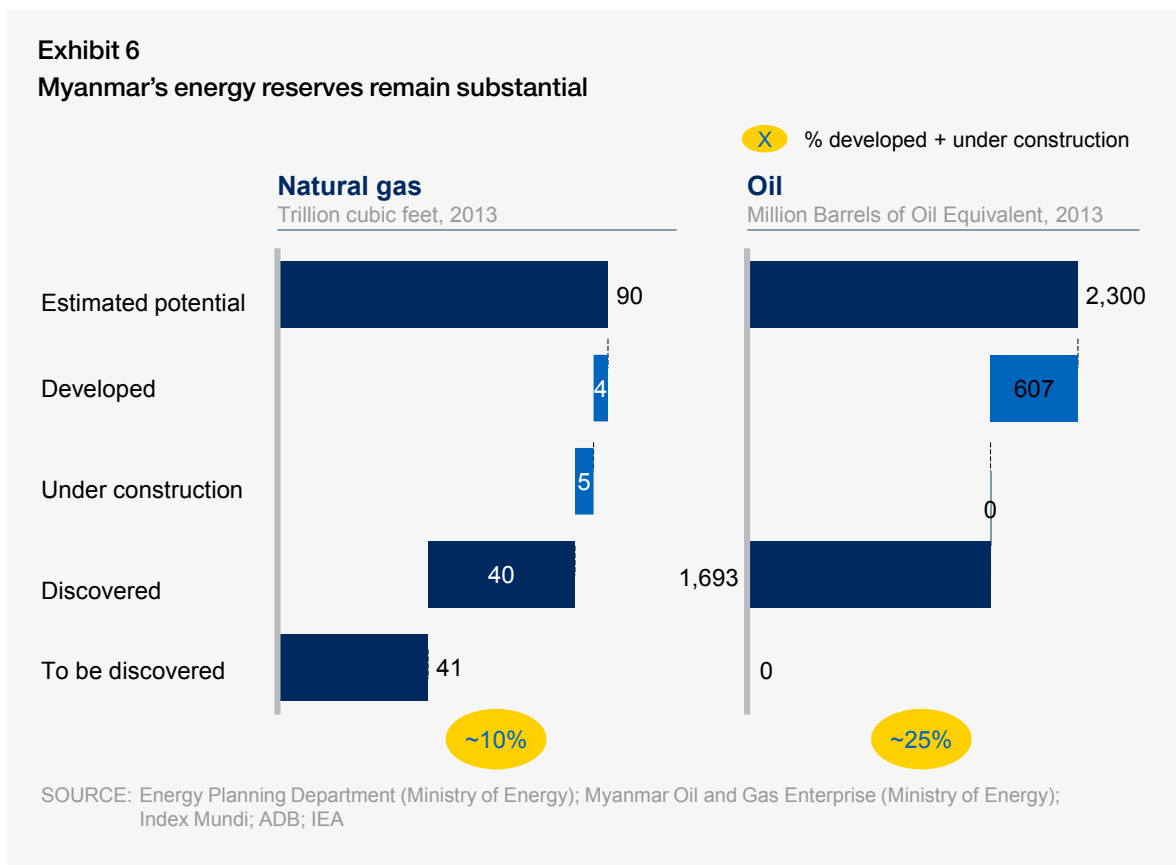
However, growth can also be delivered from increased use of digital technologies that decrease the cost of mechanization, provide better data to manage crop cycles, and ease access to markets. Myanmar's Proximity Designs, a not-for-profit organization, uses advanced manufacturing techniques such as 3D printing to build parts and equipment for small farmers on site. The effort is part of a cottage industry that builds replacement parts and minor equipment to counter strict import regulations that make it difficult for small farmers to procure equipment. Locally developed apps such as Htew Toe and Golden Paddy provide location-specific information on diseases, weather, and soil analyses, thus enabling farmers to make more informed decisions regarding their crops.

E-commerce also has the potential to increase farming revenues and productivity by offering farmers wider access to markets and fairer prices compared with the limited buyer pool

many have currently. In Indonesia, RegoPantes connects farmers directly to consumers, allowing farmers to minimize transaction costs and improve their sensitivity to prices, as well as providing cash flow visibility.

2. Energy

Though Myanmar's energy sector is limited, representing roughly 1 percent of GDP, significant value remains unrealized. Only about 10 percent of estimated natural-gas reserves are being exploited, and about 25 percent of oil (Exhibit 6). The untapped potential not only points to growth potential, but also provides a rationale to leapfrog to the newest technologies as they become financially viable and deliver environmental safeguards.



Developing this potential will enable the country to achieve meet forecasted demand of 58 gigawatt-hours in 2030, which in turn will require quadrupling capacity from 4.3 gigawatts in 2015 to 16 gigawatts.²²

Global efforts suggest a few ways that Myanmar's energy sector can capture value from new technology. In Canada, a mining company has optimized its operations by using the Internet of Things, an interconnected system of remote sensors and controllers. Real-time data delivered from processing equipment to mobile maintenance crews and central operations centers has helped improve maintenance schedules and reduce downtime. As a result, maintenance costs were reduced by up to 40 percent, and capital expenses for new

²²Myanmar Energy Sector Assessment, Strategy, and Road Map, December 2016, Asia Development Bank

equipment by 3 to 5 percent.

Additionally, shifting to renewable energy sources could bring significant savings to Myanmar. Electricity typically accounts for about a third of a mine's total energy use, and pilot projects in Australia that combine solar power with conventional fuels have lowered energy costs by up to 2 percent and emissions by up to 10 percent. Extensive sunshine in Myanmar makes solar power very attractive, and because mines are often far from the main power grid and suffer from disruptions, solar power can provide greater reliability.

3. Manufacturing

Growth rates in Myanmar's manufacturing sector have outpaced the country's overall economic growth, and manufacturing has the potential to pass agriculture as the country's biggest industry by 2030. Between 2007 and 2017, manufacturing grew on average about 10 percent a year, compared with about 7 percent for the overall economy. As a result, manufacturing's relative contribution to GDP rose from 14 to 23 percent. If manufacturing continues to grow at rates seen in peer countries, by 2030 the sector could employ up to eight million people, up from roughly three million in 2014, and account for 28 to 30 percent of the country's GDP (Exhibit 7).

About three-quarters of the growth projected for Myanmar's manufacturing sector will likely come from productivity improvements. Indeed, some manufacturers in the country are already beginning to introduce advanced manufacturing processes, taking advantage of the country's move away from isolationist policies to bypass intermediary technologies and practices and directly adopt advanced methods. For example, textile manufacturers have begun installing looms with air jets that can weave at 2,000 picks²³ a minute, compared with conventional speeds of less than 200 picks a minute. Innovations across manufacturing will become more available if access to capital imports is eased.

4. Construction

The construction industry in Myanmar has recently emerged as a significant contributor to the country's economic growth. Between 2007 and 2017, the industry grew on average by about 11 percent a year, much faster than previous growth rates. In 2017, construction accounted for about 6 percent of GDP, up from 2 percent in 2000. Its new strength is also seen in jobs data, with the industry employing roughly 500,000 people, about four times as many as in 2010.

The rapid growth has spawned increased competition within the sector, forcing companies to explore ways to improve efficiency and service. However, the sector still has significant room for improvement. One McKinsey study found that cost and schedule overruns are common in the construction sector, with large projects typically taking 20 percent longer to finish than planned.²⁴

