

For Government leaders

Breaking new ground by deploying solutions for rapid, sustainable and resource-efficient growth

Future of India The Winning Leap



Executive summary



The Winning Leap

Noun; *Breaking new ground by deploying solutions for rapid, sustainable, and resource-efficient growth; a play-to-win approach by young and growing nations seeking a radically different development path; a phrase denoting small steps by millions of people that can culminate in a giant leap forward for their nation; a phrase that citizens, entrepreneurs, business leaders, investors and government leaders associate with a ‘once-in-a-lifetime opportunity’ to lift millions into prosperity; an approach that industry leaders can use to build new capabilities for profitable growth; a state of mind focused on possibilities while recognising roadblocks in solving a wide set of challenges facing a nation*

In its seventh decade of independence, India stands on the cusp of major change: a transformation that could lead to unprecedented economic growth paired with radical improvements in the nation’s Human Development Index (HDI). Over the past two decades, India’s gross domestic product (GDP) has risen by more than US\$1tr, in the process bringing millions of citizens into a new cohort we call the emerging middle class. We set out to understand what it would take for India to increase its GDP by 9% per year to become a US\$10tr economy over the coming two decades.

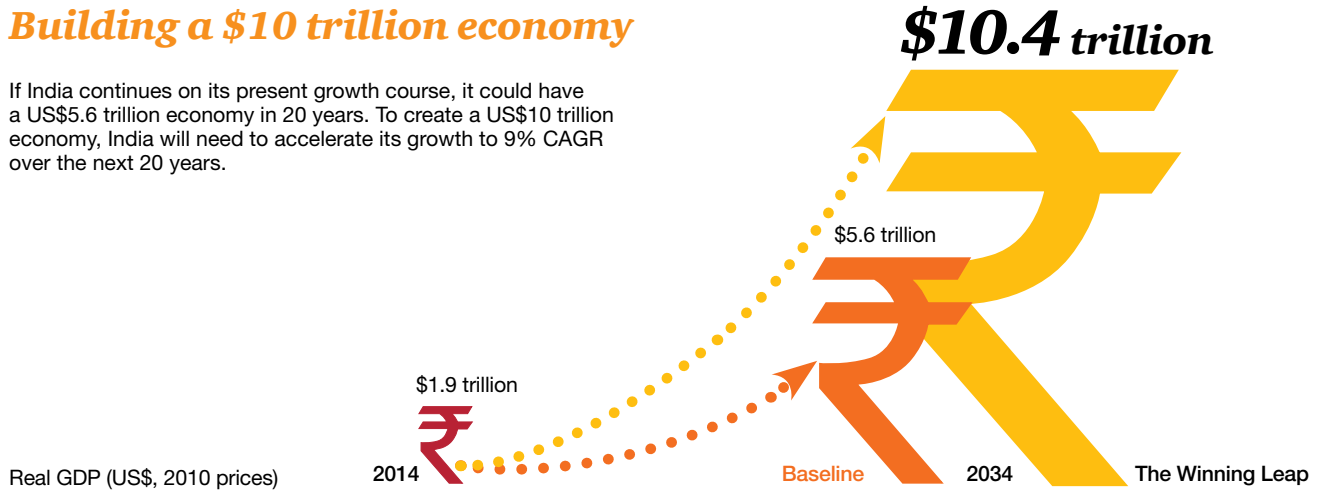
Anything less than US\$10tr would not secure India’s future. The nation needs to create 10-12m jobs every year in the coming decades to provide quality of life for its growing population. Young Indians, particularly members of the emerging middle and the middle class—a billion strong by 2034—have rising aspirations. They are also more empowered to demand change, thanks to ever-greater access to the internet and mobile connectivity. The recent electoral mandate for development is a more immediate signal of Indians’ desire for growth and for the benefits of growth to be extended to all members of society.

A 9% GDP growth rate with a per capita income rising from US\$1,500 to just under US\$7,000 per year will boost quality of life for more than 1.25bn citizens. This would be the largest national development effort any democracy has ever attempted. Reaching this goal will call for a concerted effort—from businesses, entrepreneurs, investors, and government leaders. It will also require new solutions we collectively term the Winning Leap. Our research focuses on the role that corporations and entrepreneurs must play in helping to deliver this growth while building new capabilities.

The national ambition

Building a \$10 trillion economy

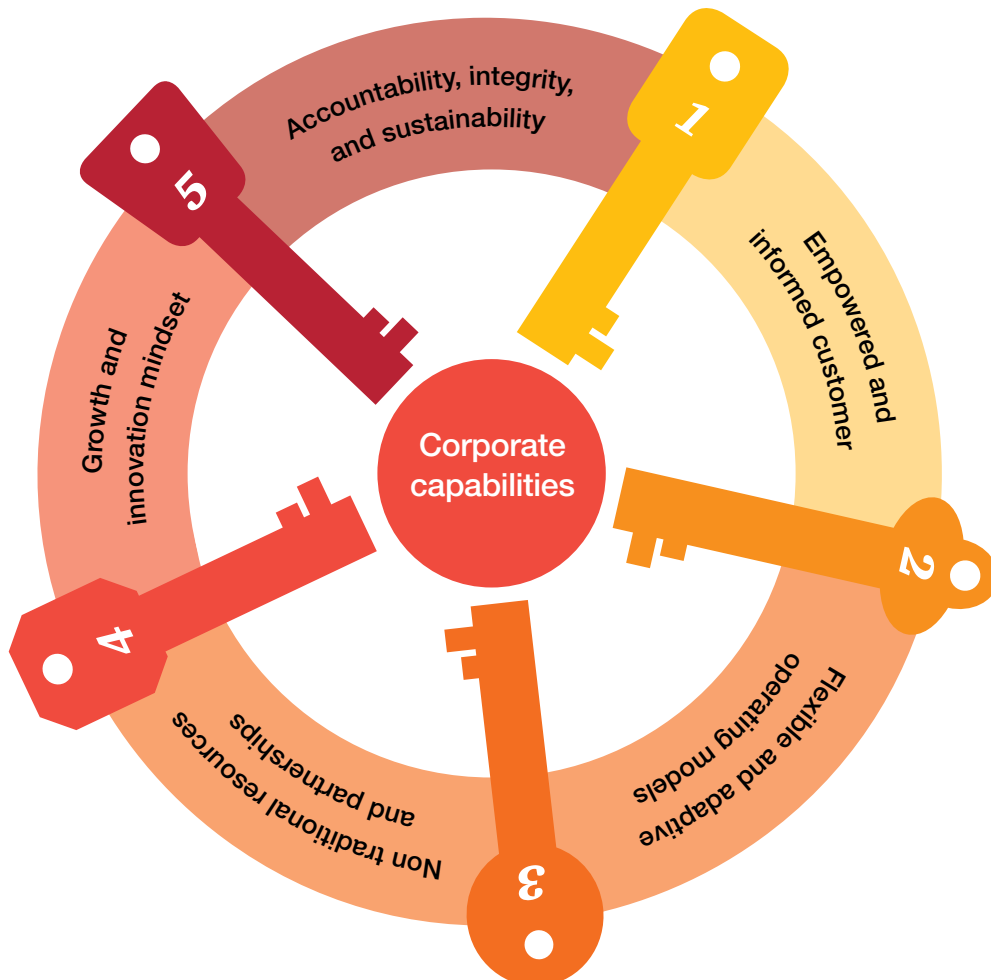
If India continues on its present growth course, it could have a US\$5.6 trillion economy in 20 years. To create a US\$10 trillion economy, India will need to accelerate its growth to 9% CAGR over the next 20 years.



Creating new capabilities

Five key themes for the corporate sector

To lead the Winning Leap, companies will have to address five key themes requiring new capabilities



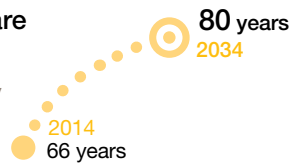
Solving problems across sectors

Achieving the Winning Leap means finding solutions to some of India's most persistent problems. As the country transforms, these must become vectors of growth not weights slowing the country's rise.



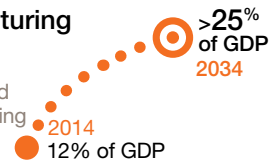
Healthcare

Raising life expectancy



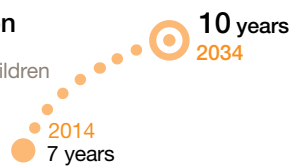
Manufacturing

Increasing value-added manufacturing



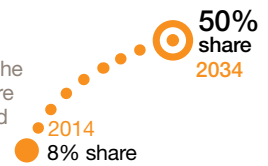
Education

Keeping children in school



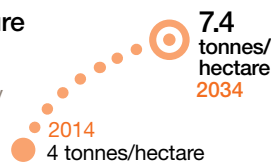
Retail

Increasing the market share of organised retail



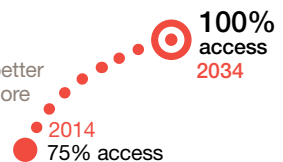
Agriculture

Improving productivity



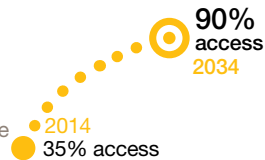
Power

More and better power to more people



Financial services

Providing banking to more people



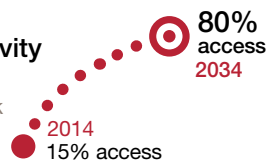
Urbanisation

Modernising urban areas



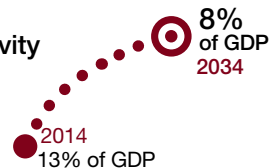
Digital connectivity

Broadening the network



Physical connectivity

Reduce logistics cost



Taking the right sub-leaps



Fierce Catch-up

Using traditional approaches or technologies—to surmount challenges—at an accelerated pace

Significant Leap

Adopting new or different approaches and technologies that may have been developed elsewhere but that would also work in India

Leapfrog

Skip a generation or create an entirely new method of business model or technology



We also highlight the critical role that the government will have to play to support this goal, by creating national platforms and an enabling environment.

Our research methodology comprised interviews with about 80 leaders in India and abroad, workshops with sector leaders, insights from academic and economic specialists, and an online survey completed by more than 1,500 PwC employees. The message we heard was unambiguous: to surmount its challenges and secure its future, India needs to focus on creating new solutions that will radically improve its economic and human-development performance.

We began with an analysis of other countries that have embarked on a similarly ambitious growth journey, including exemplars from middle-income countries in Asia and Latin America. China, for example, has shown remarkable economic growth, albeit under political and social circumstances that are very different from those that characterise India. South Korea has vastly improved its HDI since 1983. And

since 2007, Brazil has been unleashing the power of its private sector to accelerate its growth. In India, we found double-digit growth stories in key states that provide internal examples of what the nation itself is capable of.

Challenges as opportunities

To realise the Winning Leap vision, India needs to view its many economic and social challenges as opportunities for growth and renewal. With this perspective in mind, we investigated performance in ten sectors that, together, constitute more than 70% of India's GDP. Each sector faces challenges whose resolution will require new solutions that are scalable, resource efficient, and environmentally sustainable. For example, the education sector will have to deliver high-quality, formal education to 7m additional children every year over the next two decades. Yet with current education investments estimated at just 3% of India's GDP, achieving this target won't be easy using traditional strategies. India's healthcare sector offers another case in point. To serve a growing

population, the sector will need 100,000 additional doctors and 300,000 additional nurses every year through 2034. But this sector, too, faces an investment challenge. Additional sectors we examined—agriculture, retail, utilities, manufacturing, financial services, urban infrastructure—all confront a similar challenge. Each has to grow, despite resource constraints. Managing this imperative will require significant new investment and innovative approaches.

Complicating things further, all of these sectors are interconnected: a setback in one spawns setbacks in others; improvement in one enables improvements in others. As just one example, higher-quality education and healthcare result in healthier, more skilled workers who can help drive growth and innovation in India’s manufacturing sector.

In addition, we examined performance in what we call enabling sectors: India’s digital and physical connectivity. For each sector examined, we defined a key metric—a “vector of growth”—with which to assess growth performance. (See previous page.) We arrived at targets for these vectors by looking at countries at a similar stage of growth and by consulting sector experts. With sectors that support and enable growth in other sectors, like digital connectivity, we took a more aggressive approach, imagining India reaching world class status by 2034.

Vectors represent targets that must be achieved for the corresponding sector to help drive overall rapid growth in India. Moreover, each vector has quantitative as well as qualitative submetrics. To illustrate, while increasing average years of

schooling matters, spending more time in school won’t mean much unless the quality of the education also improves. And that means strengthening curricula, driving innovation in the use of learning channels, and improving teacher training.

A closer look at the Winning Leap solution

As we investigated these vectors, we saw that linear growth in each will not be enough to enable the growth envisioned for India. Given the complexity and scale of the challenges facing India, the resources required, and the urgency of demands for change coming from Indian citizens, sector players must deploy solutions that deliver nonlinear growth. Our analysis of sector growth suggested three categories of solutions. (See Figure A.)

Figure A: Categories of Winning Leap solutions

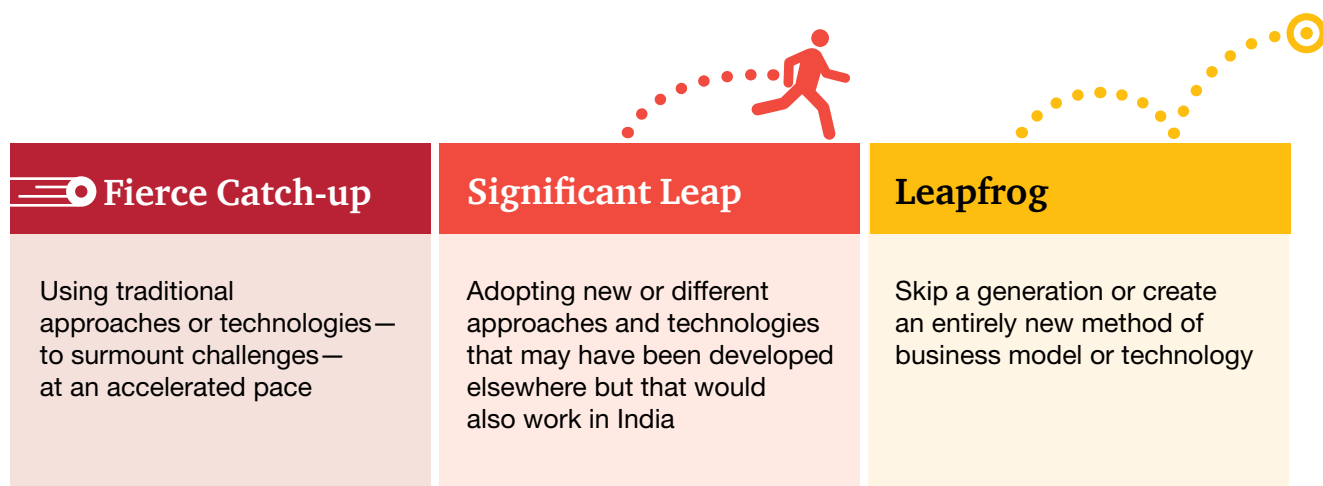
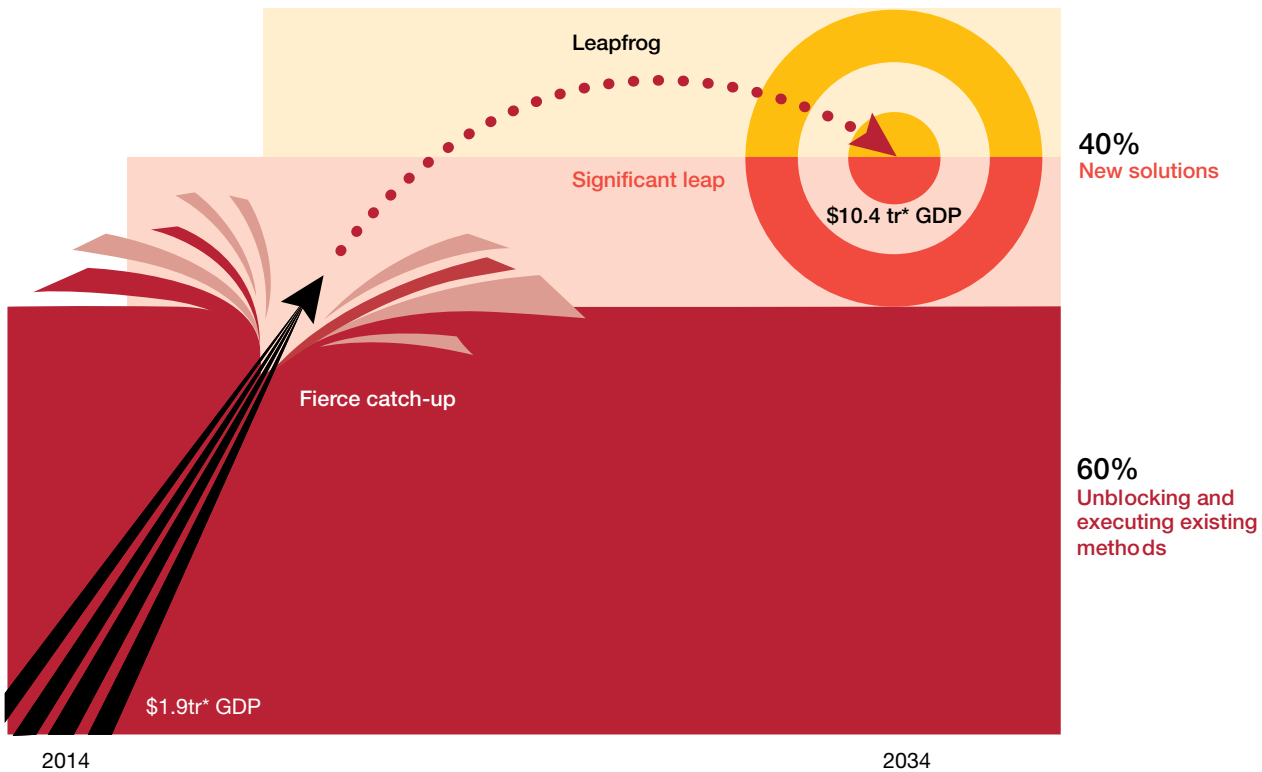


Figure B: How new approaches could contribute to India's economy



Source: PwC analysis

Each sector of the Indian economy will need to execute solutions drawn from all three categories if India is to build its GDP to US\$10tr in 2034 and improve its HDI in an environmentally sustainable manner.

Take the vector life expectancy at birth as an example. To increase life expectancy from today's 66 years to 80 years in 2034, our analysis shows that a traditional approach would require the addition of 3.6m new hospital beds over the coming two decades. A Winning Leap approach will take a decidedly different tack, whereby healthcare-sector players scale more operationally efficient business models (Fierce Catch-up), encourage preventive healthcare and home care (Significant Leap),

and adopt mobile health techniques and technologies (Leapfrog). Combining these strategies could reduce the number of additional hospital beds needed by 1.2m while still boosting life expectancy to 80 years in 2034. That reduction in the number of new beds could translate into savings of more than US\$90bn in capital expenditure on healthcare delivery infrastructure.

Other sectors can benefit similarly. For instance, a Winning Leap approach that increases average years of schooling from 7 to 10 in 2034 could save the education sector US\$170bn in cumulative investments. And a Winning Leap approach providing 24/7 access to power for all citizens while

We are sitting at 1.2 billion, going on to 1.5 billion in population. While this is a huge challenge it is also a large opportunity. It will stretch our finite resources to the limit unless there are some breakthroughs in technology.

Ajay Kumar Misra
Tata Global Beverages

increasing power delivery three-fold can be achieved through approaches that save US\$200bn in capital expenditures.

Our analysis suggests that up to 40% of India's US\$10tr economy in 2034 could be derived from new solutions. (See Figure B.) Such solutions could be successfully implemented with 25-30% less resources than those required by traditional solutions. Therefore,

Winning Leap solutions not only drive rapid growth in a resource-efficient manner but also are environmentally sustainable. The Winning Leap is more than just a new approach; it's a "play to win" mind-set for sector leaders and the country.