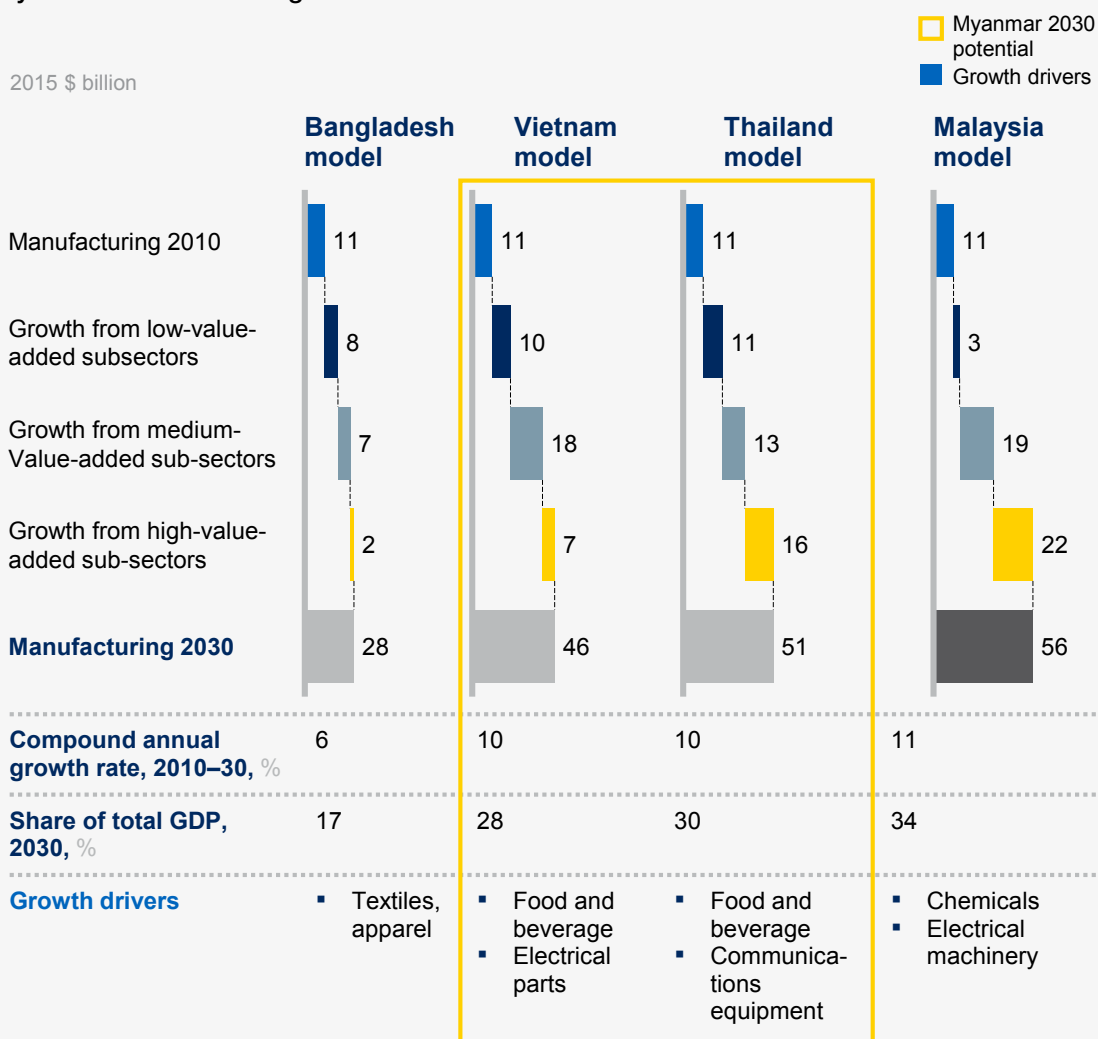
Digital tools to enhance collaboration, such as building information modeling (BIM) and industrialized building systems (IBS), can help companies improve their operations and

²³A pick is one movement of the thread-bearing shuttle across a loom.

²⁴Rajat Agarwal, Shankar Chandrasekaran, and Mukund Sridhar, "Imagining construction's digital future," June 2016, McKinsey.com.

Exhibit 7

The experience of other developing countries suggests a range of possible paths for Myanmar's manufacturing in 2030



SOURCE: International Monetary Fund; Asian Development Bank; The Conference Board Total Economy Database; Global Insight; McKinsey Global Institute analysis

become more competitive by, for instance, minimizing disputes over claims and avoiding mismanaged paperwork. A BIM system provides a shared digital model of a structure and its functions. IBS focuses on allowing off-site construction of many components, which could be important in Yangon, as transport restrictions can delay on-site processes.

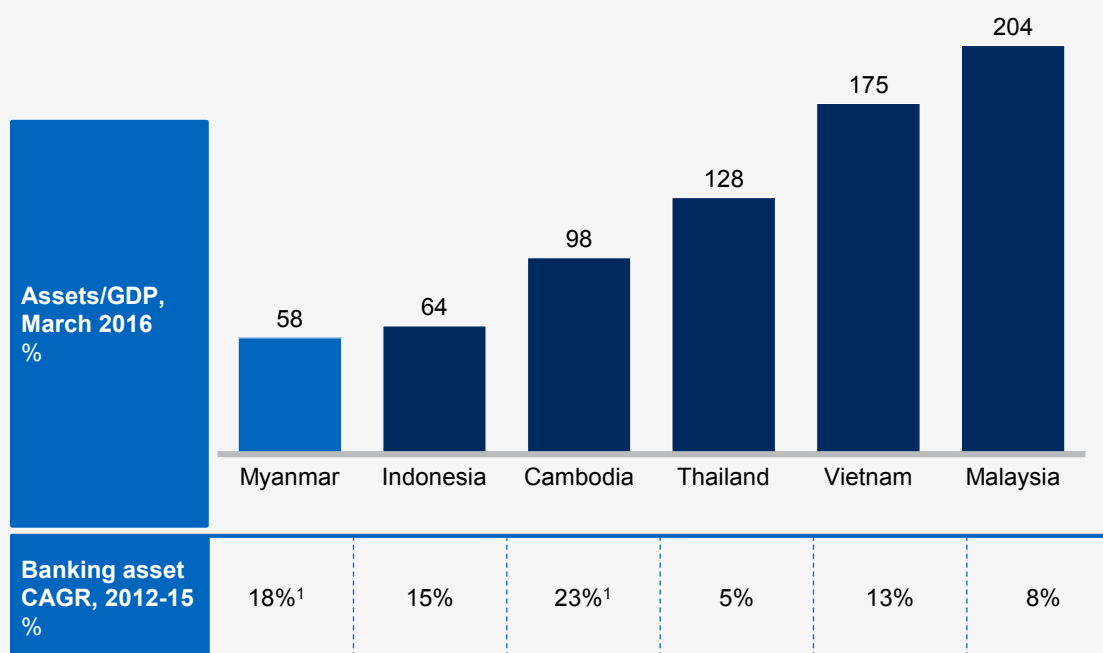
5. Financial services

Myanmar's overall banking sector is growing rapidly, with total banking assets increasing 18 percent a year between 2012 and 2016. The bulk of this growth has been driven by domestic private banks, whose assets grew from MMK 8 trillion to MMK 20 trillion during this period.

Despite this new momentum, Myanmar's ratio of banking assets to GDP was 58 percent in 2016, barely a quarter of the ratio seen in Malaysia (Exhibit 8). The gap shows a significant potential for further growth in the sector. Myanmar could reach a ratio of 76 percent by 2021 if it were to follow the development pattern seen in peer countries.

Exhibit 8

Myanmar's banking sector is currently underdeveloped with the lowest banking assets to GDP ratio in the region



¹ Most recent data available (2014)
SOURCE: CBM, GIZ, IMF, Team Analysis

Already, domestic banking assets are growing at an average annual rate of about 20 percent between 2013 and 2016. This growth was driven primarily by private banks, which accounted for 33 percent of total assets in 2013 and 50 percent in 2016. Assets at private banks grew at 31 percent a year during this period, deposits at 38 percent, and private loan volume at 41 percent. In addition, net banking income is expected to almost double from MMK 1.08 trillion in 2016 to MMK 2 trillion in 2021.

Despite a strong outlook, financial inclusion remains low. The World Bank's 2017 Global Findex estimated that only 26 percent of adults in Myanmar had access to a formal or informal bank account in 2017, a marginal improvement over the 23 percent with access in 2014 (Exhibit 9). Among ASEAN countries included in a recent McKinsey study, only Cambodia had a lower rate.²⁵ In addition, people in Myanmar with bank accounts are digital neophytes, with the vast majority still preferring a visit to traditional branches over digital banking (Exhibit 10).

²⁵McKinsey Asia Personal Financial Services Survey, 2017.

Exhibit 9

Myanmar's financial inclusion is one of the lowest globally, and has shown slow improvements over the past years

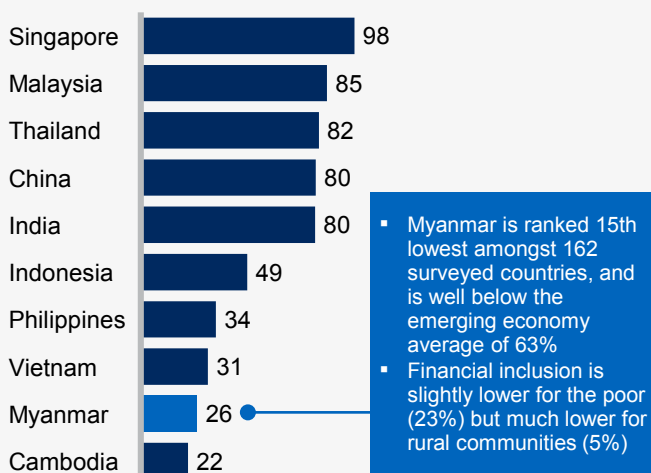
Myanmar's financial inclusion is improving, but slowly...