These and other analyses are explored closely in Chapters 1 and 2 of this report.





The private sector's role in achieving the Winning Leap

India's private sector—established corporations and entrepreneurial companies alike—can play a key role in developing and deploying Winning Leap solutions. Why? The private sector is more nimble than the government and social sectors in terms of its ability to craft new business models and strategies and leverage new technologies. Given their experience with globalisation, these companies are well positioned to learn from and experiment with best practices developed by their global peers. International companies looking to participate in high-growth markets are equally well equipped to develop relevant solutions.

This growth journey will also require public-private partnering in its broadest sense. To support progress in a number of sectors, the government will need to continue building national platforms such as improved roads, ports, and physical connectivity as well as better digital infrastructure.

If India can achieve a 9% per year growth trajectory, its economy would become the world's third-largest in 2034, after the US and China. This achievement would create world-class companies originating in India that develop capabilities essential for other high-growth markets as well. These companies could successfully serve India's already large and growing domestic market while also competing on the global stage. We anticipate that at least ten

Indian companies will find a place among the global top 100 by size and scale if the nation can achieve its US\$10tr GDP aspiration. These industry champions will not only demonstrate unprecedented growth themselves but also build new capabilities essential for ongoing innovation of new products, services, and business models.

To foster the emergence of such world-class Indian companies, India's private sector will have to invest more in research and development (R&D), particularly for solutions to challenges facing emerging markets, where India has already established a leadership position. Indeed, our economic model shows that India's Winning Leap will require an increase in R&D spending from 0.8% of GDP to 2.4% in 2034.

Five themes for the corporate sector

All too many Indian companies still don't realise the changes highlighted in our research. For those that are aware, many are not responding swiftly enough. To achieve the scale of transformation required for India's Winning Leap, businesses in as much as 40% of the nation's economy will have to execute new solutions and build new capabilities. To accomplish this, companies must focus on excelling at five interconnected themes. (See Figure C.)

These five themes are explored in detail in Chapter 3, including how they interrelate and which capabilities and technologies will prove most crucial for each.

Figure C: Five key themes for the corporate sector

Serving informed and empowered customers



As information grows (in both access and volume) and Indian consumers and businesses are more able to apply this information in their decision making, they become more empowered. And with their increased empowerment, they'll demand ever more value from the products and services they buy—including greater quality and convenience. Companies will need to rethink their business models and competitive strategies to profitably serve these customers.

Creating flexible and adaptive operating models



To reach these more demanding customers, Indian companies must build new kinds of operating models, such as asset-light models; experiment with unconventional sales and distribution channels; and leverage technology in new ways.

Drawing on nontraditional resources and partnerships



To acquire or build capabilities needed to drive growth, Indian companies can import knowledge and technologies through models such as licensing and forge partnerships with the government and social-sector organisations.

Adopting a growth and innovation mind-set



Indian companies must weave a commitment to growth into their corporate DNA by fostering companywide awareness of consumers' needs, investing enough in R&D, and unlocking entrenched organisational structures and attitudes that are inhospitable to new solutions, new business models, and new approaches.

Focusing on accountability, integrity, and sustainability



To drive rapid growth, Indian companies will need to align their top management and board to make everyone accountable for growth, embed integrity into their organisational culture, and uphold sustainability and social impact as core values of the organisation.

Entrepreneurs' role in the Winning Leap

Like large, established corporations in India, entrepreneurial companies in India can play a critical role in developing and deploying Winning Leap solutions. Indeed, the large Indian companies of tomorrow will emerge from the entrepreneurial sector of today. A groundswell of entrepreneurial energy in India has sparked recent, well-publicised successes in the e-commerce sector alone, and our research suggests the potential for similarly entrepreneurial growth in virtually all of India's sectors.

Our research has also focused on the interplay between corporations and entrepreneurs—in particular, how corporations can help by linking new ventures to their supply chain and by mentoring and coaching entrepreneurs on best business practices. In addition to being especially nimble in terms of driving innovation, entrepreneurial businesses have a huge potential to create the new jobs needed by the Indian economy. Our findings and analyses related to entrepreneurs' role in the Winning Leap are discussed in detail in Chapter 4.




The importance of ease of doing business

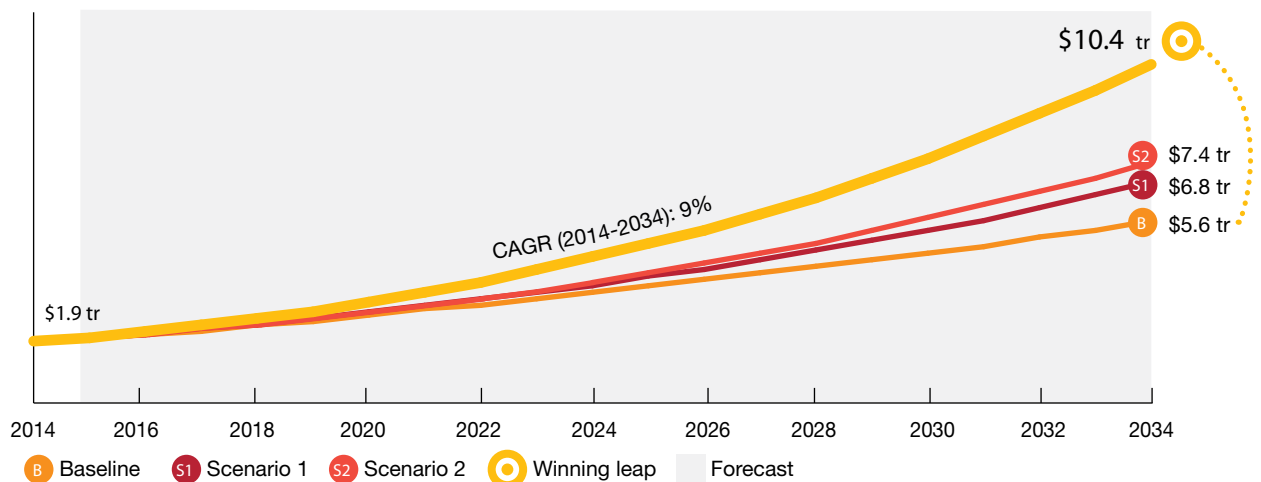
India's private-sector players can deliver Winning Leap solutions only if regulations and government policies make it easy to do business in India. In 2013, India ranked 134 out of 189 economies in the World Bank's Ease of Doing Business index. Our analysis and discussion with experts in this field suggest that there is some low-hanging fruit that could be harvested to improve this ranking—in areas like ease in starting a company and in paying taxes. Progress on these and other fronts could improve India's rank in this index by more than 50 in just a few years. Other improvements will require more complex policy and mind-set changes. An additional benefit of improving ease of doing business in India could take the form of greater confidence in India on the part of multinational companies, which would translate into larger flows of foreign direct investment and know-how into India, two essential ingredients for growth and innovation. The topic of ease of doing business is examined in closer detail in Chapter 5.



Three economic-growth scenarios

With data and modeling from Oxford Economics, we've defined three possible economic growth scenarios for India, each hinging on different strategies and achievements that could come from corporations, entrepreneurs, and the government and each reflecting a different focus for investment:

Scenario 1	Scenario 2 	Scenario 3 
 <p>Pushing old ways faster outlines a focus on investment in education, health, and other dimensions related to human capital. Our analysis suggests that in this scenario, India's GDP could see a 6.6% compound annual growth rate (CAGR) between now and 2034.</p>	<p>Turbocharging investment outlines the impact of rapid and significant investment in physical infrastructure and envisions a 7 trillion for GDP leading up to 2034.</p>	<p>The Winning Leap includes investment in both human and physical capital (as in the previous two scenarios) but also focuses on investment in R&D and innovation and envisions a 9.0% CAGR for GDP between now and 2034. This scenario forecasts the most aggressive growth and is the only scenario that will generate the 240m new jobs that India's growing population needs over the next 20 years.</p>



Source: Oxford Economics

We have also highlighted the challenges and roadblocks to achieving the identified growth in GDP. For instance, for Scenario 1, India will need to capitalise on its demographic dividend while also mitigating the risk of mass unemployment among its youth, which could be amplified by unaddressed health and education problems. In Scenario 2, water scarcity and energy security could jeopardise investments in physical infrastructure. And in Scenario 3, continued weakness in India's intellectual-property protection

system could hurt investments in R&D and innovation. These scenarios are explored more closely in Chapter 6.

How to use this report

The central purpose of this report is to drive action. We hope that the frameworks, analyses, and ideas for action laid out in this document will help catalyse corporate leaders, entrepreneurs, investors, and government officials to take actions aimed at contributing to India's Winning Leap:

Corporations



If you're a senior executive at a corporation, you may find Chapters 2, 3, and 4 of particular interest. These and other chapters can help you spark dialogue on how your company can spur its own growth, craft Winning Leap solutions that benefit India overall, and set the stage for elevating your company to world-class status. See pages: 32, 64 and 80

Entrepreneurs



If you're an entrepreneur, you may want to pay especially close attention to Chapter 4 as well as Chapters 2 and 3. We recommend using these and other chapters to brainstorm ideas for partnering with large, established corporations (such as being mentored by a large corporation), for scaling your company, and for stepping up creation of new jobs. See pages: 32, 64 and 80

Investors



If you are an investor, Chapters 2 and 6 may be of particular interest, because they explore sector opportunities, the different growth options facing India, and the approximate size of the investment opportunity. International companies seeking to enter India, acquire Indian companies, or invest in other ways in India's growth story will find this content equally useful. See pages: 32 and 100

Government



If you're a government leader, Chapters 2, 5, and 6 may be of particular interest to you. These and other chapters can help you and your colleagues explore ideas for improving ease of doing business in India (for example, by working with an industry council focused on this goal) and collaborating with businesses to identify short- and medium-term actions that the government could take to elevate India's ranking in the Ease of Doing Business index. See pages: 32, 88 and 100

These concepts are covered in greater detail in Chapter 7 (page 128).

By using this report, you can initiate new conversations that lead to long-term capability building and profitable growth for your organisation or institution. In doing so, you will be joining business leaders, entrepreneurs, investors, and government officials who participated in our study—all of whom were energised by the possibility of India's rapid growth and spread of prosperity that our report outlines.

The international leaders who took part in our study were especially passionate in their opinion that while the Winning Leap is critical for India, it's equally important for other growing economies. It is our hope that business and governmental leaders in other such economies will draw lessons from India's experience and make strides toward their own Winning Leap.







Chapter 2

Sectoral challenges and the Winning Leap

A person who cannot decide a goal simply cannot win.

Chanakya

India has bold aspirations: to become an upper-middle-income country and improve quality of life for its citizens. We maintain that it can realise these aspirations by achieving a US\$10tr GDP by 2034. To reach that target, it will need to grow its GDP at a compound annual growth rate (CAGR) of 9% over the next 20 years. In the process, we believe, India could create as many as 12m new jobs per year. This accomplishment could transform quality of life for Indians, especially in the areas of healthcare, education, and overall

living conditions—but only if India propels economic and human development simultaneously and sustainably.

Speed, inclusion, and sustainability are key elements in this story. Our research and conversations with influential leaders show that growth must occur across multiple sectors and population segments within India. The sectors are interlinked: growth for one enables growth for others. We call these multiple ambitions vectors for growth. Our

research identified ten such indicators on which India must excel to achieve its ambition of rapid, inclusive, and sustained growth. (See Figure 2.1.)

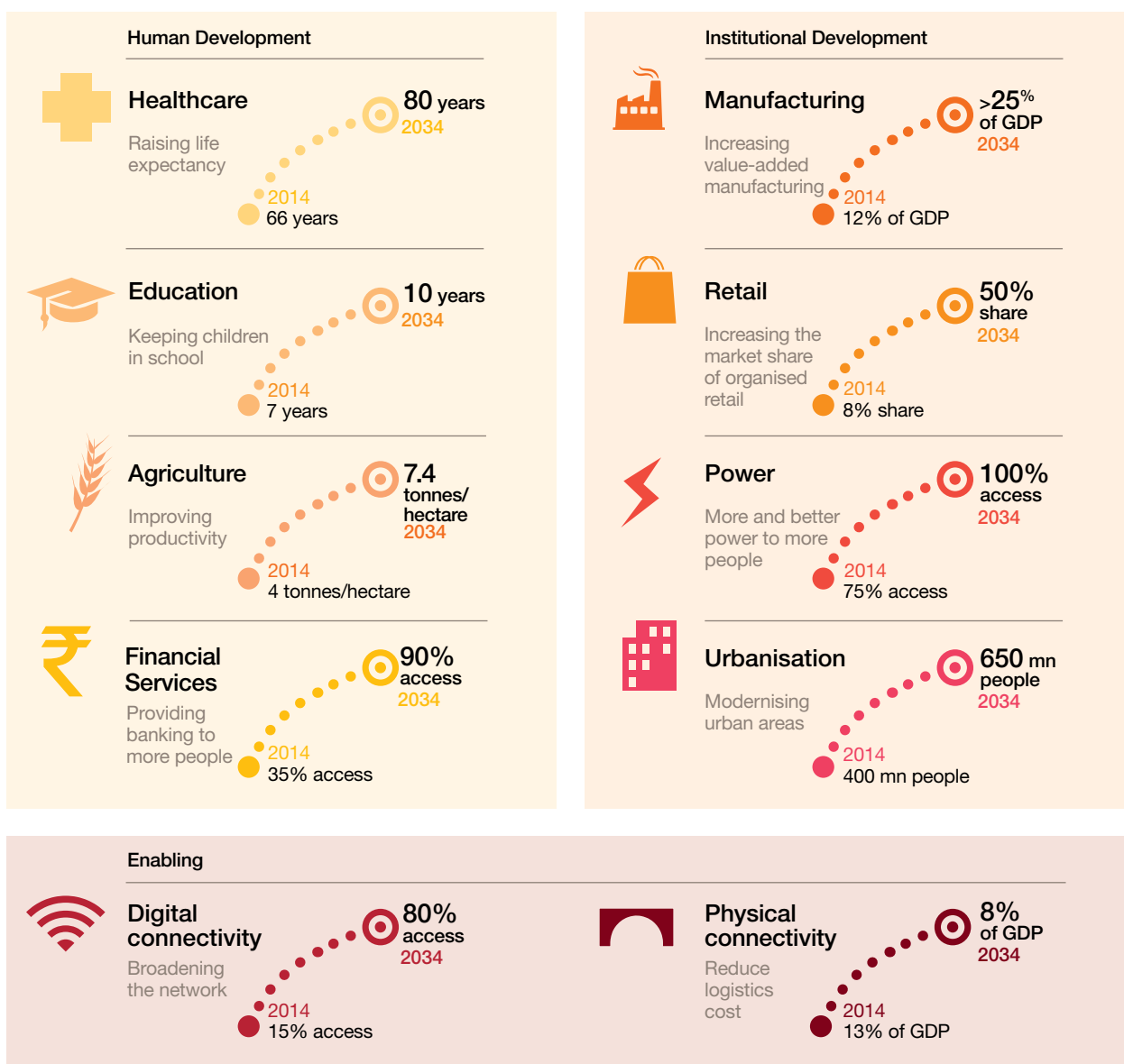
When it comes to the vectors, both quantity and direction matter. For instance, in evaluating improvement in education, the average number of years of schooling is a useful quantitative measure, but it must be augmented by an assessment of the quality of the education being received during those years. Without improvements in quality, an increase in the years spent in schooling may make no difference.

Similarly, in healthcare, life expectancy at birth is important, but healthcare improves even more when the focus of care shifts from reactive to preventive.

We group our vectors into three classifications: Human Development (life expectancy at birth, average years of schooling, agricultural yield, and access to banking services), Institutional Development (share of organised retail, value-added manufacturing, access to power, and managed growth of urbanisation), and Enabling (improving digital connectivity and improving physical

connectivity). The private sector has a major opportunity to help India improve its performance on each vector. Companies that can craft solutions to support such performance improvement can reap benefits including entry into new markets, increased revenues, and a much stronger market position than that of their competitors. To seize these opportunities, corporate executives, entrepreneurs, and government agencies should weave these vectors into their strategic planning over the next 20 years. Key questions to address will include “How can we contribute to growth on a particular vector?” and “What partners will we need to work with to make such contributions?”

Figure 2.1: Ten Vectors of growth



Source: World Bank, government websites, PwC analysis



India is at rock bottom in many sectors, from healthcare and education to organised agriculture and tourism, and we need to evangelise the massive opportunity in all in order to take giant steps to bridge the gap.

Ronnie Screwvala
UTV

We arrived at the vectors by assessing countries that have made significant progress on a particular challenge over the last 10-20 years. To develop the 2034 targets for each vector for India, we drew insights from PwC's sector experts, and we benchmarked comparative countries. To illustrate, for the past 20 years, per capita power consumption in India increased by 100%. However, over the next 20 years, this number will need to increase by 200% to bring India's power consumption to a level similar to Brazil's. Similarly, life expectancy at birth in India has inched up from 59 years to 66 years

over the past two decades, and will have to reach 80 years by 2034 to resemble the South Korea average.¹

To understand the interrelated nature of the vectors, let's consider education. In India, average years of schooling went from five to seven over the past 20 years. To raise that number to 10 by 2034, India will have to increase its investment in education as well as improve sanitation and bathroom availability for girls in schools, efforts related to healthcare. Likewise, improvements in manufacturing performance will come about only if workers are

healthy.²

Creating Winning Leaps across the ten vectors

Incremental change is taking place across the ten vectors, but it's not happening fast or cost-effectively enough. In the sections below, we look at the current conditions for each vector and consider steps that can be taken to drive improvement.

Vector one:

Life expectancy at birth

Good health is critical to human prosperity, yet quality of healthcare varies throughout the Indian population. Even though the country has produced some of the best physicians in the world, the average Indian has poor access to healthcare services. Maternal and infant mortality remains high, owing to inadequate healthcare infrastructure. Moreover, poor nutrition keeps many young children out of school, preventing them from reaching their full potential.

Part of the problem is the shortage of people and physical infrastructure needed to provide better healthcare. The ratio of doctors per 1,000 people is just 0.6. In Brazil and China, it's 1.8. And India has only 1.3 hospital beds per 1,000 people—significantly lower than the guideline of 3.5 beds defined by the World Health Organisation.³

Today, the two most important problems of healthcare in India are lack of awareness and lack of access. The affordability in healthcare can only come if there are volumes. Doctors, nurses, infrastructure, equipment, and instruments are scarce. Hence, affordability will only be possible if there's 100% utilisation.

Dr. R. D. Ravindran
Aravind Eye Care System



Several factors have resulted in poor health outcomes such as low life expectancy as well as high infant and maternal mortality rates. To bring about a Winning Leap in healthcare, we imagine an India that has increased life expectancy at birth¹ from 66 years in 2012 to 71 years by 2024 and to 80 years by 2034. We have also defined a subvector for the infant mortality rate (number of infant deaths per 1,000 live births), which could decrease from 44 to 31 in 2024 and to 12 in 2034. Similarly, the maternal mortality rate (number of maternal deaths per 100,000 live births), which is at 190 today, could decrease to 124 in 2024 to 27 in 2034. To achieve these targets, healthcare-sector players must focus on improving the reach, quality, and affordability of healthcare. The suggestions below can help.

Build more with less

Improving healthcare infrastructure takes time and money. Low-cost operational models combined with innovative financing models could help secure the needed resources. Public-private partnerships (PPPs) present real possibilities. Through this financing model, the government provides land and financial subsidies to private operators, which build hospitals and other healthcare infrastructure.