Percentage of adults considered financially included¹



... and remains among the lowest in ASEAN and broader Asia

Percentage of adults considered financially included¹



¹ Based on the World Bank Global Findex database; denotes the percentage of respondents (15+ years in age) who report having an account (by themselves or with someone else) at a bank or another type of financial institution, or through a mobile phone

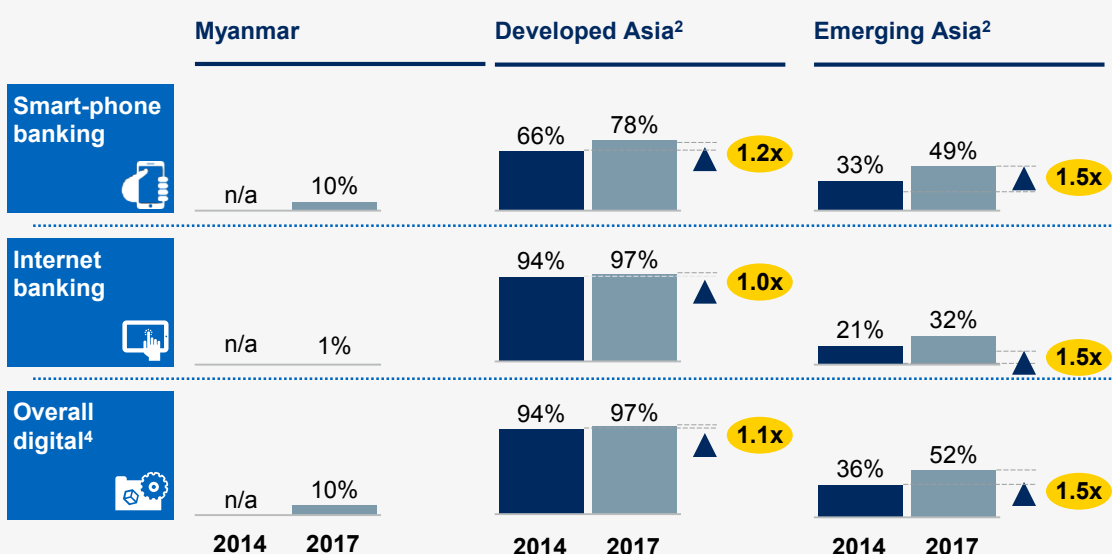
SOURCE: InterMedia Indonesia – Bill & Melinda Gates Foundation, Global Findex Database, OJK Financial Inclusion Survey

Exhibit 10

Digital banking penetration in Myanmar is driven by smartphone banking

X Magnitude of 2017 over 2014

Penetration of digital banking channels¹



¹ Defined by usage of internet or mobile banking; ² Numbers denote median values; ³ Not surveyed in 2014

⁴ Digital banking usage or penetration refers to respondents who say yes to either using Internet Banking via PC or via Smartphone

SOURCE: McKinsey Asia PFS Survey 2017

Bringing Myanmar's banking customers online – by primarily using smartphones – could unlock significant value for the banking industry, and the sector is already moving in this direction. While only 10 percent of banking customers in Myanmar used smartphone banking apps in 2017, compared with an average of 49 percent in Asian emerging markets, the penetration rate grew from essentially nothing in just three years. The McKinsey survey also showed that 60 percent of the respondents in Myanmar said they would use internet banking sometime in the near future.

Mobile money applications could be especially relevant to Myanmar, because they provide both a business opportunity for the banking sector and a tool to increase the country's financial inclusion. Indeed, such applications could potentially extend financial inclusion to all mobile-phone users, who could represent more than 90 percent of the country by 2030. Myanmar remains a cash-based economy. Therefore, to provide viable financial services, mobile money products will need easy cash-in and cash-out options while offering customers important benefits such as safe and secure savings with interest, access to cheaper credit, and tools for family financial management.

Success can deliver great value. MGI research found that large mobile money providers (those with transaction values of more than \$3 billion a year) can generate margins of up to 35 percent.²⁶ In Myanmar, 83 percent of households had mobile phones in 2018, yet only 26 percent of adults have access to financial instruments. Together, these facts suggest that mobile financial services could quickly and profitably reach tens of millions of people.

6. Retail

Myanmar's consuming class is rapidly expanding and, according to McKinsey Global Institute projections, will likely grow from 4 percent of the country's total households in 2012 to 14 percent by 2025. This growth has driven significant expansion of the country's retail sector, at a rate of about 15 percent a year between 2007 and 2017. Fast-moving consumer goods (FMCG) account for roughly 40 percent of the retail sector, or US \$4 billion in annual sales in 2016, helped by both consumer spending and FDI.

Still, Myanmar's FMCG sector remains relatively small, equaling only about 6 percent of GDP in 2015, compared with the ASEAN average of 15 percent. But with projected annual growth of 17 percent through 2022, the FMCG sector is seen contributing about 14 percent of GDP by 2022 (Exhibit 11).

However, challenges remain – particularly the country's high prevalence of cash-based transactions, which complicates the FMCG supply chain. As cash flows from customers to retailers, distributors, and manufacturers, it changes hands and is counted more than ten times on average. Some retailers reportedly have resorted to weighing cash, rather than actually counting it, to save time.

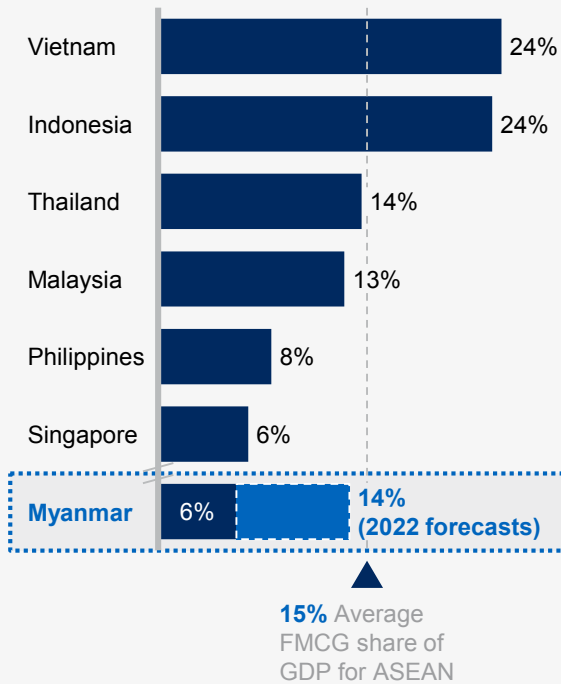
Broader adoption of e-commerce can help reduce the sector's dependency on cash, spur increased consumption, and promote financial inclusion. A 2018 McKinsey report on

²⁶Philip Osafo-Kwaako, Marc Singer, Olivia White, and Yassir Zouaoui, *Mobile money in emerging markets: The business case for financial inclusion*, March 2018, McKinsey.com.

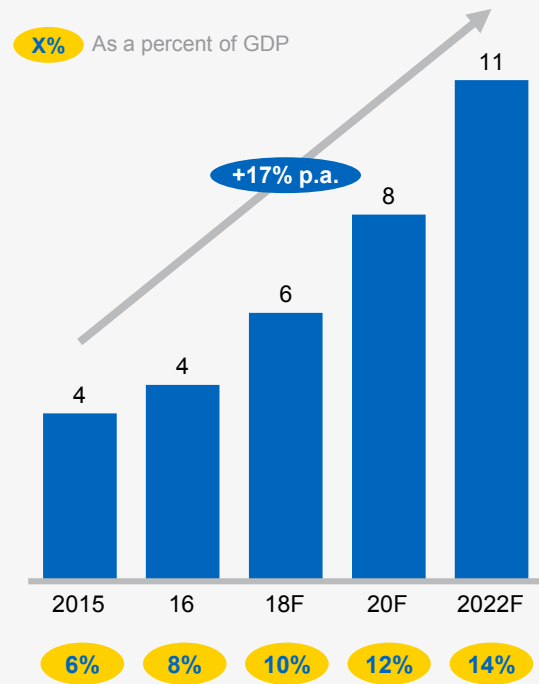
Exhibit 11

Myanmar's FMCG market is growing 2x the country's GDP growth rate

FMCG market vs other ASEAN countries
% of GDP, 2015



Myanmar FMCG market size potential
\$ Billion



SOURCE: HIS, Team analysis, Nielsen, Trading Economics

e-commerce in Indonesia²⁷ found that online marketplaces there brought about 300,000 people into the financial system as a by-product of greater use. Also, the study showed that at least 30 percent of transactions on e-commerce platforms represented increased consumption – purchases that would not have been made over traditional channels. Additional benefits to Indonesia included increased social equality (35 percent of online retail revenue generated by women-owned stores, compared with 15 percent of offline revenues) and a boost to FDI (Indonesia capturing about 60 percent of ASEAN's Internet-related FDI between 2015 and 2017). Adopting e-commerce could generate similar impact for Myanmar's consumers and businesses.

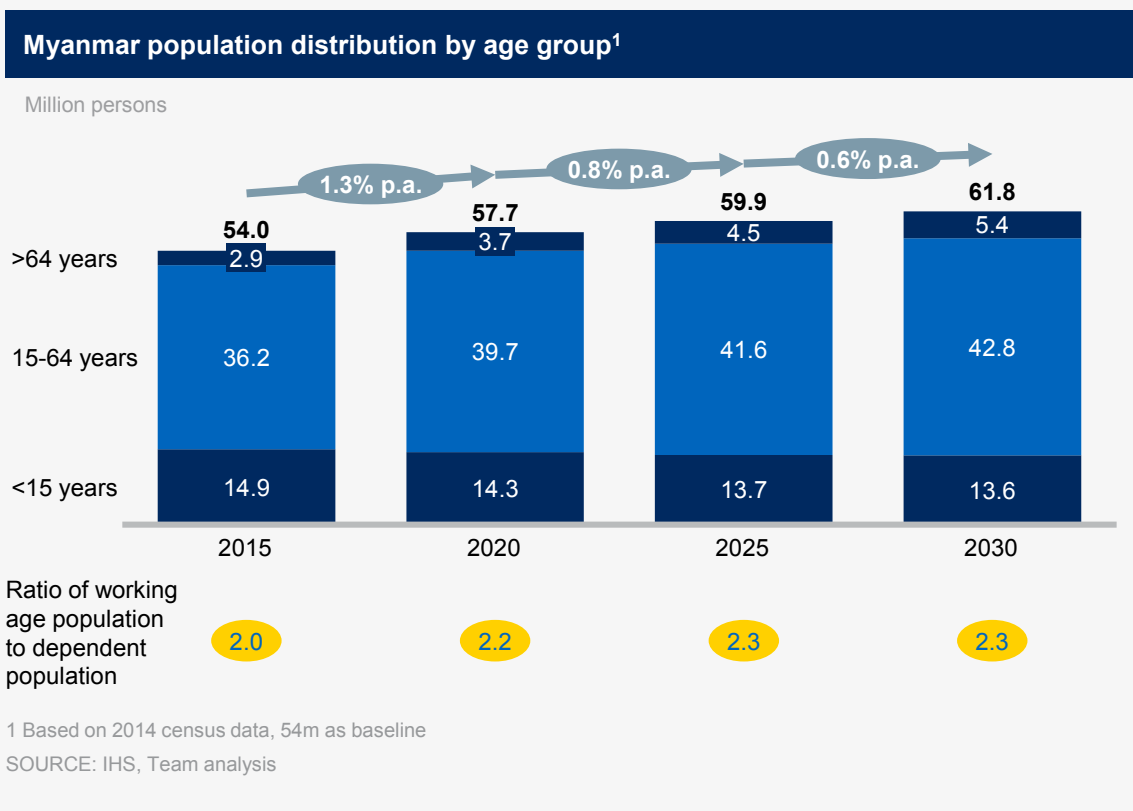
²⁷Kaushik Das, Toshan Tamhane, Ben Vatterott, Phillia Wibowo, and Simon Wintels, *The Digital Archipelago: How online commerce is driving Indonesia's economic development*, August 2018, McKinsey.com

3. Creating a present, future workforce

Much of Myanmar’s recent economic growth has been supported by an expanding labor pool and liberalization efforts that have boosted labor productivity significantly. As the country works to sustain its growth rates, one priority should be to adjust to a changing environment and focus on new areas, like improving training and education, attracting foreign professionals, and developing digital capabilities.

Adding urgency to the challenge, the labor pool is expected to stagnate within a generation (Exhibit 12). After growing by about seven million workers between 2000 and 2018 – expanding the available pool by about 25 percent – the labor pool is projected to reach about 43 million workers and level off by 2030.

Exhibit 12
The current population will provide a ‘demographic boom’ over the next 15 years until plateauing in 2030



To compensate for this change, Myanmar can consider either focusing more intensely on improving labor productivity or face the prospect of slower growth. True, productivity improved by about 7 percent a year between 2012 and 2017, significantly faster than that of most Southeast Asian peers. But much of these gains were from rudimentary mechanization as Myanmar liberalized import and investment regulations. As a result, overall productivity remains among the lowest in the region (Exhibit 13).

In increasing the country’s labor productivity, government and businesses may work together to bring improvements in the business environment through regulation, easing of

Exhibit 13

Despite being the fastest growing, Myanmar's labour productivity still lags behind its neighboring countries

Labor productivity¹ and growth in ASEAN countries

\$, 2017



¹ Labour productivity is computed as GDP per capita divided by % employed vs working age population

SOURCE: World Bank, team analysis

capital flows, and investment in innovation and technology. But these themes are only part of the solution. The country can also begin a concerted effort to develop the talent and capabilities of the nation's workforce.

Tackling a widening skills gap

Already, the pressure for improved capabilities and talent is showing. In a 2017 study of the Myanmar food-processing and textile industries, survey respondents cited "inadequately educated workforce" as the biggest obstacle to their operations. This obstacle was cited more often than power disruptions and political instability, the second and third choices.²⁸

And the skills gap is expected to widen. A McKinsey Global Institute study forecast that Myanmar will face a medium-skills crunch by 2030, at which time there will be an undersupply of mid-skilled workers and an oversupply of low-skilled workers (Exhibit 14).²⁹

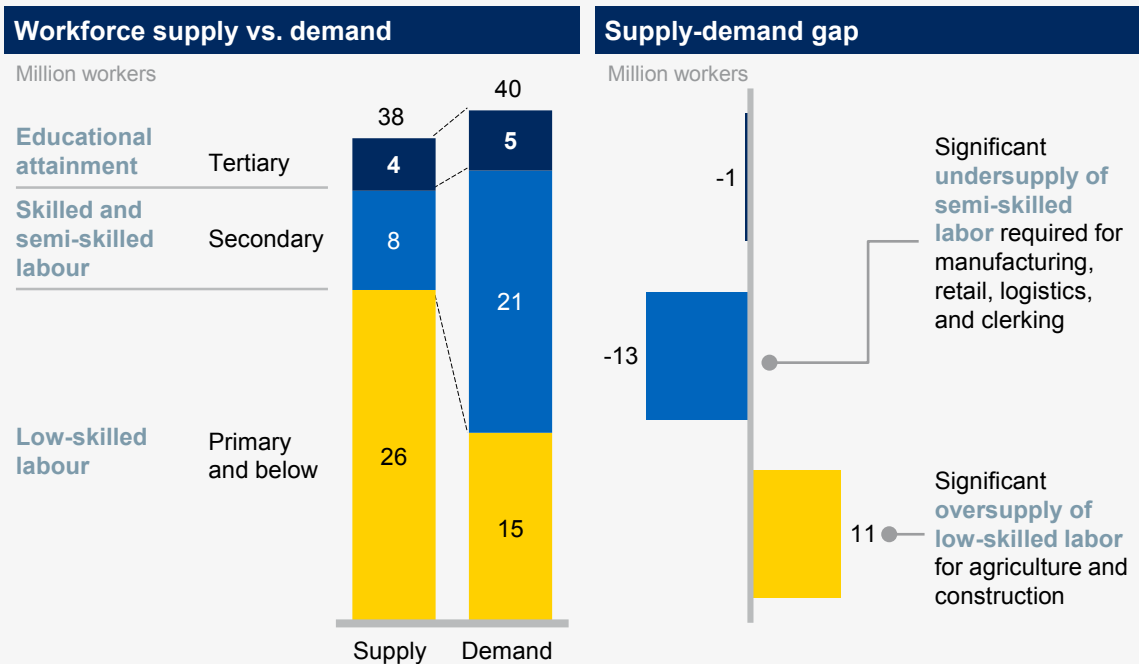
²⁸Thomas Bernhardt, S. Kanay De, and Mi Win Thida, *Myanmar labour issues from the perspective of enterprises: Findings from a survey of food processing and garment manufacturing enterprises*, International Labour Organization, Myanmar Center for Economic and Social Development, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), and International Development Research Center, 2017, ilo.org.

²⁹For the full McKinsey Global Institute report, see "Myanmar's moment: Unique opportunities, major challenges," June 2013, on McKinsey.com.