Specialty operational models also offer promise. In India, pioneers include Aravind Eye Care System and Narayana Health Group. These two hospitals invested in resources for specialised treatment (eye care and cardiac care respectively), which enabled them to streamline and standardise operations, making their services more affordable. High asset utilisation as well as para-skilling of nurses (training them to perform some procedures

that previously only doctors could do) have reduced doctor time, further helping to lower costs and enabling the staff to serve larger volumes of patients.

Permanently lower costs

Improving health outcomes without having to build costly new infrastructure can also boost life expectancy at birth. Narayana Health Group has done this by investing in information and communication technology (ICT) to shift the point of care to patients' homes. Through this model, nurses, community health workers, and trained family members provide first-level primary care at home, with serious cases monitored remotely by doctors and nurses.

Leverage digital technologies

High internet penetration can drive the adoption of telemedicine in India, improving resource efficiency and rapidly expanding access to health services. To these ends, India can replicate global best practices in telemedicine. These include using databases loaded with diagnosis protocols aggregated from the best hospitals, training field workers and on-call medics to reduce escalation of patients' concerns to a doctor, and collaborating with hospitals, doctors, and diagnostic centres to provide services in remote areas.

India can also leverage its strength as a world leader in vaccine manufacturing (it contributes 60% of global production)⁴ to sharpen its focus on preventive care. Indian vaccine manufacturers such as Serum Institute of India, Bharat Biotech, and Biological E are renowned worldwide for their contribution to reducing the cost of vaccines to about US\$1 per dose, making preventive healthcare more affordable than ever.⁵

¹ Life expectancy at birth indicates the number of years a newborn infant would live if the prevailing patterns of mortality at the time of its birth were to stay the same throughout its life.



Improvements in the healthcare sector will ripple throughout the entire Indian economy. For instance, well-nourished children will be more attentive in school. They will learn more and ultimately enter the workforce with the skills and knowledge needed to support innovation in their companies.

Vector two:

Average years of schooling

High-quality education builds a nation's human capital. To avoid squandering its demographic dividend, India must make substantial reforms in its education sector. The nation's education system has benefited the upper class, producing a number of global CEOs. But it hasn't worked for the masses: India has the largest illiteracy rate—33%—in the world,⁶ in part because education is not yet available to everyone.

In simple terms, there aren't enough schools in India, and many existing schools have inadequate infrastructure. Given the poor quality of schools, many students drop out of the formal education system early in

their lives, and many of those who stay in school emerge with insufficient skills and knowledge to find good jobs.

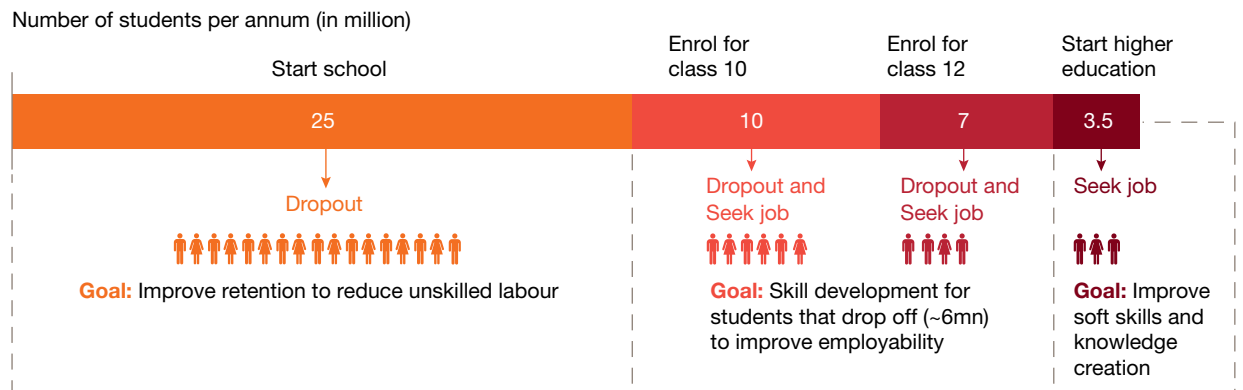
The few Indians who complete tertiary education may also lack the skills needed to excel in the jobs available. In 2012-2013, almost 45% of graduates from tertiary education in India earned less than INR 75,000 (about US\$1,300) a year.⁷ Even as millions join the workforce each year, the shortage of qualified talent remains a top concern for CEOs across India.⁸

The link between poor education and India's low labour-force participation is obvious.¹¹ Against the backdrop of India's rapidly growing working-age population, low participation can have serious social and economic consequences, including unrest among young people. India needs to raise workforce participation from 58% to 80%⁹ to be on par with China. Education and skill development will prove critical for achieving this target.

We have defined the growth vector for education as an increase in average years of schooling from seven in 2012 to eight in 2024 and ten in 2034. Achieving these targets will require innovative solutions across the education value chain. Results will include reductions in dropout rates and greater enrolment in upper secondary education (an increase from 55% to 75%, again similar to China's number). Improving infrastructure for secondary and tertiary education and improving student-to-teacher ratios as well as teacher quality are top priorities. Below, we offer recommendations.

¹¹ Labour-force participation is expressed as the proportion of the population age 15 or older that is economically active; that is, supplying labour for the production of goods and services during a specified period.

Figure 2.2: Reducing the rate of dropouts and boosting skills



Source: World Bank, press articles

Provide more blackboards and desks

In India, primary education is primarily publicly funded and not-for-profit. Boosting private participation could help improve average years of schooling along with quality of education. For instance, PPPs could be used to build new schools—the “blackboards and desks” approach. One possibility is to create multipurpose facilities that can operate as not-for-profit schools during the day and as for-profit vocational education and training centres in the evenings.

India also needs to get more students into school. Sarva Shiksha Abhiyan (universalisation of elementary education) and the Rashtriya Madhyamik Shiksha Abhiyan (National Mission for Secondary Education) are positive steps in this direction.

Empower students through skills development

India can improve inclusion and quality of education by adopting a credit-based system for vocational education and allowing interoperability of credits between vocational and mainstream schooling. This system will encourage students to complete their academic education while also acquiring practical skills that will help them find jobs with employers that need their talents.

Use of technology-enabled solutions such as massive open online courses (MOOCs) to enhance the reach and quality of vocational education is gaining ground. MOOCs are online platforms offering a wide range of courses, most of them developed in partnership with reputable institutions. MOOCs may be a good short-term solution for bridging skill gaps.

Get more from technology

Savvy deployment of technology could help India implement distance-learning solutions. Internet, satellite, and mobile-based distance-learning programmes can improve education quality and affordability at all learning levels. A technology-led model of education, based on remote connectivity, is also highly scalable. Education-sector players can even use existing technology—such as the EDUSAT^{III} satellite—to deliver learning in new ways.

India must also tailor its education system to the needs of the modern economy. Improving outcomes will require more-effective teacher-training programmes; standardisation and accreditation of pedagogy across learning settings, including vocational training; and the linking of curriculum to the needs of India’s digital and IT-enabled economy. (See Figure 2.2.)

^{III} A communications satellite launched in 2004 by the Indian Space Research Organisation to meet demand for satellite based distance education.

Vector three:

Agricultural yield

Agriculture will play a crucial role in India’s economic and human development, nearly 50% of India’s workforce depends on agriculture for their livelihood. Yet agriculture’s contribution to the nation’s GDP has fallen from 42% in the 1960s to 18% today.¹⁰

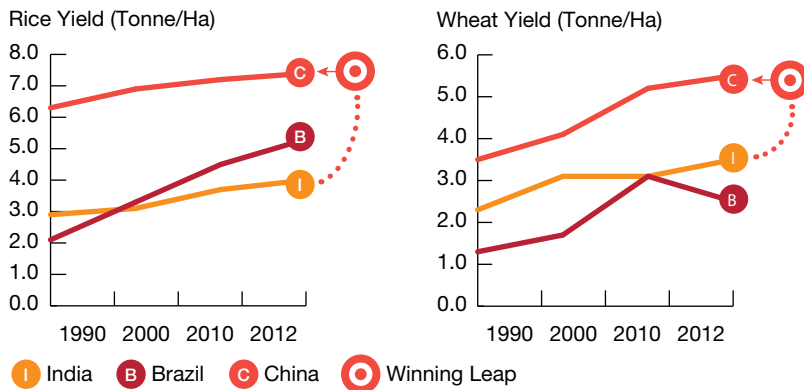
A key factor behind this shrinking share is poor yield per hectare, even though most of India’s agricultural land is already under cultivation. Let’s compare India’s situation with China’s. India produces 235m tonnes of food grain from 135m

hectares of land. China produces 450m tonnes of grain from 100m hectares.¹¹ In key commodities—rice, wheat, and maize—China’s yields far exceed India’s. (See Figure 2.3.)

There are several culprits behind low agricultural productivity. Low penetration of irrigation is one of them: 60% of arable land depends on monsoons for irrigation.¹² Moreover, farming techniques are out of date and inefficient, with limited focus on agricultural research and adoption of new crop technologies.¹³

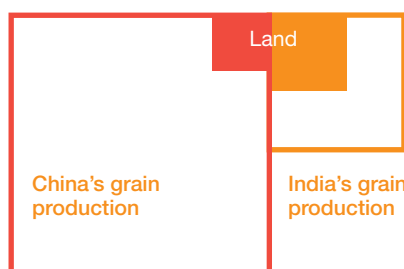
Our research identifies poor agricultural productivity and inefficient food delivery as critical issues facing India. The nation has a significant grain stockpile, just behind that of China, the world leader—yet 20% of Indians remain malnourished.¹⁴ In 2012, India had a 40% shortage of storage space for a total stock of 82m tonnes of food grain.¹⁵ Improved storage facilities and more-efficient food-distribution systems will help address these challenges and could improve food supply per person per day from 2,500 kilocalories¹⁶ to 3,500-4,000 kilocalories.

Figure 2.3: Yield per hectare in India for key commodities



Sources: World Bank data, Wall Street Journal

China produces 450m tonnes of grain from 100m hectares of land whereas India produces 235m tons from 135m hectares, the second-largest arable land in the world.





India could benefit hugely by increasing yield for food grains from 4 tonnes per hectare in 2012¹⁷ to 5.4 tonnes per hectare in 2024 and 7.4 tonnes per hectare in 2034. Reaching these goals will require improvements in irrigation, farmer education, and access to inputs such as fertilisers and good-quality seeds.

Leverage mechanisation and data

Stepping up mechanisation in farming could significantly improve crop yields. The private sector and government can play a role by making loans available for farmers to buy mechanised equipment and by developing awareness programmes that encourage farmers to advance their skills in machinery operation.

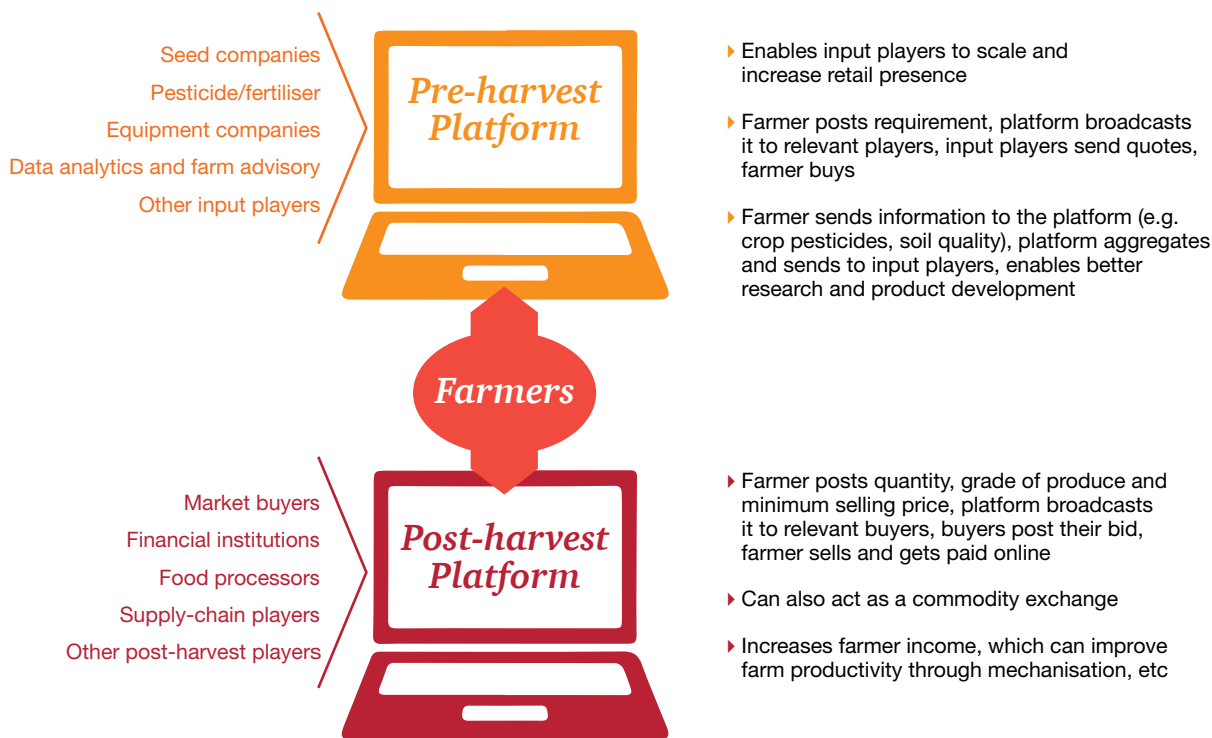
IT-led solutions can also help. Reuter's Market Light and TCS's mKrishi are examples. These education and advisory services, available through mobile apps, help farmers make informed decisions and have been implemented in more than 17 states across India.

Improve precision farming and input access

India's agricultural sector needs to shift toward data-driven precision farming—which uses sensors, imagery, and other technologies to generate information for farmers about weather, soil content, fertiliser, and pesticide levels. Farmers use the information to fine-tune their techniques as well as optimise resources and improve the quality and quantity of crops. Yet only 2.5m of India's 120m farmers practise precision farming,¹⁸ largely in the form of drip irrigation. Enabling more farmers to use such practices could help India reach its agricultural productivity targets.

Similarly, partnerships between complementary input players—such as fertiliser, pesticide, and seed companies—will strengthen the agricultural supply chain. That could reduce costs of inputs for farmers and give them easier access to inputs, all of which translates into better performance on agricultural yield.

Figure 2.4: A digital food platform



Source: PwC analysis

Strengthen research

Strengthening research in fields such as biotechnology, especially genetically modified (GM) seeds, could improve crop yield and resistance to pests and drought. However, debate persists regarding the impact of GM seeds on human health and soil quality. India thus needs to invest in research on the use of GM seeds in food crops to make them as successful as Bt cotton^{IV} has become in India.¹⁹

The sector also has an opportunity to develop an integrated digital platform comprising pre- and post-harvest modules. (See Figure 2.4.) Such a platform could create a marketplace in which players across the value chain can interact with one another. It could provide input players with opportunities to scale and to increase their market access while enhancing the transparency of transactions, which lets farmers buy and sell at the best possible prices.

The agricultural sector offers a rich array of opportunities for private-sector companies to help India achieve its agricultural yield targets. Such companies could come from sectors ranging from IT, retail, and biotechnology to fertilisers and farm-equipment manufacturing. Higher crop yield will support inclusive growth and improvements in economic status for the many Indian citizens still dependent on agriculture to make a living.

^{IV} Bt cotton, produced by Monsanto, is a genetically modified variety of cotton that produces an insecticide.

Vector four:

Access to banking services

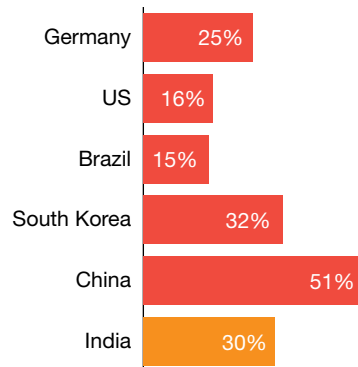
Access to finance promotes economic growth and reduces poverty and inequality. Gross national savings in India have constituted 30% and more of GDP since 2004. However, since 2010, the share of household savings entering the formal financial system has fallen with increased demand for physical assets such as gold and real estate.²⁰ (See Figure 2.5.)

In India, only 35% of adults had access to a formal bank account as of 2011-2012.²¹ Thus, a significant percentage of the country's population is vulnerable to exploitation from people involved in informal channels that fall outside regulatory control, such as money lenders or operators of fraudulent savings schemes. As of 2013, the share of informal rural credit ranged from 77% (to near-landless farmers) to 32% (to farmers with landholdings of 10 hectares and more).²² Also, 57% of families surveyed across major migrant corridors crossing states within India claimed to prefer informal channels for managing remittances, whereby workers send portions of their wages to family members living in other states or regions of India.²³

Our vector for the financial services sector envisions expanding the percentage of Indians who have access to formal banking services from 35% in 2012-2013 to 70% in 2024 and 90% in 2034. By access, we don't just mean the percentage of people who open an account; we mean the percentage who actively use banking services—namely, making at least one deposit or withdrawal each month.

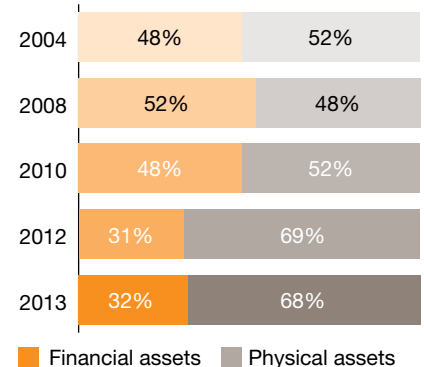
Figure 2.5: Household savings as a percentage of GDP in India

Significant rate of gross national savings in India (% GDP)



Sources: Planning Commission, Government of India

Falling share of financial savings among households remains a concern

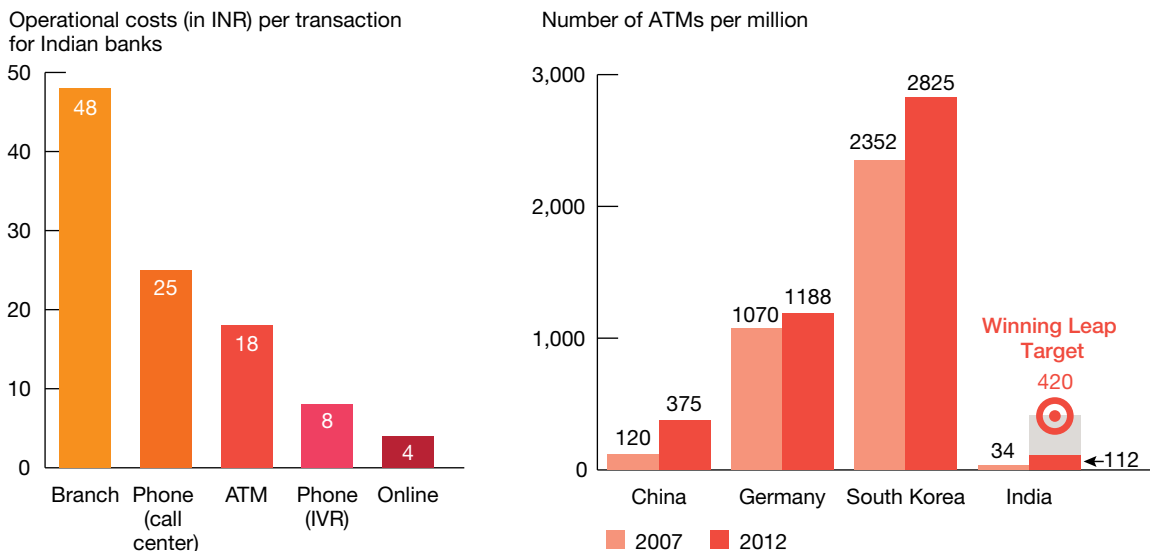


Sources: Planning Commission, Government of India

The financial sector is important because it enables other sectors. To have the most effective financial sector, we need to move more assets from gold and black real estate into productive areas.