Exhibit 14

Myanmar is projected to have too few mid-skilled workers and not enough jobs for those with low skills

2030 estimates



The expected mismatch between demand and supply is largely the result of gaps in the country's education system. While Myanmar's primary school enrollment has improved significantly over the years, producing young laborers ready for low-skill jobs, a dearth of medium-skilled workers is beginning to grow. In 2014, Myanmar had the lowest net secondary enrollment rates in ASEAN, at 49 percent compared with an average for the region of 70 percent.³⁰ One recent study found that only about 10 percent of the students who enter the school system complete high school (Exhibit 15).³¹

The projected skills crunch could limit growth in the very industrial sectors Myanmar needs to sustain its development path. For now, the country's labor supply and wage advantages support expansion of industries reliant on low-skilled labor, such as textiles, garments and footwear, and basic food processing. However, industries that create greater value and could drive Myanmar's next wave of growth – for instance, automotive, chemicals and pharmaceuticals, and electrical and electronics manufacturing – will require workers with higher skills.

³⁰World Development Indicators database, World Bank, worldbank.org.

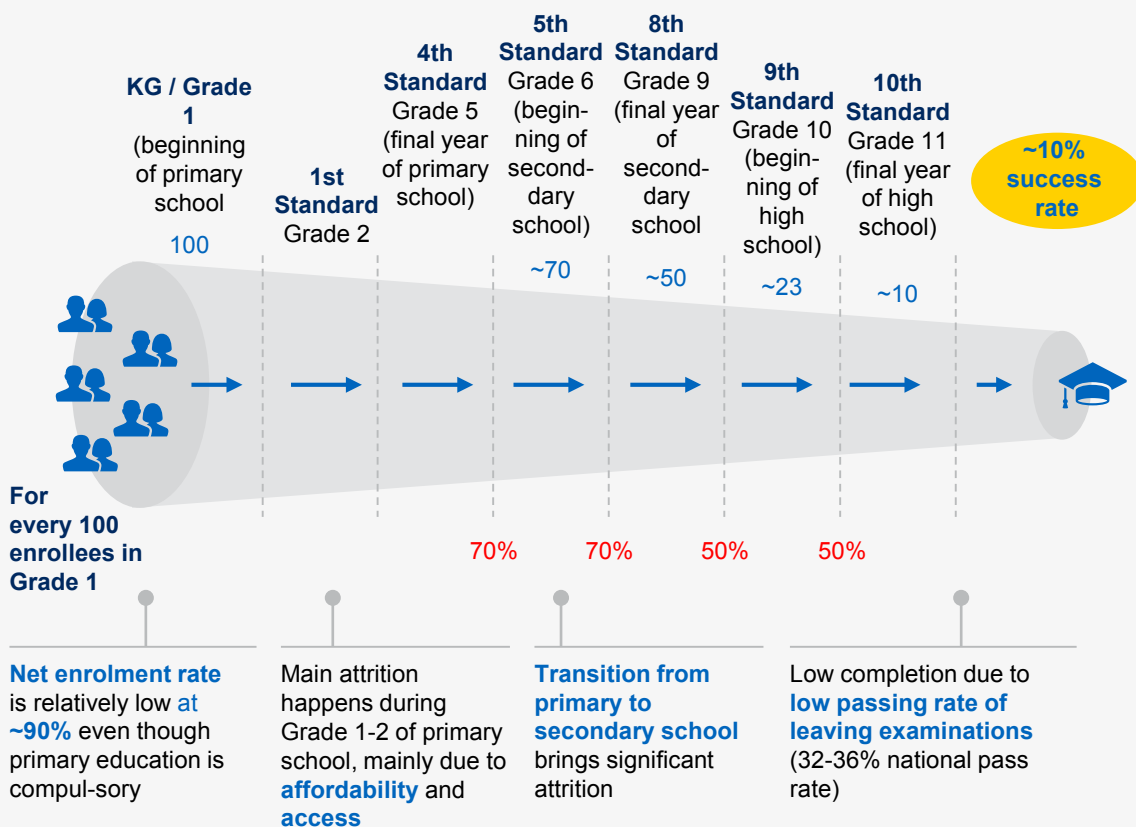
³¹Martin Haydena and Richard Martin, "Recovery of the education system in Myanmar," *Journal of International and Comparative Education*, October 2013, Volume 2, Number 2.

Exhibit 15

Only ~10% of students who enroll in Grade 1 successfully complete and pass their basic education

x Number of students xx% Pass rate

Myanmar basic education pipeline



SOURCE: Hayden, Martin and Richard Martin. 2013, "Recovery of the Education System in Myanmar.", Myanmar Public Expenditure Review 2015

More importantly, as digital technologies become essential for every industry, Myanmar will need even higher capabilities to compete in a global competitive environment that has been transformed.

Building a strong skills foundation

As Myanmar prepares for this future, government and businesses should consider working together to build an empowered labor force ready to meet changing demands. Globally, a shift in employment structure has already begun, with more jobs demanding new sets of skills. Predictably, physical tasks in fields such as manufacturing are being replaced by positions where expertise, interaction, and management skills have greater importance in industries including healthcare, education, and technology. In addition, a wide range of opportunities are emerging alongside the spread of new technologies.

To prepare for this inevitable shift and develop the skills needed for continued growth, Myanmar should focus labor policy on three primary areas: reforming formal education to meet immediate and future needs, injecting talent rapidly, and developing capabilities needed to compete in a global digital economy.

Strengthening the formal education system

Over the past decade, Myanmar has made education reform a national priority and enacted many programs designed to improve the country's education system. While these efforts illustrate the government's understanding that a good education is crucial to economic development, a lack of additional funding could hinder progress.

In the wake of many other notable developments in the education sector, the National Education Strategic Plan (NESP) was implemented in 2016 to shepherd measurable improvements in the country's schools. Among its objectives, the NESP seeks to improve the quality and accessibility of basic education. For example, one goal is to expand secondary school by a year to include a 12th grade,³² and another is to focus more on modern teaching methods that promote outcome-based, student-centered learning.

The Ministry of Education has also joined with several organizations to overhaul the classroom learning experience. A new curriculum is being developed with the help of agencies including the Japan International Cooperation Agency, the Asian Development Bank, and UNICEF. Educational reform in Myanmar has also followed a progressive approach, using advanced technology to improve instruction. For example, 360ed, a local EdTech start-up, is using virtual reality, augmented reality, digital textbooks, and other new technologies to promote better outcomes. The ministry has also emphasized creation of a more inclusive system, using evidence-based analysis for planning and delivering education and for improving its student assessment processes.

As Myanmar's education system is overhauled, quantitatively measuring outcomes will become increasingly important to assess system performance and the impact of reforms. Along with measures the ministry is taking to standardize assessments, Myanmar can also consider comparing student performance against global benchmarks by using global scoring systems such as the Program for International Student Assessment (PISA), administered by the Organisation for Economic Co-operation and Development, or the Trends in International Mathematics and Science Study (TIMSS), administered by the International Association for the Evaluation of Educational Achievement. Results of such comparisons would support and inform education policy in Myanmar.

While these efforts are needed to improve the country's education system, they will also require additional resources. Already between 2010 and 2014, Myanmar quadrupled public spending on education to \$720 million.³³ But even with this increase, Myanmar's public spending on education was about 2.1 percent of GDP, compared with an average of 3.6 percent across ASEAN (Exhibit 16).³⁴ To continue education reform and improve outcomes, Myanmar will need to bridge this funding gap.

Fortunately, Myanmar can draw on help in pushing its reforms forward. Several international aid organizations, including the UK Department for International Development and Australia's Department of Foreign Affairs and Trade, have pledged a cumulative \$120 million to support the country's education agenda. Along with the financial assistance, Myanmar

³²High school in Myanmar previously ended with the 11th grade.

³³Based on the UNESCO's Myanmar Public Expenditure Review in 2015, public spending on education was at \$170 million in 2010 and \$720 million in 2014.

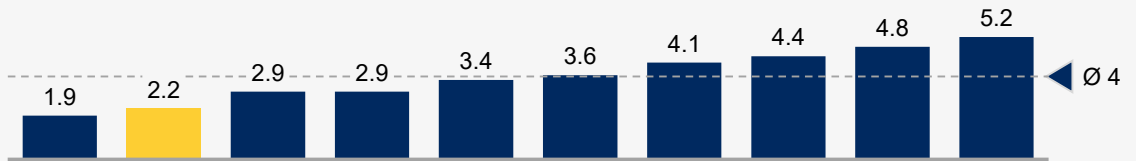
³⁴World Development Indicators database, World Bank, worldbank.org

Exhibit 16

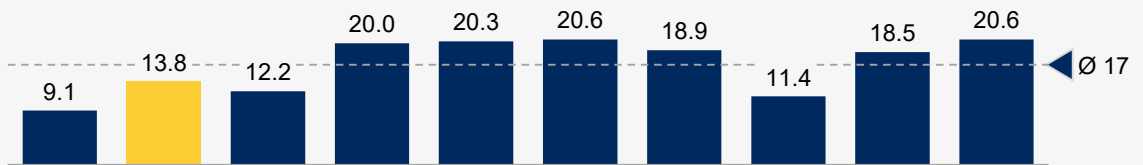
Even after increases in recent years, Myanmar's education spending lags behind other ASEAN countries

Public spending on education in ASEAN

% of GDP, 2013



% of total government spending, 2013



Cambodia Myanmar Laos Singapore Philippines Indonesia Thailand Brunei Vietnam Malaysia

1 Most recent data is: 2017 (Myanmar), 2016 (Brunei, Malaysia), 2015 (Indonesia), 2014 (Cambodia, Laos), 2013 (Philippines, Singapore, Thailand, Vietnam).