Naina Lal Kidwai
HSBC

Figure 2.6: The power of technology-enabled banking



Sources: World Bank, ICRIER, PwC analysis

Tackling India’s financial-inclusion challenge will require multiple interventions. Examples include easing regulatory norms for bank-customer acquisition, improving financial literacy, designing suitable banking services to meet different consumer needs, and expanding the penetration of banking infrastructure into rural areas to make access easier and more affordable for account holders. In the sections that follow, we explore several ideas for making such improvements.

Build branchless infrastructure

Historically, Indian banks seeking to grow have favoured expanding their number of brick-and-mortar branches over deploying branchless technology and have relied on business correspondents (i.e. third-party agents) to reach customers in remote villages. However, the gap between urban and rural branch density remains substantial, with only 38,000 branches serving

almost 600,000 villages throughout the country. The business-correspondent model has extended access to almost 150,000 villages. Yet it hasn’t led to more active use of accounts, because banks have had difficulty incentivising agents and monitoring their performance.²⁴

Quadrupling branch density from 2014 through 2034 could help India improve access to banking services. But doing so would require major capital investments from banks, especially in rural markets.²⁵ Moreover, branch density doesn’t necessarily correlate strongly with financial access. For instance, China and Germany boast much higher financial inclusion than India in terms of the percentage of people actively using bank accounts (64% and 88%, respectively)—but both countries have comparable branch density to India (77 and 139 branches per million, versus India’s 114 branches per million in 2012²⁶).

Our research shows that technology-led infrastructure such as automatic teller machines (ATMs) could significantly lower capital requirements and transaction processing costs for banks seeking to foster greater financial inclusion. (See Figure 2.6.) Banking customers would be far more likely to use permanent, convenient access points such as ATMs to conduct banking transactions, rather than having to wait for agents to visit their villages.

The other key factor India needs to address is the level of Know-Your-Customer (KYC) compliance required to open bank accounts, which increases acquisition costs for banks and excludes many citizens from the financial system. Regulatory shifts such as easing KYC norms for low-value accounts could maximise the reach of financial services for any given level of infrastructure penetration.

Exploit national platforms and new partnership models

Non-traditional partnership models could further improve financial-services penetration in India. Through such models, participants share infrastructure-development costs, lower market-entry risks, and combine their strengths to improve consumer access to services in remote areas. Such models have succeeded elsewhere in the world.²⁷ Take *Mzansi* accounts in South Africa. These no-frill bank accounts were launched jointly by the country's four largest private banks and the state-owned Postbank. More than 6m accounts were opened during 2004-2008, improving penetration from 46% to 63%.²⁸ Brazil's banking-correspondent model is another example. Through this model, the retail banking presence was expanded through partnerships with nonbanking entities such as local grocery stores, drugstores, and gas stations—backed by extensive use of IT systems.²⁹ The Philippines adopted a PPP model to deliver

welfare payments through multiple channels including cash cards, ATMs, rural bank offices, postal services, pawnshops, and mobile payment options.³⁰

Business-model innovations could also be combined with national platforms such as the unique identification number (or *Aadhaar*) to reduce compliance costs for service providers. This could reduce customer acquisition costs by as much as 40%, compared with the face-to-face identification procedures and paper-based processes used extensively today.³¹ And applicants would not have to provide multiple identification documents, a requirement that prohibits many from entering the financial system. The reach of the *Aadhaar* platform has been significantly extended; it covered some 600m registered members by early 2014. Still, banks must create the infrastructure and develop the capabilities needed to adopt and use real-time digital solutions such as e-KYC and biometric authentication

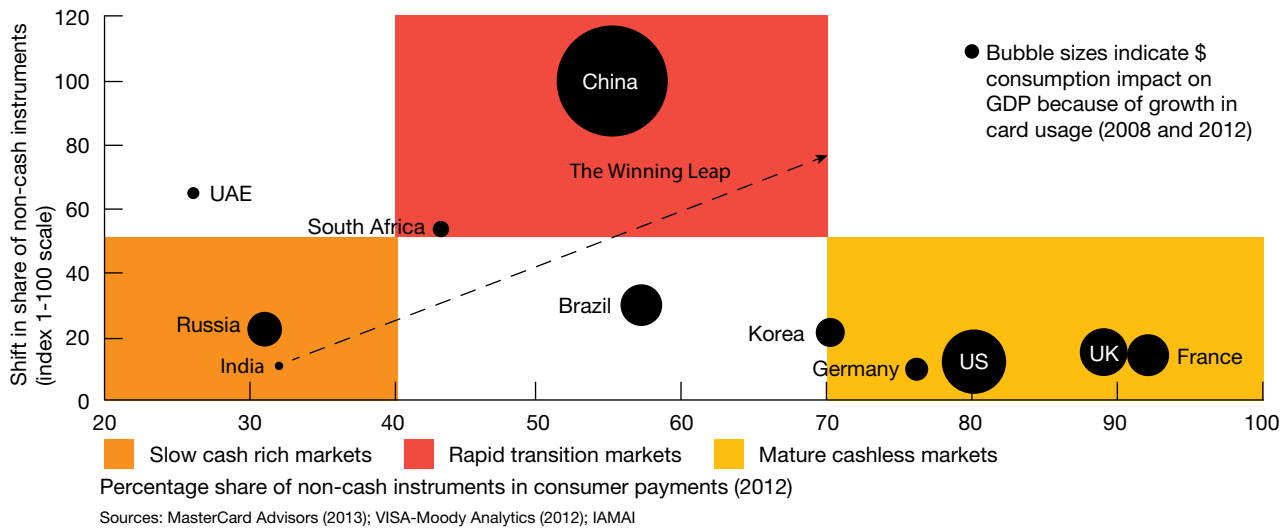
of customer identity. Such capabilities could also include management of partnerships that banks will need to forge to implement and get the most from digital solutions in the coming years.³²

Use next-generation digital channels

Use of digital channels such as mobile and online banking could greatly improve financial inclusion. Mobile money solutions have gained acceptance in markets such as Kenya and Bangladesh. But converting over-the-counter transactions into accounts enabling a full suite of banking services remains elusive even in those markets. The challenge facing nascent markets such as India must be addressed at more fundamental levels. Potential solutions include creating low-cost service models that offer incentives to multiple industry participants (such as telecom providers, banks, and payment providers), improving digital literacy, and expanding broadband and digital banking infrastructure within the country.³³



Figure 2.7: Advantages of digital payments



China's GDP is estimated to have grown by

↑ **\$375 bn**

due to consumption emanating from growth in payment card usage between 2008-2012

Emerging technology solutions such as solar ATMs can help, by slashing ATM setup costs by almost 50%.³⁴ Furthermore, credit-scoring models based on online and mobile usage data could make it easier for banks to evaluate potential customers' credit risk.³⁵ Examples include *M-Shwari* in Kenya, a savings-and-credit product from Safaricom and Commercial Bank of Africa (CBA), and an online credit model adopted by AliFinance in China.

These and other next-generation solutions could help India move toward a cashless economy. Growth of 5% in cashless transactions could help save more than INR 500 crore annually for the national economy through lower transaction and administrative costs.³⁶ And as China has discovered, digital payments could also drive private consumption, further boosting India's GDP.³⁷ (See Figure 2.7.)

Vector five:

Share of organised retail

India is one of the fastest-growing retail markets in the world. The nation boasts a population of 1.25bn. It also has an emerging-middle and middle class (households earning between INR 150,000 and INR 850,000 per year) of 640m poised to reach 900m in 2021.³⁸ India's retail industry could see a CAGR of 10% over 2012-2020, growing from US\$500m to US\$1tr in that time-frame.³⁹ Experts foretell a future when an INR 1,000 increase in per capita consumption could improve GDP by 2 percentage points.⁴⁰

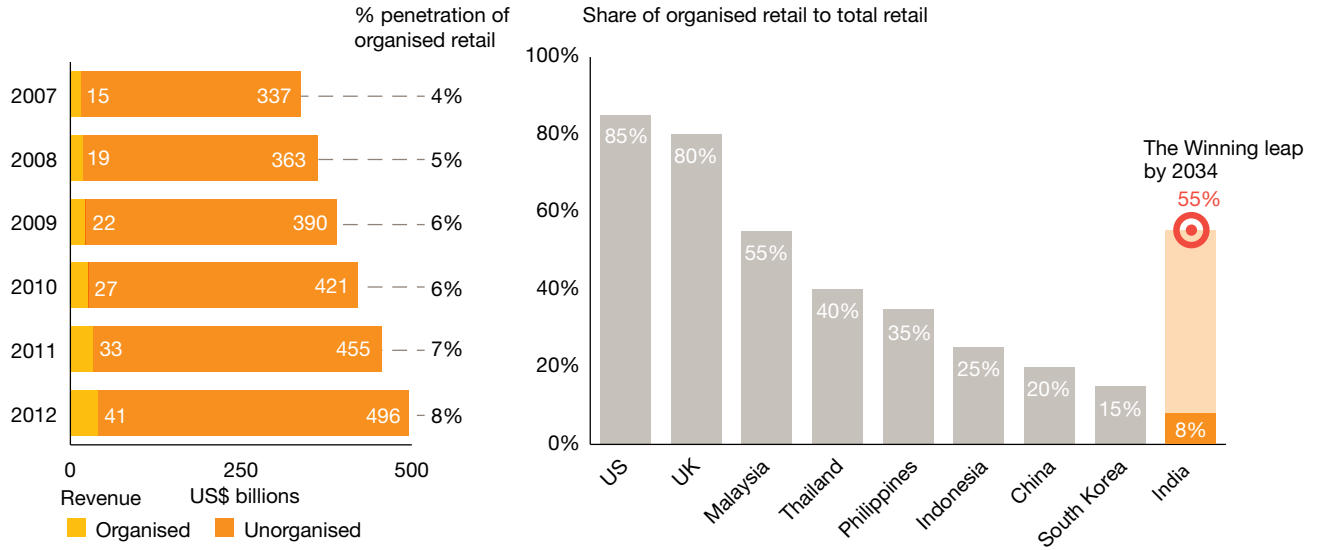
However, 92% of India's total retail market remains unorganised,⁴¹ dominated by local shops owned by independent private individuals.^V (See Figure 2.8.) Promoting growth of organised retail will strengthen India's consumption ecosystem—which includes producers,

unorganised retailers, consumers, and the government. Besides benefiting farmers, manufacturers, the government, unorganised retailers, and logistics providers, growth in organised retail will create more jobs available to people with lower skill levels. Currently, retail employs up to 40m people^{42,43,44}. If the sector is strengthened, it could produce 10m additional jobs in the next ten years.⁴⁵

We envision India boosting the share of organised retail from 8% of total retail in 2012 to 30% in 2024 and 50% in 2034. We don't mean to suggest that unorganised retail channels will lose their relevance in the local communities they serve. Nor do we mean that organised

^V Unorganised retailing refers to the traditional formats of low-cost retailing; for example, local shops, owner-operated general stores, convenience stores, hand carts, and pavement vendors (as defined by the Parliamentary Standing Committee on Commerce, 2009).

Figure 2.8: India's unorganised retail sector



- The retail industry is expected to grow at 10% to ~US\$ 1tr by 2020.
- Organised retail is expected to grow 24%, at a higher rate than overall Indian retail sector.
- Even at 24% CAGR, organised retail will account for less than a third (30%) of the total retail market by 2024.

Sources: PwC analysis, press articles



retail in India will have to mirror the large formats characterising the “big box” retailers in more developed economies. The goal is to support the creation of a retail value chain that improves operational efficiency and that works with the unorganised sector to improve consumers’ overall retail experience—for instance, by offering more choices, more reliable supply of popular products, and lower costs. The end result would be an increase in overall consumption, among other advantages. (See Figure 2.9.) Below, we summarise follow-on improvements that will come from strengthening organised

retail in India.

Bring in efficiencies

Organised and unorganised retail players can partner to improve the overall retail ecosystem while also generating new benefits for their own customers. For instance, the unorganised sector could help extend organised retail’s reach to that “last mile,” where independent store owners understand the local market. Organised players could take responsibility for managing core supply-chain components that require hefty capital expenditures. They could also help unorganised players improve their stores’ ambience, provide IT systems, and educate smaller players on basic management

techniques, in exchange for smaller players’ sourcing specific products from them. This model combines the prowess of organised retailing with the proficiency of neighbourhood stores, creating more value for consumers than either sector could provide on its own.

Use technology to reach customers

Real estate in India accounts for 8-10% of retailers’ revenue; in contrast, the world average is 4%.⁴⁶ By leveraging digital retail channels (e-commerce), retailers could spend less on real estate while also reaching more customers in tier-2 and tier-3 cities. Some leading e-commerce players in India, such as Jabong and Myntra, derive

Figure 2.9: Benefits of strengthening organised retail

Increases tax inflows for the government

- Significant challenge of tax collections from the unorganised sector
- Organised retail players are generally large tax payers
- Organised retail also helps increase indirect tax through development of related sectors (warehousing, logistics, etc)
- State VAT revenues will increase as modern retail grows

Reduces inefficiencies in food supply

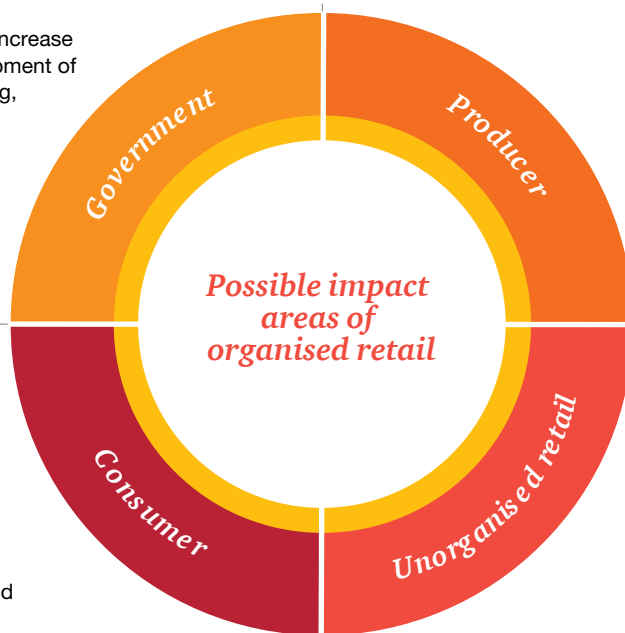
- Farmers integrated into modern retail thereby removing several layers of intermediaries
- Reducing wastage
- Farmers to get a fair value for their produce and a stable income
- Improvement in quality of produce
- Contract-farming and cooperative models can be adopted for partnership

Improves quality of life

- Greater choice of products
- More competitive prices—supply-chain efficiencies and greater competition
- Better quality of products
- Improvement in customer service—policies and staff behaviour
- “Lifestyle parity” with developed markets for consumers in India

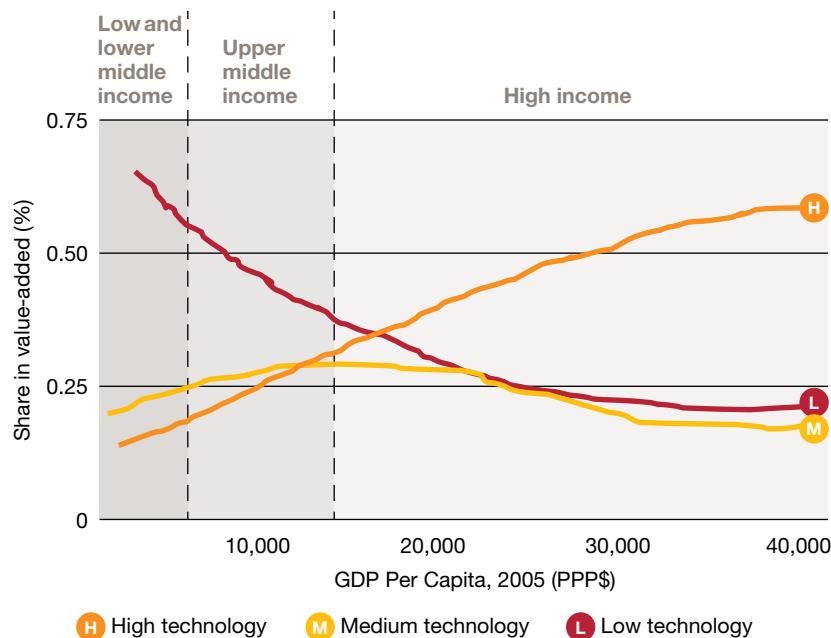
Improves unorganised retail

- India’s large retail sector needs and can accommodate both organised and unorganised retail
- Unorganised retail can source food and non-food items, essential for operations, from cash-and-carry providers, benefiting from bulk discounts
- Unorganised players can become franchise partners for modern trade players’ neighbourhood format



Source: Winning in India’s retail sector, PwC report 2012

Figure 2.10: Share of value-added manufacturing



Source: United Nations Industrial Development Organization

nearly 50% of their revenues from tier-2 cities.⁴⁷

Increasing penetration of Internet subscribers, smartphones, credit and debit cards, and innovative payment models (such as mobile wallet and cash on delivery) are creating a growth environment for digital retail. We project that digital retail could account for 50% of the organised retail market in 2034, resulting in significant reductions in capital expenditure for retail space.

New technologies such as virtual walls and virtual mirrors will further help improve the retail customer experience, thereby encouraging greater consumption. Virtual mirrors let shoppers “try on” clothes and accessories virtually before making buying decisions. Virtual walls help customers scan barcodes for items on an electronic wall, using their mobile phones, and place orders with retailers. Tesco in South Korea was an early adopter of this technology. In India, HomeShop18 has launched India’s first virtual-shopping wall. Scan N Shop at New Delhi’s international airport uses a similar technological interface.

Vector six: Value-added manufacturing

The manufacturing sector will play a key role in India’s development, as the nation grows more urban and industrialised, by providing jobs to a broad spectrum of workers and spurring income growth across different segments of the population. Shifting focus from low- to high-tech industries will prove critical. Countries that have boosted their per capita GDP have done so by making this shift. (See Figure 2.10.) Take South Korea, whose per capita GDP grew 20-fold from 1963 through 2013.⁴⁸ The nation achieved this growth in part by developing the manufacturing capabilities essential for high-tech

Innovation, design, and manufacturing go hand-in-hand. The closer you can co-locate these operations, the more effective is the leverage you can get. It is a little theoretical to talk about design and innovation in one part of the world and manufacture in another.

Banmali Agrawala
GE

Figure 2.11: A path to improved manufacturing competitiveness in India

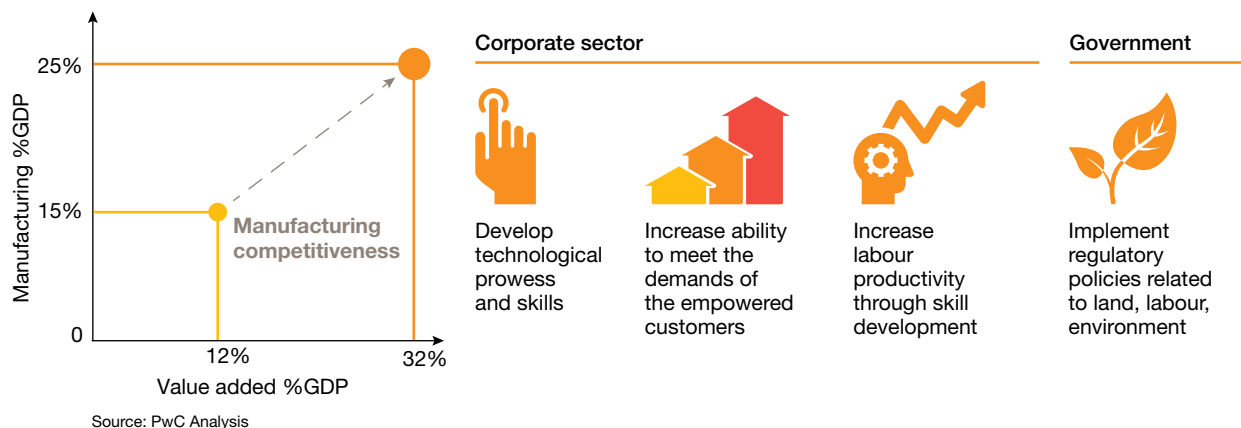
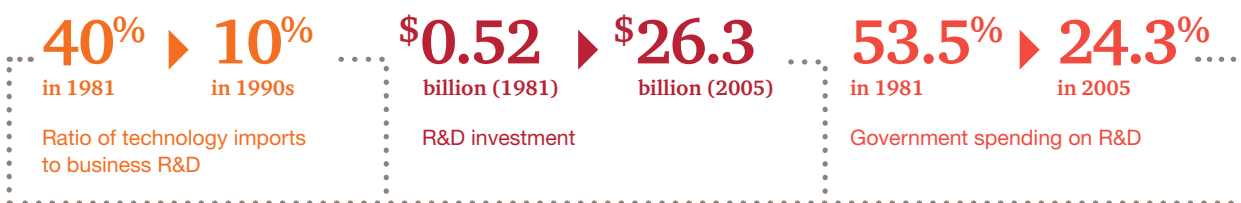


Figure 2.12: Technology importing in South Korea



Source: Issues in Science & Technology - Excelsior: The Korean Innovation Story

industries, which now dominate its manufacturing landscape.