SOURCE: Myanmar Public Expenditure Review 2015, UNESCO

should take advantage of the experience these organizations offer in improving national education systems.

Injecting talent into the workforce

While education reforms affect the country's long-term prosperity, the effects will not be felt until the next generation of students graduate. To complement these reform efforts, Myanmar may consider more immediate solutions for capturing the skills needed in its workforce to sustain its growth.

Several measures could help inject needed talent into the economy quickly: attracting foreign talent, investing in overseas education opportunities, and using private companies and development partners as platforms for building skills.

1. Attracting foreign professionals

Already, Myanmar companies face a shortage of professionals for higher-level managerial and technical jobs. One measure to fill this gap quickly is to recruit foreigners with the desired expertise. Although this approach can be expensive, it provides a quick, short-term solution to bringing in the skills needed to support business success. In addition, foreign professionals can also serve as on-the-job mentors for talented subordinates and apprentices, helping to build domestic capabilities in crucial areas and training the next generation of corporate leadership.

China's Thousand Talents Plan, created in 2008 in the wake of the global financial crisis, offers a model. One prong of the program targets individuals in senior roles at well-known

organizations, including professors at prestigious institutions. Recruits receive visa privileges, competitive pay, signing bonuses, senior titles, and other benefits. In its first decade, the program attracted more than 6,000 high-level professionals from other countries.

Myanmar could consider a similar program, targeting skills needed to fill gaps specific to the country's immediate needs. Among possible approaches, Myanmar could provide multiyear visas, reducing a candidate's administrative burden and uncertainty, or help match candidates with appropriate incumbents and start-ups. Domestic companies could also craft job-rotation programs with their overseas partners, giving local hires a chance to hone their talents in different environments.

2. Investing in overseas education

Taking advantage of educational opportunities in other countries is another way to kick-start Myanmar's efforts to build the skills of its workforce. A UNESCO database estimated that only about 7,500 Myanmar college students study abroad, roughly 1 percent of the country's college students.³⁵ In Malaysia, for comparison, about 65,000 students – almost 5 percent of the country's college students – study abroad, the database showed.

For many university students, the cost of studying abroad is the biggest disincentive. Myanmar's government and businesses can ease the burden by providing scholarships for qualified candidates.

Other efforts also can encourage bright students to consider overseas education. Along with government-sponsored scholarships, Malaysia has a "twinning program" that allows Malaysian students to attend their first two years of university at home and complete the last two years of their degree program at partner universities abroad. The program, a joint effort by the government and private companies, significantly lowers the cost of international study.

3. Building skills at work

As Myanmar begins to make changes in its tertiary education system, the country's SOEs can consider starting their own education programs. Some Southeast Asian countries, including Indonesia and Malaysia, have followed this path, with SOEs opening corporate universities to fill their talent pipelines. Such programs also provide more tertiary education choices for the broader national workforce.

In Malaysia, Tenaga Nasional Berhad, the state-owned electric utility company, owns and operates Universiti Tenaga Nasional, which focuses on training high-quality engineers and business managers. Similarly, Indonesia's state energy company, Pertamina, established Pertamina University in 2016. It offers undergraduate programs in exploration technology, industry technology, economics and business, infrastructure planning, science, communication, and diplomacy.

Because Myanmar has many large SOEs operating in critical parts of the country's infrastructure, these companies could be encouraged to consider establishing their own academic institutions to develop the skills they need and to contribute to the country's overall growth. In addition, private companies have ample scope for contributing to

³⁵Global flow of tertiary-level students, UNESCO Institute of Statistics database, <http://uis.unesco.org/en/uis-student-flow>

capabilities development. A World Bank survey in 2015 found that only 6 percent of Myanmar companies invest in formal internal training programs, compared with an ASEAN average of 24 percent³⁶ (see sidebar “Talent development critical for superior organizations,” on page 40).

Some larger companies are already contributing. For instance, Yoma Bank has a dedicated People Development Centre and a learning channel team that integrates talent development with business operations. However, many other companies, especially small and medium enterprises (SMEs) with limited resources, have not invested in personnel training. Facing a similar challenge, the Australian government launched the Apprenticeships Incentives Programme, which provides incentives for employers, trainers, and workers to provide and participate in training and certification programs. Myanmar could consider similar programs to foster growth of its SMEs.

4. Embracing partners in vocational education

Alongside university studies, Myanmar has recognized vocation education as fundamental to a growing economy. As part of the NESP, the government is reforming its Technical and Vocational Education and Training (TVET) program to create a stronger system that is responsive to workforce skills demanded by industry.

Singapore, along with other development partners, is supporting this effort and works with Myanmar’s National Skills Standards Authority to improve the TVET system. For example, the Singapore-Myanmar Vocational Training Institute in Yangon provides engineering, technology, and hospitality courses for young students and adults. Germany’s development agency, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), also is helping develop vocational education in Myanmar. Germany has, amongst other projects, invested almost \$5 million to upgrade the Industrial Training Center in Sinda, funding equipment and teacher training. GIZ and UNESCO also work with the Ministry of Education to build an assessment system for TVET qualifications.

Myanmar can encourage and expand such partnerships to accelerate the reforms under way in the country’s education system.

³⁶ 2015 Enterprise Survey database, World Bank, enterprisesurveys.org/data.

Talent development critical for superior organizations

Top-class talent is a critical plank in any platform that allows companies to thrive amid increasing competition and contribute to overall economic growth. Smart, capable employees have, of course, always been a keystone for leading global companies. As the spread of digital technologies amplifies the need for nimble, innovative thinking, the importance of developing talent within a corporation only increases.

Experience working with companies in Myanmar suggests that many senior executives have yet to recognize the pressing need to develop talent. While some companies are promoting values and actively developing talent, most organizations appear to make little effort to nurture and develop these tendencies – for example by promoting meaningful values, establishing appropriate rewards and recognition, and inspiring the organization generally.

In addition, employees, as a rule, have limited autonomy in making decisions. Instead, they often push decisions higher into the organization to their superiors. They, in turn, might defer to their own seniors, thus delaying decisions and creating a lack of accountability for initiatives.

Addressing these issues will become imperative as Myanmar's companies increasingly compete with the global economy and will be required to improve their agility and innovation. To win in the global business environment, Myanmar's CEOs and other corporate leaders should create systems that empower their employees throughout their organizations.

In their new book, *Talent Wins: The New Playbook for Putting People First*, former McKinsey global managing partner Dominic Barton and his coauthors lay out five crucial themes in building an organization that puts talent first:¹

- **Empower top management to steer the talent agenda.** An organization's CEO, CFO, and human resources head should meet regularly to craft, refine, and execute the company's talent plan.
- **Identify and invest in high-value employees.** Research has shown that the top 2 percent of workers generate ten times the average output in an organization. Business leaders should identify these employees wherever they are in the organization's hierarchy and invest heavily in developing their talent and retaining them. Beyond compensation, efforts should include mentorship and sponsorship.
- **Put people at the center of the board agenda.** Business leaders should put the same priority on talent development as they give to business strategy, risk, and compliance.
- **Link strategic moves to talent implications.** As businesses move toward adopting new digital technologies and becoming more agile, human resource departments will need to anticipate the organization's shifting talent needs and prepare a plan to address these needs.
- **Use new tools to support talent strategy.** Some organizations are already investing in digital tools to accelerate talent screening and acquisition, as well as improving employee retention.

¹ Dominic Barton, Dennis Carey, and Ram Charan, *Talent Wins: The New Playbook for Putting People First*, Harvard Business Review Press, March 2018. Carey is vice chairman of Korn Ferry, and Charan is an author and adviser to CEOs

Conclusion: Exploiting opportunities arising from Industry 4.0

As outlined in previous chapters, Myanmar's government, big businesses, and workforce have key roles to play in the country's transformation. Examples of how other countries have engaged these stakeholders can offer useful lessons, but Myanmar also has the chance to chart its own course. This unique opportunity rests on the back of digital technologies, which have created an economic environment quite unlike the one that was present when countries like China emerged from poverty.

Industry 4.0 – an umbrella term for the disruptions brought to manufacturing by modern technologies – is the critical enabler of Myanmar's chance to leapfrog past technologies that will quickly become obsolete. Industry 4.0 is driven by underlying changes in the relationships between people, machines, and data. The Internet of Things, cloud technology, virtual and augmented reality, industrial automation, big data, and new manufacturing techniques all contribute to the disruptive shift.

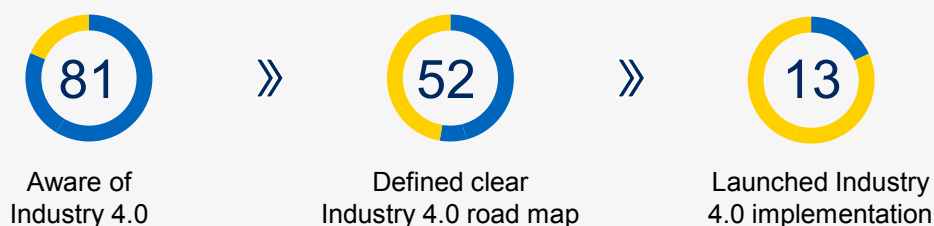
These advanced technologies could be a boon to Myanmar, where GDP growth expectations remain high, but factors that contributed to recent growth, such as an expanding labor force, are starting to weaken. Indeed additional labor is likely to account for less than a percentage point of annual GDP growth between 2015 and 2030.

Although many acknowledge the potential of Industry 4.0, most struggle to embrace it. Within ASEAN, for example, 81 percent of the managers responding to a McKinsey survey said their companies knew about Industry 4.0, and only 13 percent reported that initiatives had been launched (Exhibit 17). Roadblocks to implementation included defining clear business plans, siloed data, a lack of digital talent, concerns regarding cybersecurity, and a lack of coordination across business units.

Exhibit 17

ASEAN Technology suppliers and manufacturers on Industry 4.0

% of respondents, n = 205



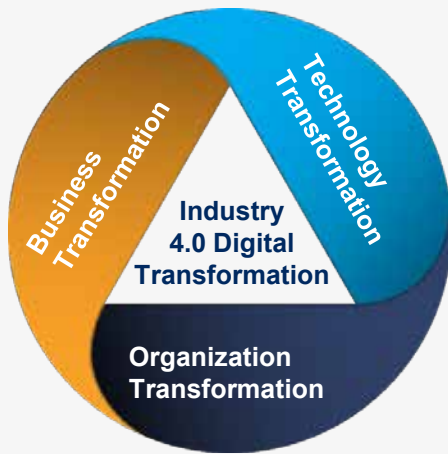
Overcoming these challenges requires interventions across two broad themes. First, companies themselves must implement internal changes to support Industry 4.0 initiatives, and second, broader society must be prepared to provide a skilled digital workforce.

Businesses face a triple transformation

Corporations wanting to capture the value of Industry 4.0 must launch a triple transformation that touches every aspect of the company. The company's business, technology, and organization will all be reimagined and changed in the process (Exhibit 18).

Exhibit 18

Moving toward industry 4.0 require “Triple Transformations” at the same time



1. Business – Impact Driven Digital Solutions

- Business-led with clear impact targets for productivity or growth
- Customer-back solutions linked to key business processes and use cases



2. Technology – Innovative technology architecture

- Multi-speed development (Fast-cycle App on top of SAP)
- Access to ecosystems (e.g. startups, established vendors, research institutes)



3. Organization – Agile DNA

- Test and learn, fail fast & tweak – hackaton method
- New digital roles & skills (e.g. Data Scientist, IT Scrum Master)
- Upgraded talent capabilities and mindset: Digital Capability center, Digital Academy

SOURCE: Energy Planning Department (Ministry of Energy); Myanmar Oil and Gas Enterprise (Ministry of Energy); Index Mundi; ADB; IEA

A successful Industry 4.0 initiative must be guided by clear business targets for productivity or growth, and business processes tied to well-defined use cases and customer needs. For example, predictive analytics can be used to reduce a power company’s maintenance costs by 45 percent, while smart inventory automation can ensure just-in-time delivery and reduce inventory management costs by 20 to 50 percent.

Some companies in Myanmar have already begun the transformation. For example, leading companies are using end-to-end inventory-tracking systems that rely on sensors and QR codes and are enabled by the country’s high smartphone penetration rate along the value chain.

Companies must also adjust their technology development processes to enable rapid prototyping of new products and services. Under the traditional approach, technology development can take up to three years as features and other aspects are perfected before a new offering is released. In the current climate, however, businesses must move much faster if they are to capture opportunities and customers.

Long development timelines have been replaced with two- to three-month prototyping periods. Rather than striving for perfection, companies produce these prototypes and introduce them to the market rapidly, with subsequent iterative improvements as necessary. Beyond faster time to market, the accelerated approach also helps limit risk, since only incremental investments are required for each iteration or prototype. Moreover, speeded development cycles allow companies to respond to shifting customer needs within weeks or months, rather than years.

One approach to faster technology development cycles is to work with start-ups already pushing the boundaries of Industry 4.0. In many markets, start-ups are driving innovation in computational power, connectivity, analytics and intelligence, human–machine interaction, and advanced production methods. As a measure of their strength, Industry 4.0 start-ups globally attracted \$6.7 billion in funding between 2012 and 2016, according to one analysis.³⁷

Collaboration between start-ups and corporations can benefit both sides. Start-ups can receive revenues, generate high-profile case studies, internationalize faster, have access to the larger corporation’s sales channels and proprietary assets, and tap into their partners’ market knowledge. At the same time, the larger partner can accelerate its innovation, reduce costs, renew its customer focus, and inject entrepreneurial and agile approaches into its own corporate culture.³⁸

Finally, businesses must infuse their organizations with new roles and skills. Examples of the new roles required by Industry 4.0 include data scientists, analytics engineers, analytics translators, and digital transformation coaches. These roles should complement existing business functions, such as IT managers, data architects, and traditional business managers.

Securing talent to fill new roles can be difficult, particularly in a market like Myanmar, which is just beginning to enter the digital economy. In the following section, we explore several ideas for rapidly injecting digital talent into Myanmar’s talent ecosystem.

Securing a digital workforce

Beyond immediate needs, Myanmar may also consider new skills that will be needed as digital technologies sweep across industries and national economies. Unless the government recognizes and acts on this imperative, the country could quickly find itself facing a new skills gap that exacerbates the challenge of finding new positions for the estimated one million to two million workers who will be displaced by automation (Exhibit 19). Several options to address this challenge are available.

Improving overall digital literacy

Digital literacy, in general, should be an early goal in any effort to prepare for the disruptions brought by the new technologies. In essence, a reasonable proportion of the population should be comfortable using the internet, conducting e-commerce, and performing basic actions, such as downloading smartphone apps. Computer literacy prepares workers for myriad tasks in the digital economy all along the value chain.

India, for example, is tackling computer illiteracy with a \$330 million program designed to teach people basic digital skills. As part of the push, the government has opened training centers in rural areas to teach people how to operate computers, tablets, and smartphones, how to send and receive email, how to access government services, and how to conduct cashless transactions. Since its inception in 2017, the program has reached more than six million people.³⁹