Our research focuses on share of value-added manufacturing as a percentage of GDP. This differs from percentage of GDP that is derived from manufacturing. Value-added manufacturing denotes the percentage of value addition achieved in manufacturing and indicates the level of sophistication in manufacturing processes. Percentage of GDP from manufacturing denotes the proportion of manufacturing in the overall economy. In India, value-added manufacturing stands at 12% of GDP today.⁴⁹ Our analysis shows that value-added manufacturing can grow to 20% by 2024 and to greater than 25% in 2034 if India can step up its manufacturing

competitiveness. Ideas for doing so follow. (See Figure 2.11.)

Remove regulatory hurdles and focus on skills

For India to achieve its targets on the value-added-manufacturing vector, it needs to first remove regulatory hurdles that have made doing business in India difficult. That includes simplifying policies related to land, labour, and the environment and providing single-window clearances for obtaining business permits. Strengthening manufacturing skills training will also prove crucial. For example, in Germany, vocational education and training (VET) is seen as a pillar of the nation’s education system. Two-thirds of German youth undergo vocational training in both the workplace and vocational schools.

They receive broad-based (i.e. basic to advanced) training and gain the skills and knowledge needed to practise a trade. Those completing the training qualify for jobs in about 355 recognised occupations that require formal training.

Import technology to strengthen manufacturing capabilities

Importing foreign technology can help Indian manufacturers strengthen their capabilities. In the 1960s and 1970s, South Korea began enhancing its domestic manufacturing capabilities through methods such as reverse engineering and foreign licencing. (See Figure 2.12.) At the same time, the South Korean government and private sector invested in the capabilities needed to absorb the new technology. Indian companies are making strides in this direction through joint ventures, licence

arrangements, and acquisitions. But they will need to step up the pace to help the nation reach the vector target we've proposed. With the government's help, business can do so by increasing investment in research and development (R&D), with the goal of ultimately reducing dependence on technology imports.

Make structural shifts in manufacturing

As Indian manufacturers shift their focus to high-tech industries, they will need to invest in R&D and develop new technological skills. Our analysis shows that the share of R&D in India's GDP will have to grow from its current 0.8% to 2.4% in 2034 to achieve the desired gains in value-added manufacturing.⁵⁰

Global giants like Toyota have invested heavily in R&D to reduce the lead time from design to production. For example, Toyota's central R&D labs have developed simulation models to predict the impact of noise, wind, and other

factors on automobile frames and to use the resulting insights to design more robust frames. India needs to enhance such capabilities to "move the needle" toward value-added manufacturing.

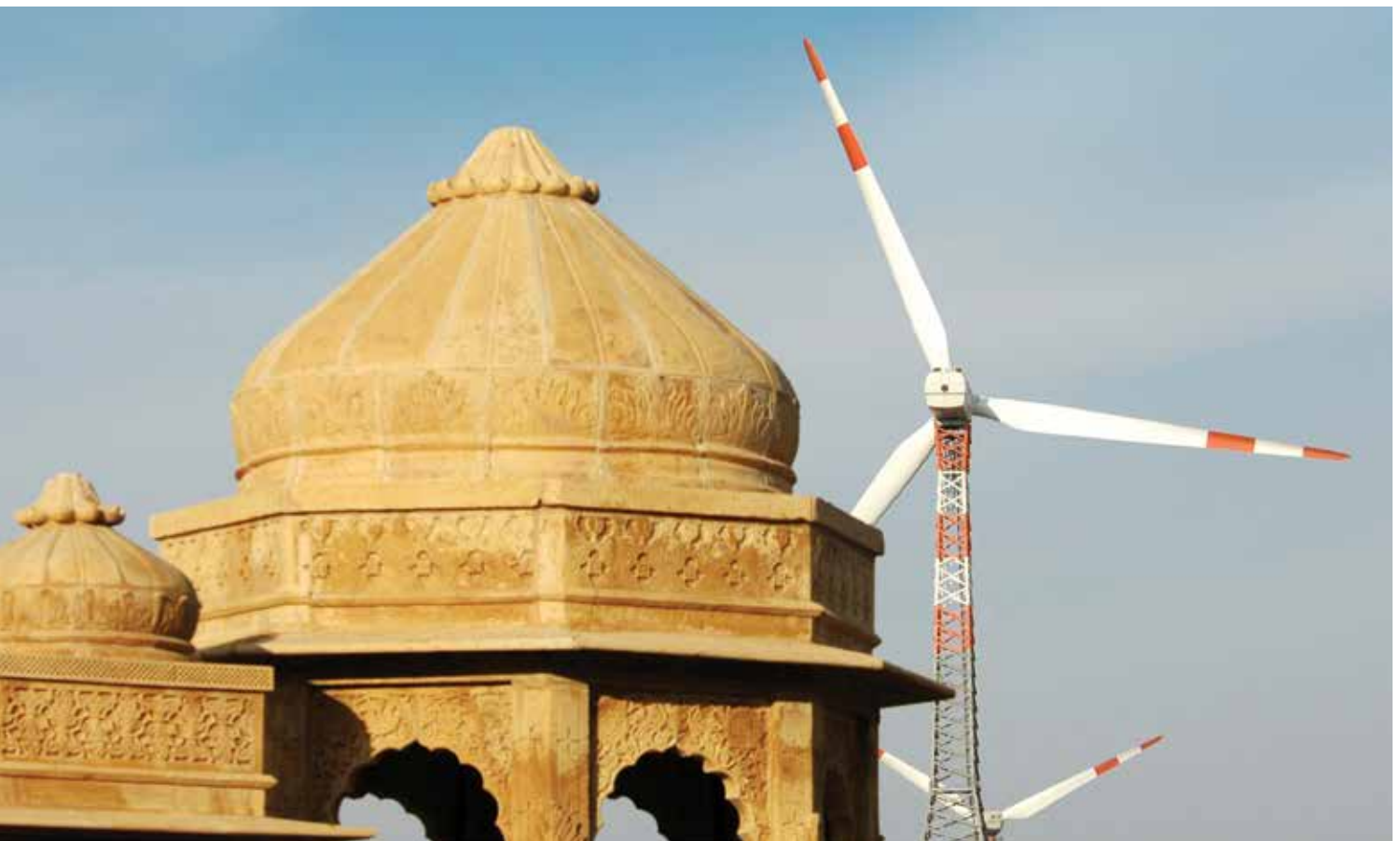
However, this doesn't mean that India should neglect its low- and medium-technology industries. The bulk of job creation will happen in these sectors. But in the short run, India needs to start exporting finished goods. For example, while the top two exports from India to China were cotton yarn and iron ore, China's top two exports to India were electronic goods and electrical machinery, indicating these growth economies' different positions in the manufacturing sector.⁵¹

Vector seven: Access to power

In India, more than 300m people today don't have access to electricity.⁵² And the need for power will only grow, given the

expected increase in urbanisation, manufacturing, and mechanised agriculture. India lags behind its global counterparts in per capita power consumption, at roughly 700 kilowatt hours (kWh) for 2013; in Brazil and Thailand, the number is 2,400 kWh.⁵³ Our analysis and sector experts suggest that India could increase access to power for more than 300m additional people by 2034, with annual per capita consumption of 1,800 kWh for those connected to the grid.

To achieve this feat, India will have to tackle a number of challenges related to fuel supply, power generation, transmission, and distribution and will need an additional 450 gigawatts (GW) of power supply. Despite having the fifth-largest coal reserves in the world, India is the world's third-largest coal importer, with nearly 59% of its power plants coal based.⁵⁴ The nation must mitigate its dependence on coal to avoid resource shortages



and environmental challenges. Diversifying fuel sources could help.

The rural-urban divide in access to power also sounds a loud warning bell. In 2014, almost 31,000 villages in India had no access to electricity.⁵⁵ Moreover, per capita consumption in rural households is estimated to be only one-third of average consumption in urban India.⁵⁶ Below, we present ideas for addressing India's power-related challenges.

Move toward a diverse energy mix

Given the limited availability of coal and the extensive carbon emissions from thermal power plants, India will need to shift its power-generation capacity toward noncoal sources. Only then can it meet the increased need for power in an environmentally sustainable way. Other developed nations that depend heavily on coal—such as Germany and South Korea—are working to reduce the share of coal in their power generation and incorporate more renewable and nuclear energy sources. China, whose power is generated mostly by coal-based plants, is experiencing the consequences first-hand, including a high level of air pollution that's raising alarms around the world.

Encourage private participation in transmission and distribution

As much as 24-30% of power generated is lost in transmission and distribution, including 15% lost to theft.⁵⁷ Use of digital information and communications technology to automate information gathering can help reduce such losses, ultimately improving efficiency and reliability in production and distribution as well as lowering costs. As an example, the US Department of Energy estimates that smart grids in that nation could save US\$46-\$117bn over the next 20 years.⁵⁸

Our experts and analysis suggest that a comprehensive smart grid may not

be financially feasible in the near term for India. However, components of smart-grid solutions—such as integrated communication systems, sensing and measurement instruments, and smart meters—could help improve efficiency, reduce costs, balance demand and supply, and reduce wastage and loss of power. Such tools could also help consumers track and optimise their energy usage, thus reducing their utility bills.

Another idea for improving efficiency in the power system is to encourage private-sector participation in power retail. Utility customers want a better experience, including more pricing options, and private sector companies could satisfy this unmet need. India has historically invested more in power generation than power distribution. If private companies handled more distribution, the entire value chain could be strengthened.

Deploy advanced technologies

India's power sector has an opportunity to skip a generation of technology. Consider the case for distributed power. Investing and developing capabilities in advanced storage and distributed power could go a long way toward addressing the challenge of rural power distribution in India. Distributed power solutions generate power at or near the point of use and can be installed quickly, sometimes in weeks compared with years for traditional centralised power generation and distribution setup. Distributed power also enables a local level of control, management, and demand planning. In China, the government has defined policies aimed at increasing the share of distributed power. By 2015, China aspires to have 1,000 distributed power projects fuelled by natural gas, a solar-power capacity of 10GW, and

100 “showcase” cities receiving distributed power.⁵⁹

Vector eight: Managed growth of urbanisation

As more Indian citizens migrate from rural areas to cities teeming with industrial and service-related activities, the resulting urbanisation will drive economic growth for the nation. Cities will become centres of future investment and job creation. With expansion of city boundaries and creation of new urban centres, India's urban population is projected to soar from 400m in 2013 to 650m in 2034.⁶⁰

But to date, growth in India's urban centres has been largely unplanned. Going forward, Indian cities will have to fill infrastructure gaps to handle significant imminent growth in the need for housing, transportation, public utilities, educational institutions, healthcare services, and recreational facilities. The contribution of India's urban economy to national GDP grew from 38% in 1970-1971 to 63% in 2009-2010 and could exceed 75% by 2030 if the nation addresses its urban infrastructure challenges.⁶¹ Below, we offer some ideas.

Strengthen transportation infrastructure

With rising urbanisation in India, traffic movement across 87 cities could more than double from a 2007 baseline of 229m trips to 482m trips in 2030. Limited adoption of public transport and rapid growth of private-vehicle ownership are contributing to rising traffic congestion, greenhouse-gas emissions, and traffic-related fatalities. The business-as-usual scenario projected by the government assumes that, owing to increased congestion, average speeds on major city corridors could decrease from 26-17 km/hr in 2007 to just 8-6 km/hr by 2030, with emission levels rising seven



times in that time frame. In 2011, public transport accounted for only 27% of total urban trips in India; that number must increase to 60% if India is to manage the urban growth expected over the next two decades.⁶²

Define new policies and develop peri-urban infrastructure

Policy changes could further help India manage imminent urban growth. For instance, if the government provided subsidies on land purchases, cheaper project financing, and faster construction-project approvals, housing prices could decrease considerably. Interventions such as congestion pricing policies, restricted access, and parking-management policies could also be explored to manage traffic congestion. In addition, there is a strong need to strengthen city-level administrative bodies in India and give them greater autonomy to raise infrastructure development funds. Building capacity or developing skills within such bodies to improve planning and execution of urbanisation initiatives can also be given top priority.

Companies and government agencies involved in construction outside tier-2 and tier-3 cities and along industrial corridors could benefit from the lower land costs in such

areas. Consider the Ashray housing project in the Shapar Industrial Zone outside Rajkot, Gujarat. While seeking potential locations, project developers weighted the advantages of the affordable real-estate prices in the area, the proximity to industrial units offering jobs, and the availability of adequate road connectivity and infrastructure such as hospitals and schools. Offering housing units priced between INR 300,000 and INR 500,000, the project sold almost 70% of its units on the first day the units came up for sale. Moreover, during the planning stage, project developers had conducted focus groups with industrial workers in the area to gain insights into their needs and incorporated those insights into the project's design. The result was high demand for the units, even with minimum marketing investment.⁶³

Use technology to manage near-term demand

India could use technology to address infrastructure deficits in the near term. Countries such as Japan have adopted ICT solutions to manage urban transport congestion. India could also adopt systems using real-time data collection and analytics to optimise traffic-signal patterns in response to changing traffic volumes. Procuring these technologies is easy for India, but

ensuring that they are implemented and managed well will prove more challenging, owing to the lack of managerial skills within city-level administrative bodies.⁶⁴

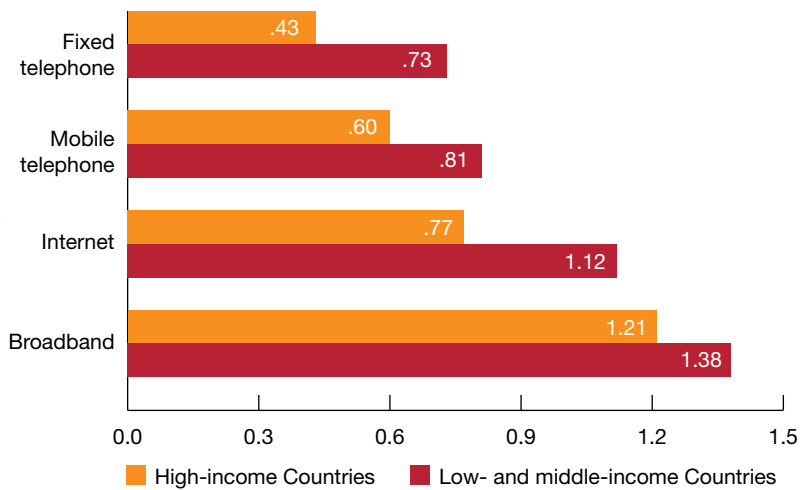
Similarly, prefabricated home-construction models could support rapid scaling of low-cost housing. Offsite construction includes use of prefab panels and advanced materials such as autoclaved aerated concrete bricks.^{VI} Such materials have relatively higher capital costs but can deliver 60% savings on construction time and 40% savings on labour costs. Although prefabricated construction has been popular in developed markets, its entry into India's residential sector remains nascent; wider adoption will likely come with increased buyer awareness and demonstrations of business viability to developers.⁶⁵

Integrate public transport and rental housing

India would also need to significantly modify its existing approaches to address its urbanisation challenges. Creating integrated transportation networks such as those developed in Germany and shifting focus from ownership to rental-based housing models would constitute good first steps.

Transport alliances between carrier companies have gained momentum across Germany, aimed at creating a more efficient and convenient public-transport network. To take part in these alliances, different service providers (such as bus, rail, and ferry operators) had to collaborate to make it easy for travellers to switch from one mode to another. This greater interoperability has encouraged more city dwellers to use public transport. Governed by extensive contractual agreements, these alliances created an independent legal entity to build and manage a coordinated timetable and a common fare and ticketing system. Alliance partners have also conducted joint consumer research on and designed

Figure 2.13: % GDP growth per 10% rise in penetration by type of access



Sources: Broadband Strategies Toolkit, World Bank

marketing campaigns on the downsides of relying on private vehicles compared with public transport.⁶⁶

Similarly, in housing, rental-based models can efficiently cater to members of economically weaker segments of the population,^{VII} many of whom can't afford home ownership. They can manage only small monthly rent payments, and they may not have access to mortgage loans. In some countries—such as the US, UK, and Germany—governments and private players have worked to provide adequate rental housing, with such homes constituting 30-60% of total housing stock. However, owing to rent-control legislation and taxation policies in India, private developers have steered clear of getting into the

VI Autoclaved aerated concrete (AAC) is a lightweight, precast construction material. AAC blocks are three to four times lighter than traditional bricks.

VII The economically weaker section of Indian society includes households earning less than INR 60,000 a year (as of 2011-2012). The government later revised the definition to include households earning less than INR 100,000 a year in 2012-2013.

rental-housing business, because it's just not profitable enough. Policy interventions would have to be initiated for this to change.⁶⁷

Vector nine:

Improving digital connectivity

A strong digital infrastructure will help spur efficient growth across multiple sectors in India, such as education, healthcare, retail, and financial services. Academic studies have further established a positive correlation between GDP growth and increase in the penetration of digital technologies. (See Figure 2.13.) This correlation is greater in low- and middle-income countries such as India, with broadband expected to exert the most

impact on growth.

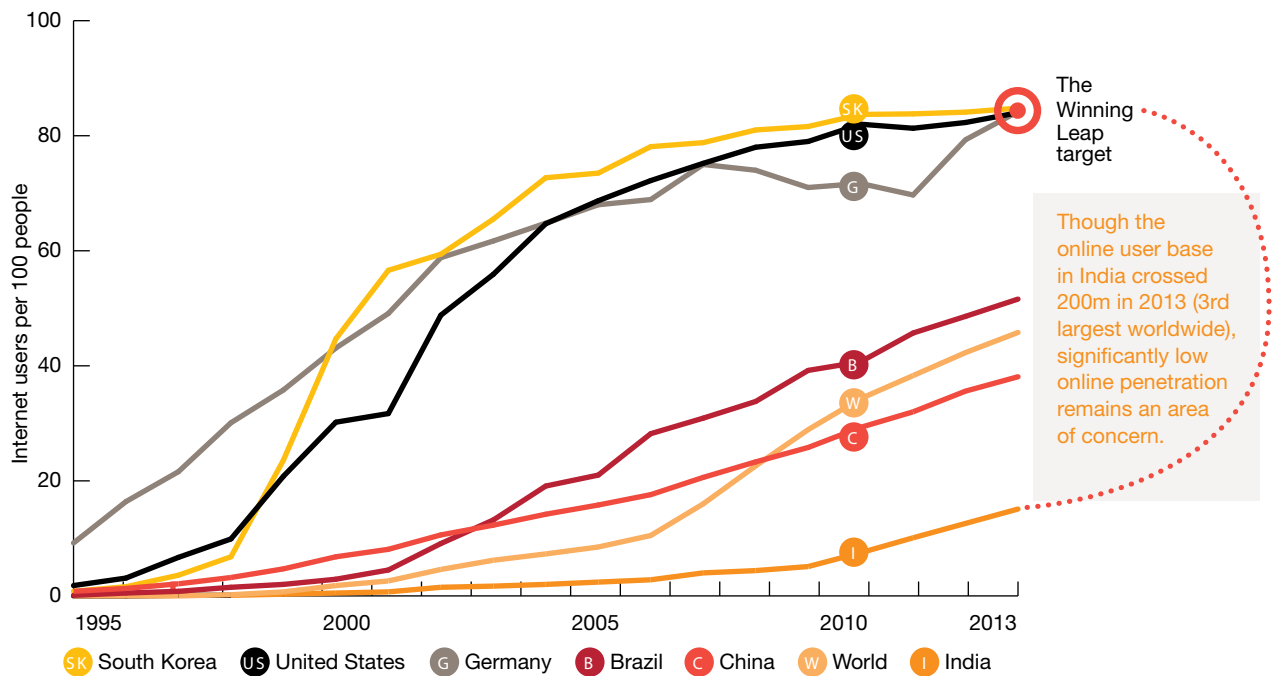
Digital technologies could shape India's growth story in four ways. First, they could improve sector productivity by enhancing access to information and process efficiency. Second, they could boost consumption by providing consumers with greater access to products and services and giving rise to entirely new consumption categories. Third, they could create new jobs. And fourth, they could enable implementation of e-government solutions, lowering the cost of government services and ensuring that services are delivered to the intended beneficiaries.⁶⁸ Below are ideas for enhancing digital connectivity in India.