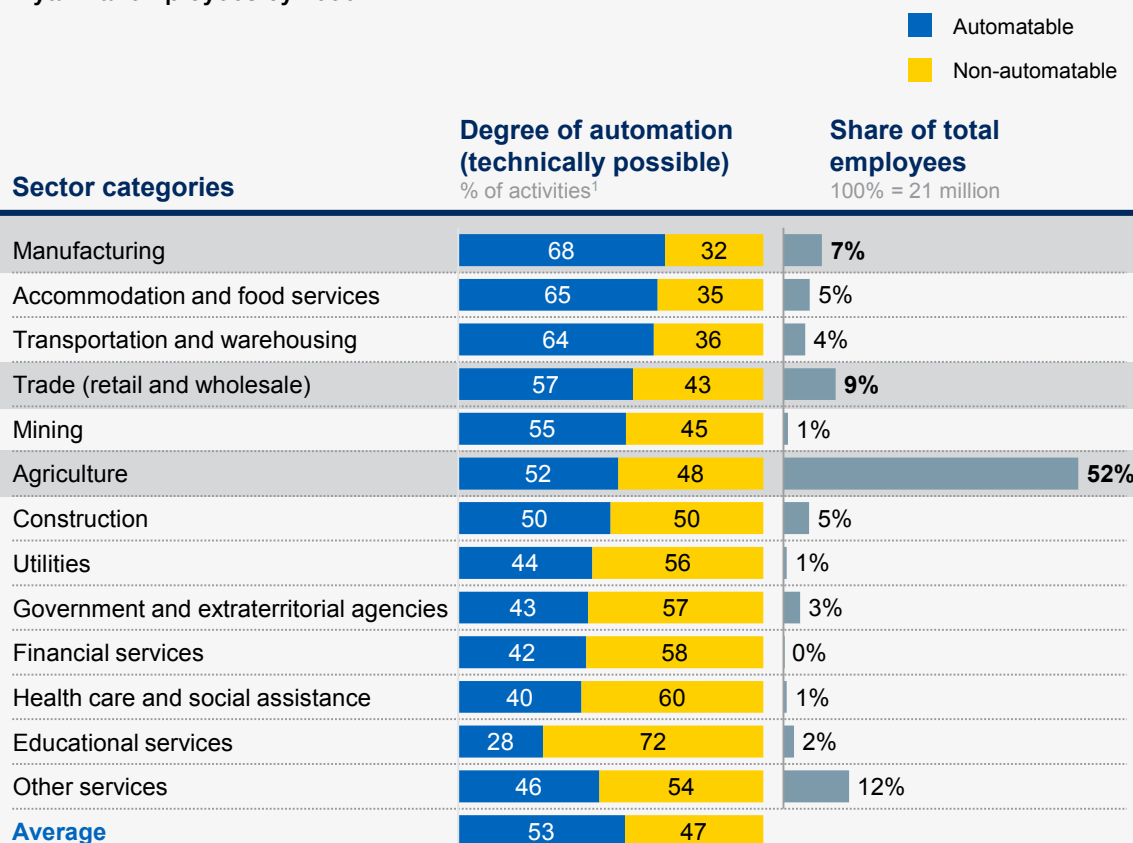
³⁷CB Insights Industry 4.0 start-up funding from 2012 to 2016. <https://www.cbinsights.com/research/manufacturing-iiot-digital-factory/>

³⁸*Collaboration between start-ups and corporates: A practical guide for mutual understanding*, World Economic Forum, January 2018, www.weforum.org.

³⁹Sukanya Mukherjee, “PM Narendra Modi Launches Gramin Digital Saksharta Abhiyan To Promote Digital Literacy In Rural India,” *Inc42*, Oct. 10, 2017.

Exhibit 19

Technology and automation will bring productivity but require reskilling of 1-2 million Myanmar employees by 2030



¹ Assuming same degree of potential automation as Vietnam, as of 2016. Insufficient data in Myanmar was available for a direct analysis of the country's potential automation.

SOURCE: McKinsey Global Institute, General statistics office of Vietnam (January 2018)

Myanmar faces a similar challenge. Although smartphone penetration is undergoing meteoric growth, data suggest that many users are not realizing the full socioeconomic potential of such devices. A 2015 survey found that most smartphone users are able to search and consume information on the internet, but few know how to create and share content or how to configure and manage their apps and devices. Users also reported low to moderate improvements in their financial status as a result of having mobile-phone access.⁴⁰

Against this backdrop, the government and companies should work to build overall computer literacy. Private telecoms company Telenor, for example, has started an education campaign similar to that seen in India. Telenor's Lighthouse digital-literacy program strives to teach those in rural communities basic smartphone and computer-based digital skills. Myanmar can use the momentum behind such efforts to form public-private partnerships that expand digital-literacy campaigns further and faster.

⁴⁰ *Mobile phones, internet, and gender in Myanmar*, GSMA and LIRNEasia, 2015, gsma.org.

Designing vocational training for adults in the digital era

Disruptions brought by advanced technologies will change the very composition of the job market. MGI has estimated that globally at least 30 percent of activities in 60 percent of all occupations can be automated.⁴¹ Also Myanmar should be prepared to retrain a significant population of dislodged workers.

Many advanced economies have already begun large-scale efforts to retrain their labor pool. In Singapore, the Ministry of Education launched the SkillsFuture for Digital Workplace program in 2017 with the goal of retraining 100,000 Singaporeans over three years. The program is supported by many corporate partners, including Courts, the Fei Siong Group, Maybank, SIA Engineering, and Singtel. These companies have actively encouraged their employees to participate.

SkillsFuture targets a wide range of participants, from students through midcareer workers, as well as employers and training center operators. Among its initiatives, the program provides these services:

- International internship opportunities for local university students through the Young Talent Program
- SkillsFuture Work-Learn Bootcamps, designed to equip fresh graduates and midcareer individuals with the relevant behavioral and technical skills in sectors with strong demand
- Support for SMEs in the form of mentors who undertake nine-month assignments to help the company launch training programs and other measures to improve employee capabilities

Singapore also recently launched a Digital Capability Center (DCC) as a joint effort of the Singapore Economic Development Board, the Advanced Remanufacturing and Technology Center, and McKinsey. The DCC, which simulates examples of companies moving toward Industry 4.0, provides experiential learning and capability building for midlevel managers leading digital transformations in their organizations.

In a similar effort, New York City, in partnership with IBM and the City University of New York, opened the Pathways in Technology Early College High School in 2011. The program combines a high school curriculum with two years of college and awards graduates with an associate's degree and privileged access to jobs at IBM. Such flexible programs are needed to ensure that education programs match the needs of employers.

Philanthropies also can play a role. For example, 42, founded in 2013 by French telecommunications entrepreneur Xavier Niel, is a free coding school that began in Paris and has since opened a Silicon Valley campus in the United States. More than 3,000 students have participated in the program, in which they study without direct instruction or supervision, work collaboratively on school-provided projects, and are graded by fellow students. About four-fifths of the participants have had job offers before leaving the program, and all have been employed after completing the full course.⁴²

⁴¹For the full McKinsey Global Institute report, see "Jobs lost, jobs gained: Workforce transitions in a time of automation," December 2017, at McKinsey.com.

⁴²Jenny Anderson, "A free, teacher-less university in France is schooling thousands of future-proof programmers," Quartz, Sept. 4, 2017.

Retraining through corporate programs

Notwithstanding initiatives by the government, private companies – especially those in technology industries – also can build digital capabilities on their own. In India, for example, Google has begun a retraining program in collaboration with the National Skill Development Corporation to create a high-quality global hub for mobile-app developers. Working with other companies, Google opened the Authorized Android Training Partners to provide training courses for employees, employers, and students in Android app development.

In another example, Amazon in 2012 launched Career Choice, a program that helps its employees in Canada, the United Kingdom, and the United States earn certificates and associate degrees. Qualified workers can have 95 percent of their tuition and fees paid through the program. They are not limited to programs relevant to Amazon, but can also study high-demand areas targeted by labor agencies, such as aircraft mechanics, computer-aided design, machine tool technologies, medical lab technologies, and nursing. About 10,000 workers had participated in Career Choice by 2017, with participation expected to reach 20,000 by 2020.

Companies have also formed partnerships with academic institutions to develop retraining programs. For example, in the United States, AT&T works with the Georgia Institute of Technology and other universities, as well as online-learning company Udacity, to offer employees subsidized tuition at 32 universities. AT&T also created an online community, AT&T Aspire, where employees can share their training success stories. And an internal marketplace at the company pairs job openings with relevant training opportunities. Altogether, AT&T spent more than \$250 million between 2008 and 2017 on employee education and professional-development programs, including more than \$30 million a year on tuition assistance.

Building start-up ecosystems

Technology start-ups can also be a rich source of digital talent. Unlike larger companies, start-ups are generally not bogged down by legacy systems or strategies and often have the flexibility needed to explore the potential of advanced technologies. They also tend to attract innovative freethinkers eager to learn new skills.

India has made a concentrated push to develop a stronger start-up ecosystem. As the ecosystem has grown, it has provided more opportunities for retraining the workforce and created a stream of jobs secure in the digital era. One goal of the initiative is to create 10,000 new start-ups by 2020, compared with 4,750 in 2016. As part of the effort, the National Association of Software and Services Companies, an industry trade association, recently launched a platform called FutureSkills, which provides an online marketplace and content library for technology skills in high demand, such as automation, cloud computing, and virtual reality. The platform also offers information on emerging job trends, skill requirements, and content to help build desired skills.

Myanmar's technology start-up ecosystem remains in its infancy, although efforts have begun to nurture it. For example, PhandeeYar, an accelerator program in Yangon, provides support for new local technology entrepreneurs by investing in their businesses, training them, and helping build a pool of local technology talent. The government should consider supporting similar programs through financial incentives and regulations that allow new technology businesses to grow and prosper.



Myanmar's economy holds significant potential as local and international trends give the country a dynamic platform for growth. As part of the effort to sustain and accelerate growth, the country can boost labor by developing a skilled workforce comfortable with – and even proficient in – digital technologies. To succeed, government and business leaders in Myanmar can work actively to build an enabled workforce.