Take digital to the masses

India boasts the world's third-largest online user base, but Internet penetration, at 15%, ranks far below the global average of 38%. India's Asian counterparts (such as South Korea, Brazil, and China) have made major strides in the past two decades toward improving online connectivity. China crossed the world average in 2009, and South Korea reached more than 80% in the same year. (See Figure 2.14.)

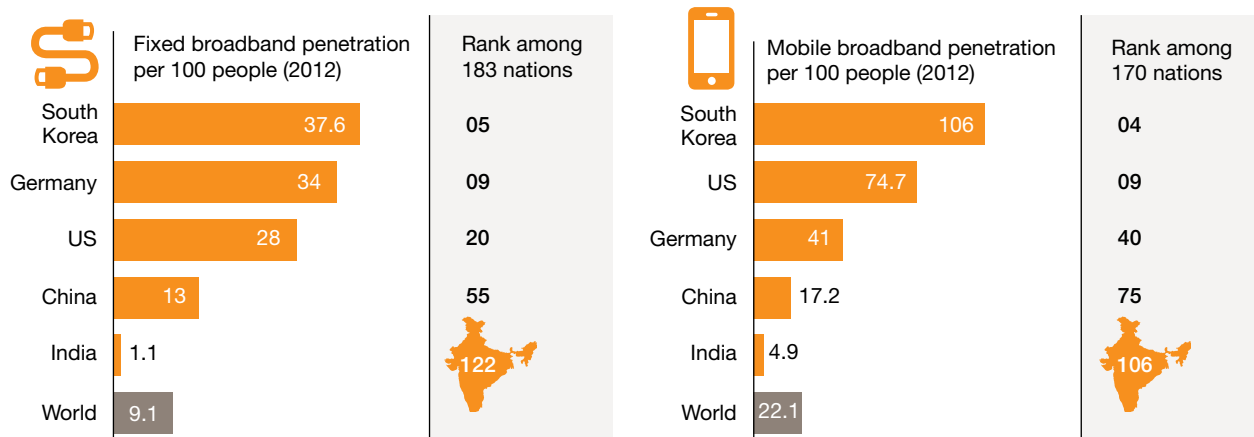
India can benefit by achieving more than 50% digital penetration in 2024 and 80% in 2034. However, to make this leap, the country will have to design significant supply- and demand-side interventions,⁶⁹ such as making broadband the

Figure 2.14: The Winning Leap: Expanding Internet penetration to more than 50% by 2024; 80% by 2034



Source: World Bank

Figure 2.15: Global fixed and mobile broadband penetration



Source: Broadband Commission

primary mode of Internet access and closing gaps in urban-rural connectivity, as discussed below.

Manage the supply side—by making broadband the primary mode of Internet access

India must improve accessibility to high-speed broadband services. A majority of Internet users in India (more than 90%) connect at 2G speeds suitable only for low-end applications such as messaging or text downloads. (See Figure 2.15.)

Mobile broadband is widely considered the preferred mode for improving connectivity in emerging markets such as India that already have high mobile penetration. However, India also needs fixed networks to adequately support its rapidly growing mobile traffic. According to Cisco Systems’ estimates, almost one-third of mobile traffic worldwide was offloaded to fixed networks in 2012. Hence, India must establish fibre-optic infrastructure for both backhaul and last-mile fixed connections.⁷⁰

Manage the supply side—by closing gaps in urban-rural connectivity

India has to close the gap between urban and rural telecom penetration to enable last-mile connectivity for digital services in its hinterlands. Although India’s rural areas account for almost 70% of its population, country residents represent only 42% of telecom subscriptions.⁷¹ (See Figure 2.16.)

High spectrum costs and industry debt levels have restricted Indian telecom players’ ability to expand their capacity. Moreover, policy barriers such as high right-of-way costs have constrained the expansion of fixed networks for last-mile connectivity. India deployed only 14m fibre km in 2013; China deployed 125m that same year.⁷²

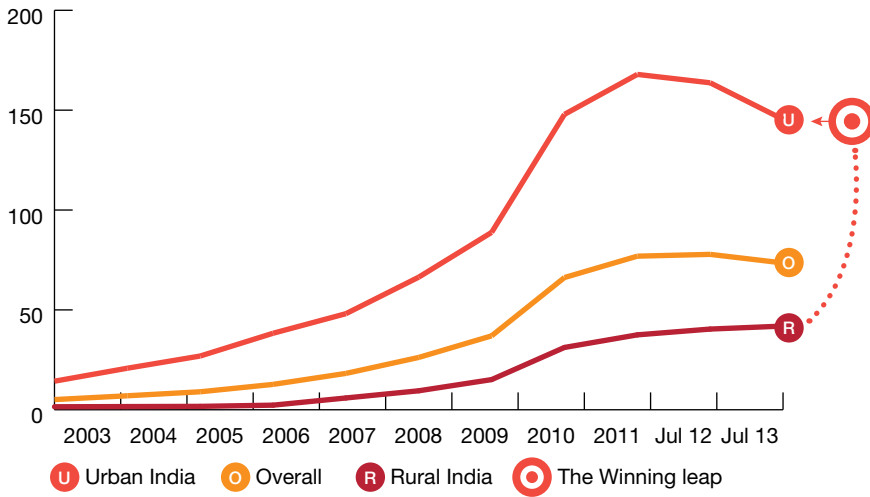
However, service providers can test low-cost alternatives being piloted worldwide and evaluate their potential for wide-scale deployment in India. Examples include the use of “white space” wi-fi networks (unused, unlicensed spectrum) as part of the Mawingu Project in Kenya^{VIII} and the use of satellite broadband technology to enable enterprise-level connectivity in a few remote markets in India^{IX}.

VIII The Mawingu Project provides low-cost broadband to remote areas in Kenya, using unlicensed wi-fi spectrum and unused TV bands. Microsoft is working with the Indian Institute of Technology at Powai and RailTel Corporation of India to understand commercialisation prospects in India.

IX Hughes India has set up more than 10,000 Internet kiosks across urban and rural India using satellite broadband technology, providing a lower-cost alternative to terrestrial broadband.

Figure 2.16: India's urban-rural connectivity gap

Telephone connections per 100 people-tele-density



The gap between urban and rural telecom connectivity has widened significantly over the past ten years

More than double rural tele-density, reaching 100 by 2034

Source: Telecom Regulatory Authority of India





Regulatory interventions will be needed to scale up such options in nationwide.⁷³

*Manage the demand side—
by improving awareness,
affordability, and applicability*

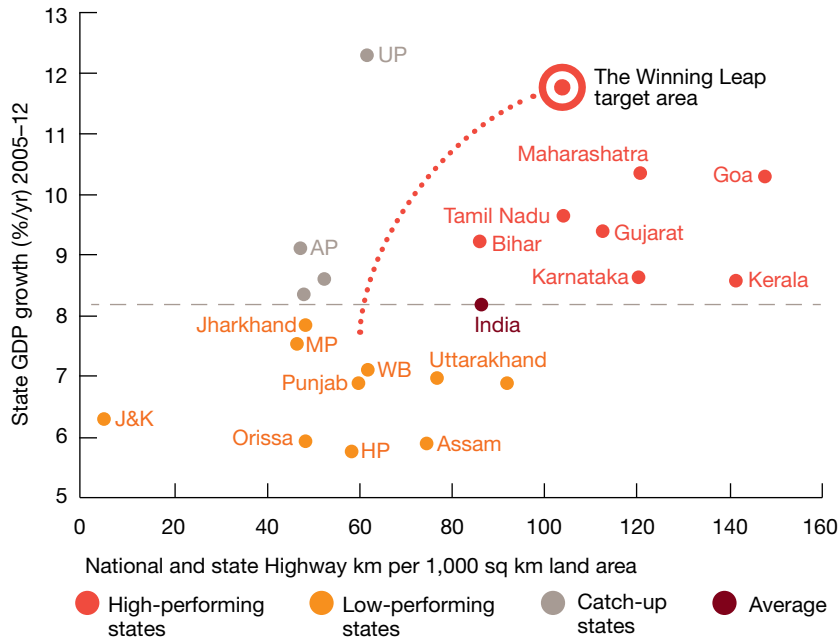
Availability of digital connectivity alone will not guarantee greater adoption of such technologies. To bolster adoption, India needs to improve awareness and increase the affordability and applicability of online services. Computer literacy is estimated at approximately 14% in rural India. Moreover, nearly 70% of non-users of computers in rural India have never heard of the Internet. Staff operating rural Internet centres also need to be suitably trained to play an advisory role and suggest solutions to the uninitiated.⁷⁴

For wider adoption, there is a need to create low-cost solutions—Internet services and devices to enable mass adoption. An

entry-level broadband plan in India costs 5.5% of average per capita income, as compared with 1.7% in developed markets (0.5% in the US, 1.1% in Germany). A major factor behind this is the poor state of data-centre infrastructure in the country, as a result of which most content is hosted on servers outside India.⁷⁵ Low-cost mobile devices also need to be developed, given that the Internet is being increasingly accessed from smartphones.⁷⁶

Last, the country needs digital content and solutions that address the needs of a wide range of users, including elderly individuals, women, and people running or working in small- and medium-size enterprises in rural India. Multilingual content will be required to penetrate diverse regional markets throughout India. Indeed, findings from a study conducted by the Internet & Mobile Association of India suggest that almost 43% of noncomputer users in rural markets

Fig 2.17: Correlation between highway connectivity and growth



Sources: PwC analysis, RBI Statistical Yearbook, MORTH

and 13.5% of those in urban markets might start accessing and using the Internet if content were made available in their local language.⁷⁷

Vector ten: Improving physical connectivity

A nation’s physical connectivity—its network of transportation and logistics infrastructure—forms the backbone of its economy. Robust physical connectivity improves productivity, creates employment opportunities, and lowers logistics costs. Though India has created new airports, metro rail networks, highways, and roads in the past ten years, much work remains for the country to improve its global competitiveness in terms of physical connectivity.

So perhaps it’s not surprising that infrastructure issues were cited as a key factor behind India’s low ranking (54 out of 150) in the World Bank’s Logistic Performance Index.⁷⁸ In addition, logistics costs

in India are significantly higher than in other countries: 13% of GDP versus 7-8% of GDP in developed countries.⁷⁹ Our major metric for physical connectivity is logistics cost as a share of national GDP, which we believe India can decrease to 8% by 2034 if the country addresses challenges in its road, rail, air, and waterway networks. Below are some suggestions for making this leap.

Control logistics costs

Inefficient and costly logistics hamper businesses’ growth. For example, India’s automotive industry is expected to emerge as the third largest in the world by 2020. But in this industry, logistics costs as a percentage of sales is high—roughly 30%,⁸⁰ which far exceeds the number in China and other developed markets. Part of the problem is that in India, automotive companies rely heavily on road transport to move vehicles

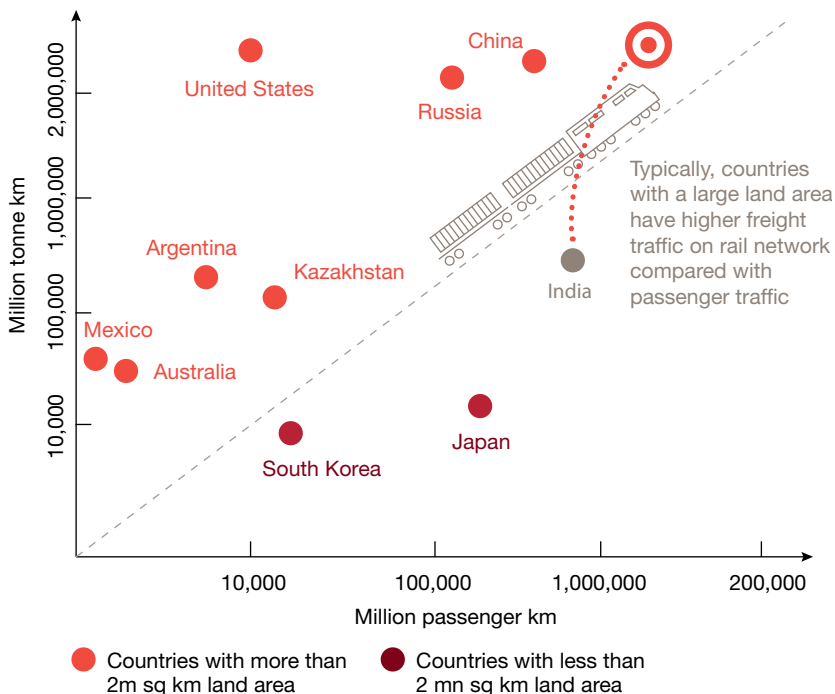
from manufacturing facilities to dealerships and to move automotive components from suppliers to manufacturing facilities. If logistics costs could be brought under control, Indian automotive players would be able to free up more of their revenues to invest in more strategic activities, such as R&D.

Optimise freight traffic across multiple modes

In India, 63% of freight is transported on roadways and 28% is transported by rail.⁸¹ More than 40% is carried by national highways, which account for a mere 2% of the nation’s total road network.⁸² As economic growth accelerates in India, this concentration of traffic flows will intensify even further on the nation’s highways.

Indian states with greater national or state highway density have performed better in the last seven years in terms of their respective state GDP growth. States with a

Page 60: Fig 2.18: Freight-passenger mix on national rail networks



Sources: PwC analysis, World Bank

well-connected physical infrastructure also attract investment, especially in core sectors such as manufacturing. (See Figure 2.17.)

Other transportation modes—such as rail, air, and water—currently, don’t provide a viable alternative to transporting freight by road. Getting freight to ports is difficult because of poor connectivity to India’s hinterland. Rail-freight facilities are poor owing to lack of flexibility in handling varied products and to lengthy transit time. Share of inland waterways in overall freight traffic—at 0.5%—is lower than that of the US (8.3%) and Europe (7%) and well below that of global peers,⁸³ indicating minimal use of inland waterways. India can make considerable headway in its logistics sector if it reduces the load on its road network by optimising its freight and passenger traffic across different modes of transport.

Take railways, India ranks fourth globally in terms of total rail-route network distance, but it ranks eighth in terms of freight traffic carried per km. Its low ranking stems primarily from the suboptimal freight-passenger mix on rail networks—meaning that potential for freight remains fairly untapped, with passenger movement dominating freight traffic on the rail network. (See Figure 2.18.) The government hikes freight rates by nearly 3% every year to cross-subsidise passenger tariffs.⁸⁴ Other countries with a large land area have a higher freight-passenger ratio owing to cheaper, faster, and more-efficient freight handling by their rail networks. Moreover, most rail terminals in India are so antiquated that they’re not set up to carry diverse kinds of cargo. The upshot is that freight transportation by rail network is inefficient for Indian businesses.

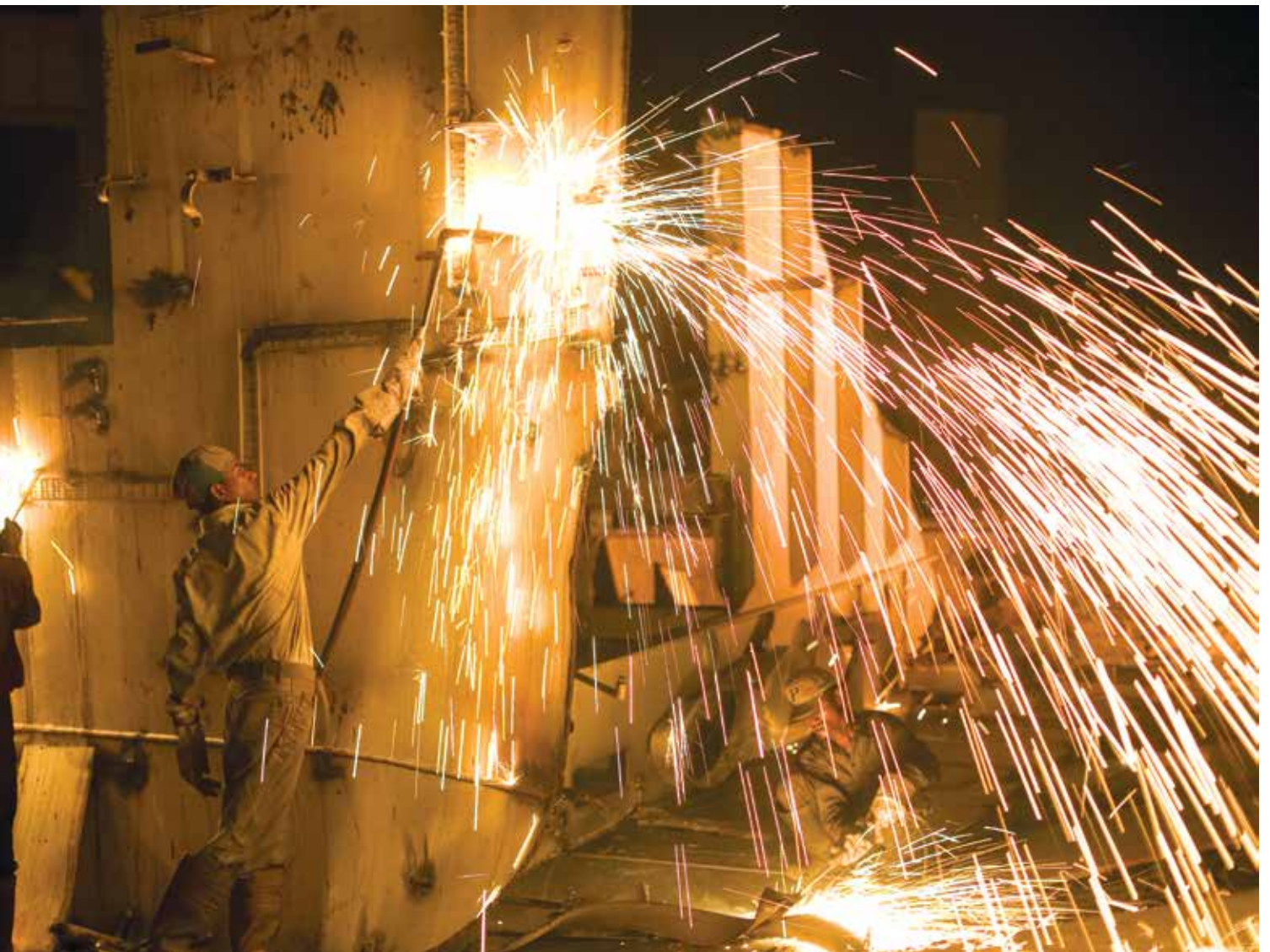
Remove institutional roadblocks to free up operations

A study by Transparency International India, estimated that bribes account for 20%⁸⁵ of the operational expenses (excluding fuel costs) in logistics. Moreover, multiple road checks account for almost 27% of total travel time in India’s trucking industry. These inefficiencies have severe cost implications for freight transportation. The time spent by trucks during check-post stoppages roughly equals the annual labour time of 17,000 drivers.

The key reasons for the inefficiencies are the inconsistent nature of state tax structures and bottlenecks in documentation processes. Middlemen and corrupt officials only worsen the inefficiencies in India’s logistics system. Other sectors have encountered similar challenges. For instance, corrupt meter readers and bribery have led

Infrastructure is the key for the development of the nation. When you have roads, schools, hospitals, water, then people move to those areas and that's when development happens. You have to get people away from urban areas. You have to develop rural areas and make it an attractive place for people to live. You have to create mini cities, which have to be supported by schools and hospitals.

Keki Dadiseth
Unilever



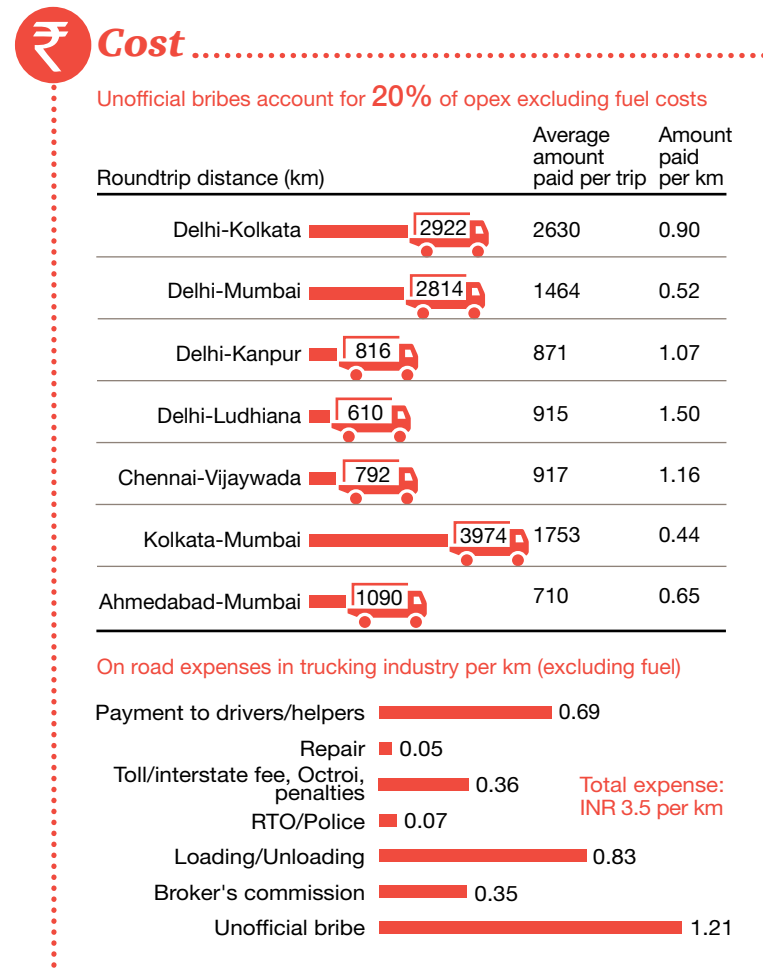
to annual revenue losses on the order of US\$17bn in India's utility sector.⁸⁶ Technology-enabled solutions adopted in other sectors—such as smart meters that human beings can't tamper with—could also be used in the trucking industry. Similarly, digitisation of travel documents along with automation of transport-office processes could free up huge amounts of time for truckers to do their real job: driving trucks. (See Figure 2.19 and 2.20.)

Make greater use of third-party logistics providers

Third-party logistics (3PL)^x companies provide logistics and supply-chain solutions across functions such as transportation, warehousing, and inventory management. There's an inverse relationship between logistics costs as a percent of GDP and the share of 3PL in the logistics market.⁸⁷ By aggregating demand and domain expertise, 3PL players not only help lower logistics costs but also provide higher-quality services. Indeed, according to the 18th Annual 3PL Logistics Study, 3PL services reduced logistics costs by 11% and inventory costs by 6% worldwide in 2014 alone.⁸⁸

Currently, share of 3PL in total logistics costs in India is only about 9%. The number is 50-70% in developed markets. Moreover, in India, 3PL is used in only a few sectors, such as automotive, IT hardware, and telecom.⁸⁹ However, as players in other industries begin sharpening their focus on their core business activities, more of them are outsourcing their logistics activities. As the 3PL

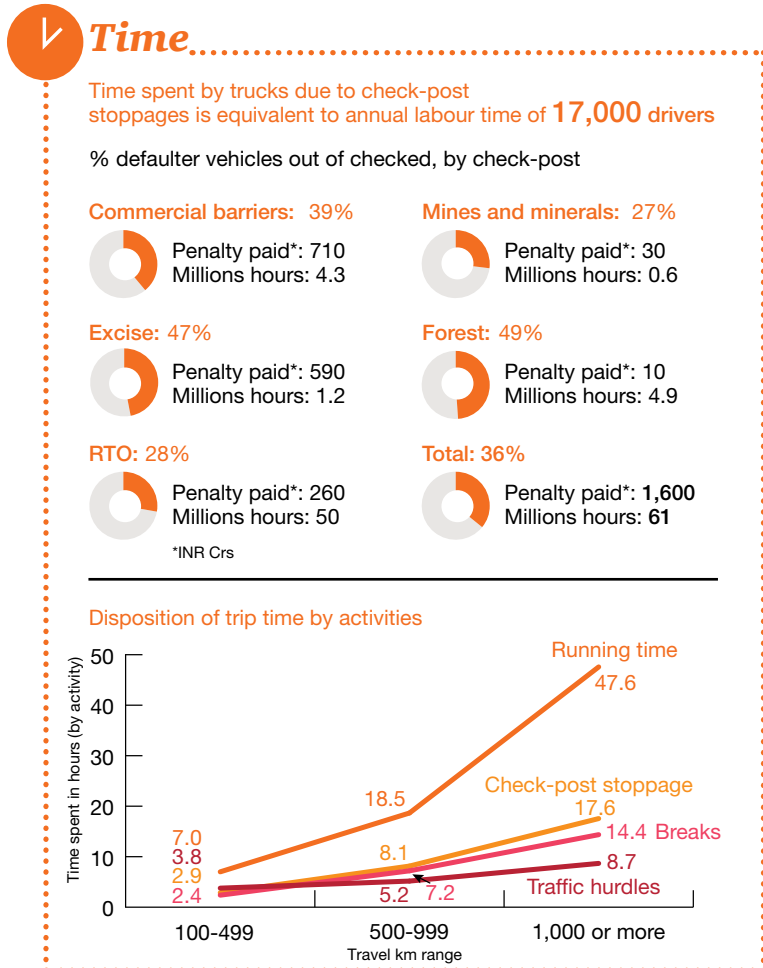
Figure 2.19: Cost drivers in India's logistics industry



Sources: PwC analysis, Corruption in Trucking Operations (MDRA), Economics of Trucking Industry (MORTH)

^x A 3PL company is an outsourced provider that manages all or a significant part of an organisation's logistics requirements and performs transportation, locating, and sometimes product-consolidation activities.

Figure 2.20: Time drivers in India's logistics industry



Sources: PwC analysis, Corruption in Trucking Operations (MDRA), Economics of Trucking Industry (MORTH)

market matures in India, companies using such providers will benefit from their scale and expertise, in such forms as greater efficiency and lower logistics costs.

Better outcomes, less investment: a bottom-up view

The solutions suggested in this chapter for each of growth vector could transform market markets in India—increasing market size and growth, sparking innovative products and services, reconfiguring competitive dynamics, and giving rise to new types of businesses. Such solutions will also redefine the capabilities that companies will need to succeed. Some companies may have to completely restructure themselves to survive and thrive; others may have to partner with organisations from different sectors and geographies to acquire or build the required capabilities. Let's consider how this could play out in various sectors.

The scale and know-how needed to implement Winning Leap solutions for each of the ten vectors will require Indian companies to radically rethink how they do business. In the next chapter, we take a closer look at the capabilities they will have to master and the changes they will need to initiate in order to make that transformation.

Healthcare

Winning Leap

Enabling universal access to healthcare

through the adoption of Winning Leap solutions

could help save US\$90bn in capital costs in India's healthcare delivery infrastructure.

As outlined in the section on increasing life expectancy at birth, non-linear solutions could achieve the same outcomes more effectively and efficiently, with less investment, if the solutions are designed around preventive care, technology enablement, best-practice scaling, and Government support.

Currently, the healthcare delivery system suffers from acute problems in terms of limited availability of hospital infrastructure and required workforce.

Consider the metric of beds per 1,000 population: India with 1.3 beds per 1,000 people is well behind the 3.5 guideline prescribed by the WHO. Similarly, access to doctors and nurses is low due to the limited number of medical professionals in the country. The issue of doctor and nurse training is even more pertinent, given

Winning Leap

the fact that the hard infrastructure is of no use without the people who are equipped to operate it.

To meet the desired outcomes in terms of hard and soft infrastructure capability, the healthcare delivery system will need to add 3.6m beds, 3m doctors and 6 million nurses over the next 20 years. This would require an investment of around US\$ 245 billion through traditional means. Such an investment would not only put fiscal pressure, but would be difficult to implement considering the nature and scale of new additions. For instance, over the last decade roughly 100,000 hospital beds have been added annually.¹³ If India continues to maintain this rate, it will fall short of the Winning Leap target by 1.6m beds by 2034. Therefore, it is essential for India to leverage Winning Leap solutions that are non-linear in nature. The country needs solutions that can help maximise reach and efficacy and are cost-effective by a quantum margin.

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Improved healthcare delivery infrastructure

The issue

Challenges around access, affordability and quality of healthcare contributes to low life expectancy

2014

Average life expectancy



Per 1,000 people:



Desired outcome

Improved health outcomes with easier access to quality healthcare infrastructure

2034



Achieving outcome by traditional means

Building more traditional hospitals



Additional 3.5 million hospital beds required to achieve desired outcomes

Investment in medical education



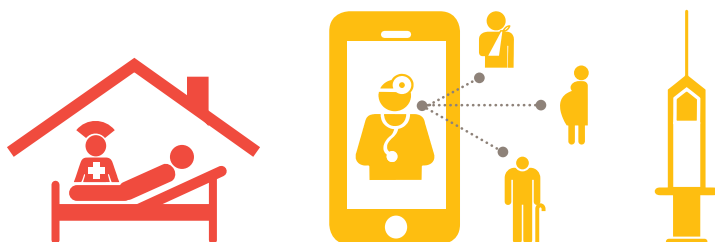
Addition of 3 million doctors

Addition of 6 million nurses

Taking the Winning Leap

Enabling universal healthcare access through the adoption of Winning Leap solutions could help save US\$90 billion in capital costs.

Winning Leap solution enabling alternative healthcare delivery access



Shifting point of care

Noncritical patients recuperate at home reducing average length of stay in hospitals

+

mHealth

Technology enabled solutions to reduce stress on hospital infrastructure

+

Preventative care

Early diagnosis of diseases enables timely treatment and fewer complications

2.2 million hospital beds required



High volume, low cost
Aravind Eyecare prototype



Traditional hospitals



PPP model hospitals
Government as an enabler

Investment in medical education



Addition of 2 million doctors

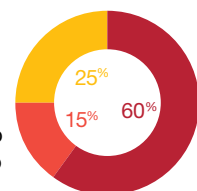
Addition of 6 million nurses

The bottom line (over 20 years)

Projected investment:	Without Winning Leap	With Winning Leap	Winning Leap savings
US\$	245 bn	156 bn	90 bn

Winning Leap contribution:

- Fierce catch up
- Significant leap
- Leapfrog



Power



Winning Leap solutions could save approximately US\$200bn in capital outlays across power generation, transmission, and distribution, while also ensuring universal and reliable access to power. Diversifying and optimising fuel sources, focusing investments on transmission, strengthening R&D in advanced storage facilities, and bringing in smart-grid solution elements are examples of the non-linear moves that could benefit India's power sector.

To meet the desired outcome of tripling per capita power consumption to 1800 kWh, India would require an additional 455 GW of installed capacity along with significant investments and operational improvements in transmission and distribution (T&D) networks. Using traditional means to achieve these targets would require investments of almost US\$ 900bn over the next two decades. To put things into perspective, India spent only US\$ 120bn

of the available US\$ 170 billion in the Eleventh Five Year Plan on power infrastructure.¹⁴ Hence, achieving the Winning Leap target through traditional means would require current investments to be doubled on an annual basis. India's dependence on fossil fuels for energy generation has also resulted in high greenhouse emissions, with India being ranked fourth, behind China, the US and the EU in global emissions.¹⁵ Moreover, growing dependence on coal as a source will require increasing imports which may not be a viable solution for India's economy in the long run. All these factors strengthen the need for Winning Leap methods for India to achieve its universal access targets. Winning Leap solutions could save 20% of projected investment (US\$ 200bn) to provide universal access to power while tripling consumption on a per capita basis.

Universal access to power

The issue

While 94% of urban households had access to electricity, only 67% of rural households had access, compounded with frequent power cuts.

2014

Access to power

India: 75%



China: 99.8%



Brazil: 99%



Per capita consumption

672 kwh

3,300 kwh

2,438 kwh

Desired outcome

Improving access to power by connecting 300 million more people while increasing uptime of power availability for consumers.

2034

India: 100%



1,800 kwh

🏠 Access to power
⬛ No access to power

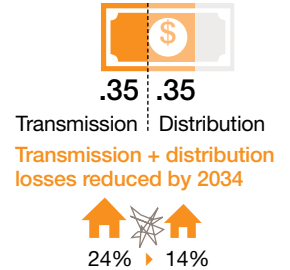
Achieving outcome by traditional means

Installed capacity requirement to increase from 245 GW to 700 GW to achieve desired outcomes



Existing electricity generation mix

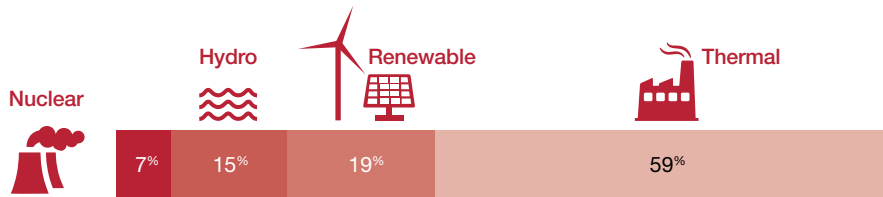
Of every \$1 invested in power generation...



Taking the Winning Leap

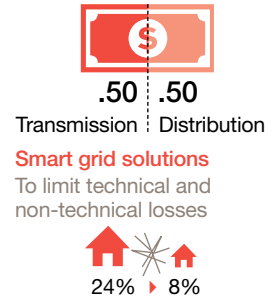
Winning Leap solutions could save 20% of projected investment to provide universal access to power while tripling consumption on a per capita basis.

Changing energy mix towards non-conventional source



Installed capacity requirement to increase from 245 GW to 540 GW to meet winning leap targets.

Of every \$1 invested in power generation...



Increased investment in transmission and distribution

Generated power saving that are currently lost due to transmission and distribution capacity bottlenecks

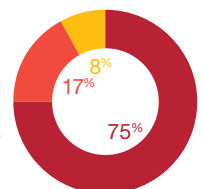


The bottom line (over 20 years)

Projected investment:	Without Winning Leap	With Winning Leap	Winning Leap savings
US\$	900 bn	700 bn	200 bn

Winning Leap contribution:

- Fierce catch up
- Significant leap
- Leapfrog

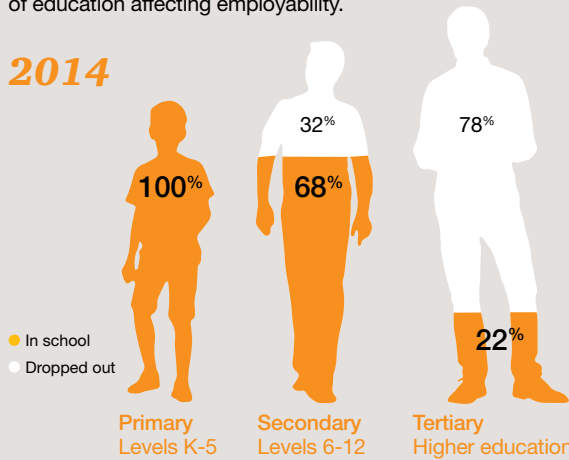


Average years of schooling

The issue

Average years in school: **7**
Increasing drop-out rates at higher levels of education affecting employability.

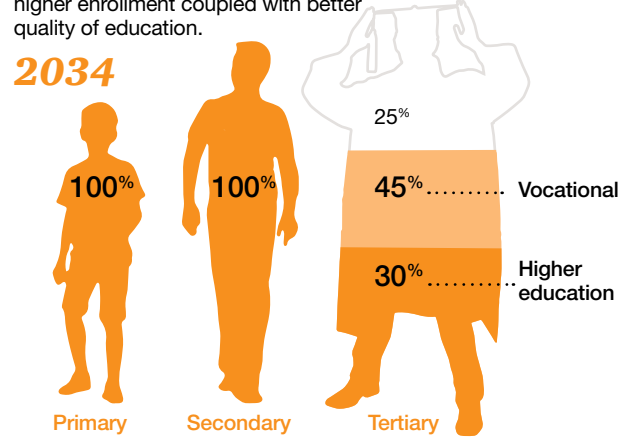
2014



Desired outcome

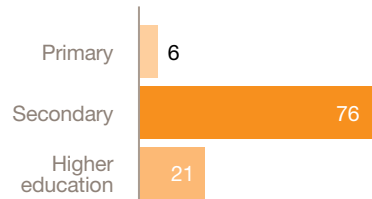
Average years in school: **10**
Improving access to education with higher enrollment coupled with better quality of education.

2034



Achieving outcome by traditional means

New additions
New student admissions required over 20 years



(In millions of students)



Primary and secondary schools



Higher education

Use of brick and mortar schools to meet Winning Leap targets

500,000 traditional schools required across different levels of education required.

Taking the Winning Leap

Use of technology enabled solutions and adoption of the 'PPP model school' format could help save **US\$165 billion** in investments in education infrastructure.

Fast track expansion of traditional brick and mortar schools



Increase focus on PPP model school format Government as an enabler

Formal education institutions



Higher education



Virtual schools
Access to quality education at reduced infrastructure costs

Massive Open Online Courses (MOOC)
Bringing parity in quality of education.



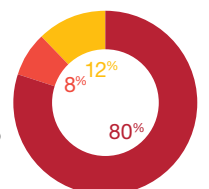
For Profit model in formal education

The bottom line (over 20 years)

Projected investment:	Without Winning Leap	With Winning Leap	Winning Leap savings
US\$	500 bn	335 bn	165 bn

Winning Leap contribution:

- Fierce catch up
- Significant leap
- Leapfrog



Financial service

Adoption of branchless banking channels and partnerships with players in sectors other than financial services could help banks reduce their infrastructure investments by 30% to achieve the Winning Leap target. While creation of a bank account is typically the first stage in the adoption of financial services, the ability of customers to carry out transactions remains the most critical aspect in their evolution. This would entail enabling greater access by addition of physical infrastructure of bank branches and ATMs across the country and significant expansion in the scale of emerging branchless channels such as mobile and internet banking.

Overall, the traditional branch heavy approach to financial inclusion would require an addition of almost 400,000 bank branches and 175,000 ATMs by 2034, to a network of only 100,000 branches and 115,000 ATMs existing at present. Such a significant

transformation for both urban and rural India would require an investment outlay of around US\$ 40bn by 2034 through traditional means. The traditional approach to growth in the banking industry—building ever more brick-and-mortar bank branches—will however always be a profitable proposition, especially in rural markets. Many accounts opened in rural parts, at present, remain comparably inactive and hence operationally inefficient and less profitable for the banks. Branchless banking solutions could therefore be a smarter choice for enabling scale. To deploy such solutions, banks must forge cross-sector partnerships with established players, shift from traditional to emerging low-cost solutions such as solar ATMs, and ride the mobility wave to maximise their reach to customers. As a result, India could hit the target of 90% of citizens having access to banking services (and actively using those services) by 2034 through much lower investments of US\$ 28 bn.

The scale and know-how needed to implement Winning Leap solutions for each of the 10 vectors will require Indian companies to radically rethink how they do business.

Domestic capital for growth

The issue

Two-thirds of India's adult population does not rely on formal institutions for its financial services.

2014

Urban adult population: 175 million

Rural adult population: 110 million

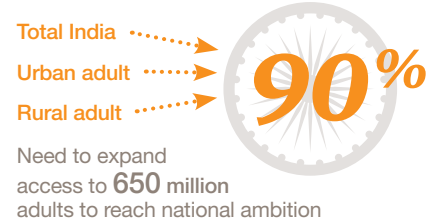
Total India adult population



Desired outcome

Reaching our goal by improving access to capital and driving consumption through digital modes.

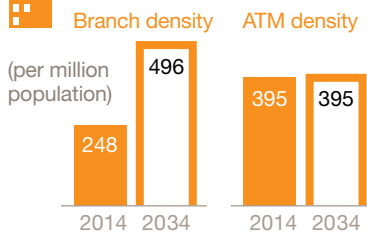
2034



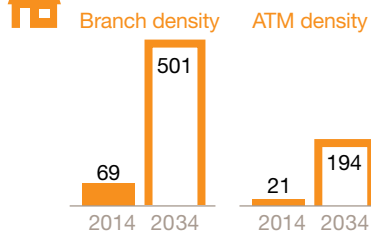
Achieving outcome by traditional means

Branch heavy approach to provide universal access

Urban

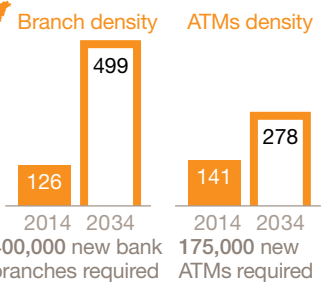


Rural



Total India

The volume of banks increase from 100,000 in 2014 to 500,000 in 2034. Shift in branch/ATM per million translates to 4X new branch addition and 1.5X new ATM additions (where X is existing infrastructure)

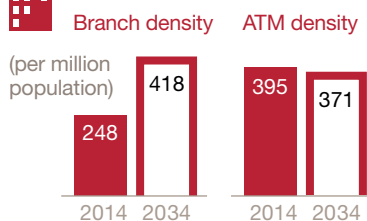


Taking the Winning Leap

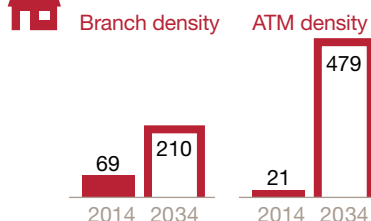
Adoption of innovative branchless banking channel options and forging partnership with non-banking players could help save 30% of infrastructure investment

A shift towards branchless banking solutions

Urban

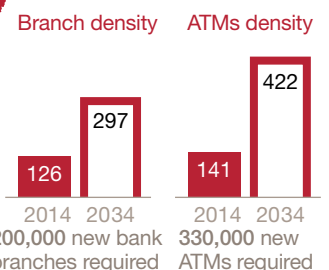


Rural



Total India

Shift in branch/ATM per million translates to 2X new branch addition and 3X new ATM additions (where X is existing infrastructure).



Enable scale by forging partnerships with established non-banking players



+

Solar ATMs to lower capital costs, lesser energy consumption, lower maintenance costs suited to rural needs



+

Mobile and online banking to provide branch banking functionalities on mobiles/desktops

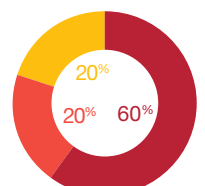


The bottom line (over 20 years)

Projected investment:	Without Winning Leap	With Winning Leap	Winning Leap savings
US\$	40 bn	27 bn	13 bn

Winning Leap contribution:

- Fierce catch up
- Significant leap
- Leapfrog







Chapter 5

The ease of doing business

The difference between what we do and what we are capable of doing would suffice to solve most of the world's problems.

Mahatma Gandhi

There is a strong correlation between a country's level of economic development and the ease of doing business there. Easing the ability to do business can smooth a country's transition to higher-income status. If India aspires to more than 9% GDP growth, it will have to improve its business environment. Figure 5.1 (on next page) illustrates a clear distinction between economic clusters based on GDP per capita and the Ease of Doing Business rankings for different countries.¹

India has a reputation for being a difficult market in which to do business. Investment plans are often abandoned, not because the idea lacks merit but because the business environment presents too many barriers. Regulations for tax compliance and audits, along with labour laws and constantly changing government policies, create

¹ The Ease of Doing Business index, published by the World Bank, ranks 189 global economies based on how favourable each country's regulatory environment is for doing business. A high ranking indicates an environment more conducive to starting and operating a business.

In India, the government and private sector have to work together closely. It's important for processes to be transparent. You need to have laws that are uniformly applicable without much discretion. You need both the legal system and the regulators to support a transparent and fair system.

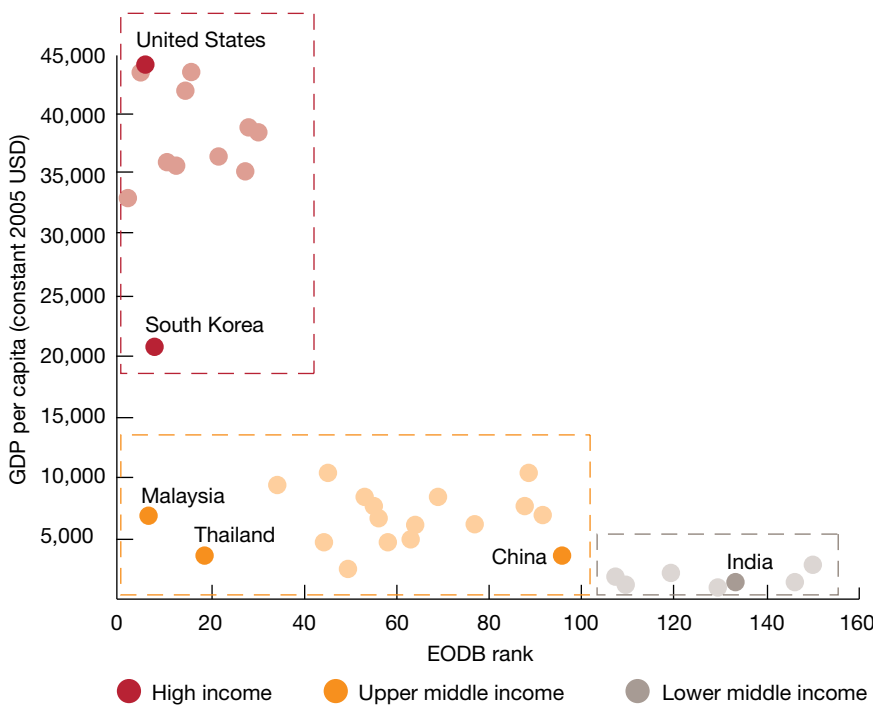
Ajay Piramal
Piramal Group

unnecessary complexity. India's current business environment can inhibit growth rather than serve as a springboard for Winning Leaps.

Accomplishing Winning Leap transformations across the many different sectors of the economy we've identified requires an enormous effort. Given the nonlinear nature of the solutions we envision, Winning Leaps require leadership from both government and diverse private-sector entities. Companies

large and small will need to make major investments. They will also need to take bigger risks. Companies' management will need to focus with laser-sharp precision on operational issues. And entrepreneurs will need to incubate new businesses. All these efforts require developing new strategic and operational capabilities. Only then will India be able to realise its true potential—and achieve its goal of a US\$10tr economy through a path of inclusive economic growth.

Figure 5.1: Relationship between GDP per capita and Ease of Doing Business rankings



Sources: World Bank



The costs and complexities of doing business in India

India has historically performed poorly on various benchmarks gauging the business environment, as indicated by the World Bank's Ease of Doing Business ranking. Currently, India ranks 134 out of 189 countries, below countries such as Indonesia, Brazil, and China. (See Figure 5.2.) The reasons for its poor performance are straightforward: unnecessary costs, the difficulty of complying with complex regulations, and frequent delays in regulatory decisions.

The challenges of doing business in India extend across multiple components of the World Bank's ranking, and in certain areas India ranks near the very bottom of 189 countries ranked. (see Figure 5.3)

Areas such as starting a business, paying taxes, and enforcing contracts significantly depress India's overall ranking. For example, India ranks 186 out of 189 countries in enforcing contracts. As Figure 5.4 shows, it takes nearly four years on average to enforce a contract in India, compared with only eight months in South Korea, and the cost of enforcement in India is far higher.

Figure 5.2: Ease of doing business: India versus selected countries

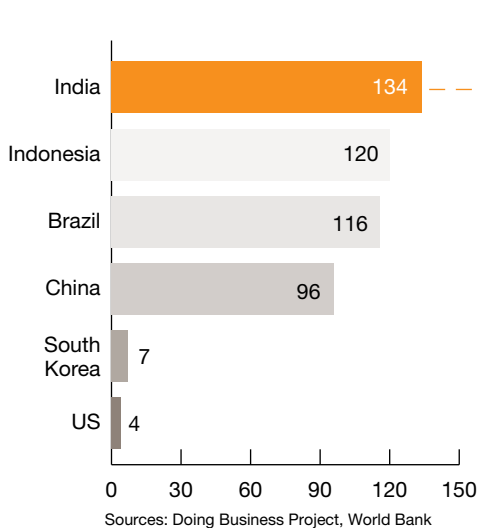


Figure 5.3: How India ranks in each component criteria of the Ease of Doing Business index

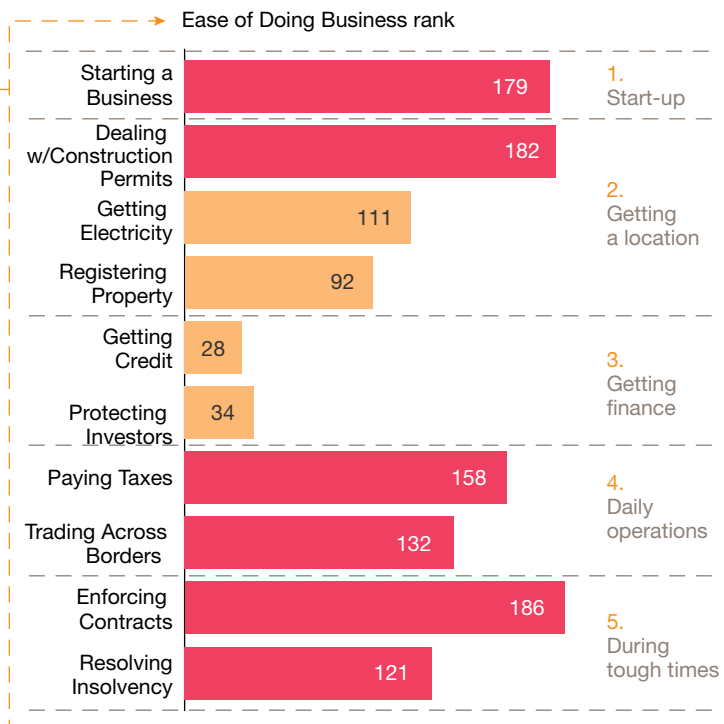
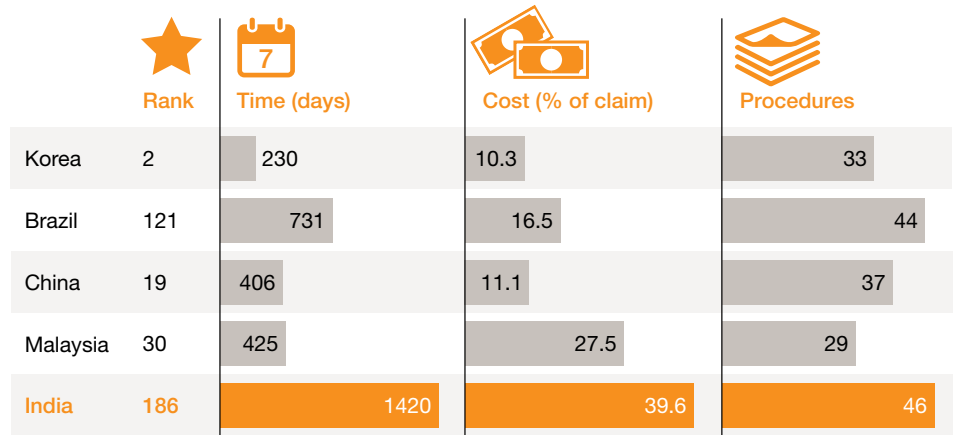


Figure 5.4: Contract enforcement: how India compares with select countries



Sources: Doing Business Project, World Bank

In India, contract risk is a problem that cascades through the larger economy. One of its repercussions is that companies often have difficulty quantifying the risk of their business relationships. New businesses must go to extraordinary lengths to prove that they would be a reliable partner, an effort that often hampers their growth and expansion. Complex business activities that require multiple, interlinked commercial agreements have also become substantially riskier. In the modern industrial supply chain, there may be hundreds of service, maintenance, delivery, and other agreements between numerous

companies. One minor dispute that rapidly escalates could be enough to disrupt all other companies along the supply chain. Without any guarantee that this dispute could be readily resolved, the disruption could extend for years, destroying value for all involved.

This is just one example of how India's business environment puts the country at a clear disadvantage relative to other countries it competes with for foreign investment. Foreign companies invest elsewhere, and even Indian companies often locate their primary activities overseas, thereby reducing the level of economic activity and limiting opportunities at home.



Government as an enabler of business

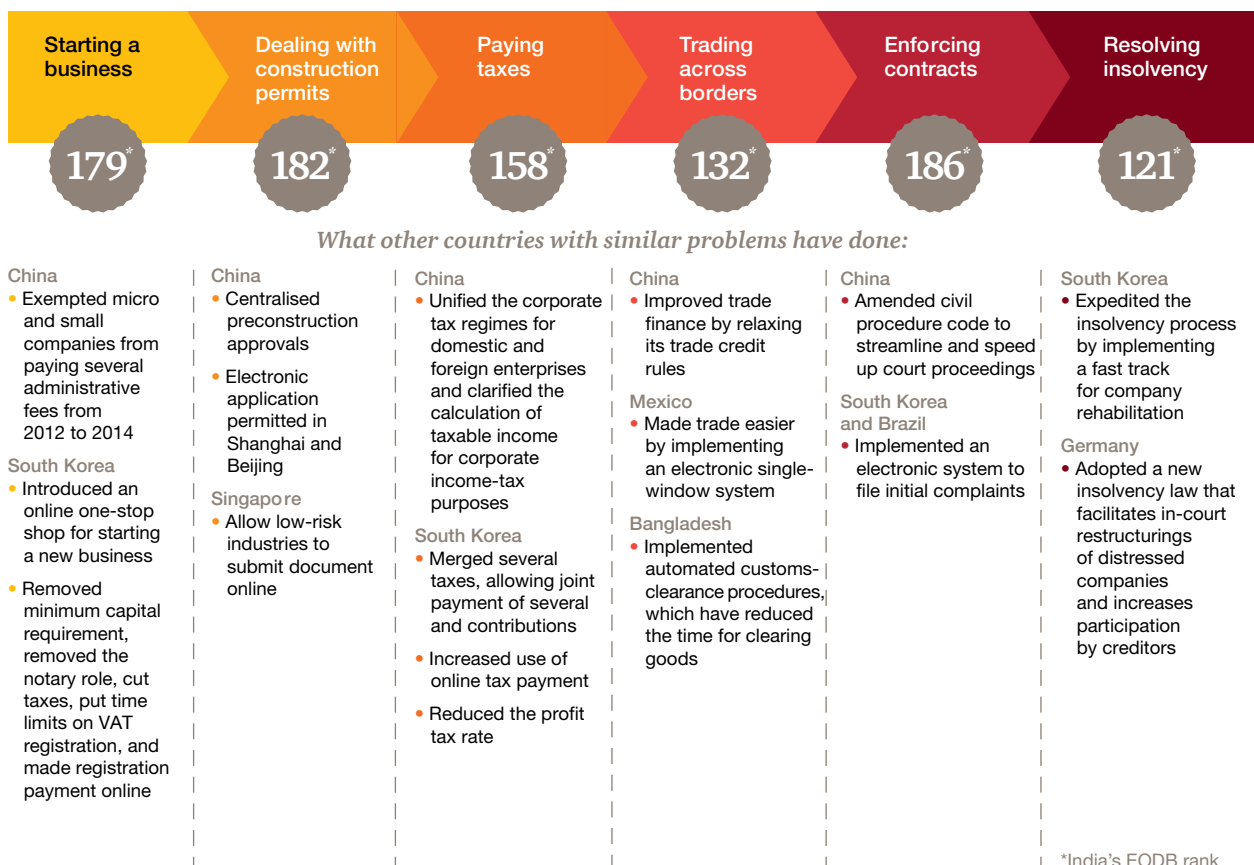
Beyond the performance in any international ranking, what's even more important is creating an environment in which businesses want to take risks because they believe that in doing so they could reap financial rewards. Governments looking to support an economic system that contributes to development should care about promoting fair and effective regulation that conforms to the nation's unique business and social climate.

No country can claim to strike a perfect balance between regulation and free enterprise. India could borrow from the experiences of global exemplars that have faced similar issues in the past. Figure 5.5 lists many practical reform measures adopted by other countries that could be applicable to India.

For some business activities, enacting reforms will require a shift in attitudes as well as policy changes, both of which will invariably take time. Fortunately, though, there are areas in which reform is possible in the near and longer term.



Figure 5.5: Reforms enacted by other countries to ease business formation and activity



*India's EODB rank

Sources: World Bank, PwC analysis

Figure 5.6: Simplifying corporate registration

	Procedure for business entity	Authority	Recommendation
1	Obtain Director Identification Number (DIN)*	Ministry of Corporate Affairs (MCA)	New Step 1: Offer option to obtain a digital signature when applying for the DIN
2	Obtain digital signature certificate	Certifying Authorities	
3	Reserve the company name with the Registrar of Companies	MCA	New Step 2: Register the company
4	Pay stamp duties online, file all incorporation forms and documents, and obtain certificate of incorporation	MCA	New Step 3
5	Create a seal	Agencies	Eliminate
6	Visit an authorised franchise appointed by NSDL/UTIITSL to obtain a Permanent Account Number**	Income Tax Dept.	
7	Obtain a tax account number for income taxes deducted at source	Income Tax. Dept.	New Step 4: Require details to be submitted on one form after name confirmation and submitted to the MCA for processing. MCA then issues all related numbers such as the PAN and Tax Deduction and Collection Account Number,† along with the Corporate Identity Number (CIN)†† such as the PAN and Tax Deduction and Collection Account Number,** along with the Corporate Identity Number (CIN)
8	Register with Office of Inspector, Mumbai Shops and Establishments Act	Municipal Corp.	
9	Register for Value-Added Tax	State Government	
10	Register for profession tax	State Government	
11	Register for Employees' Provident Fund Organisation	Ministry of Labour & Employment	
12	Register for medical insurance	Insurance Co.	Eliminate

* The DIN is a mandatory unique identification number provided to an existing or potential director of a company incorporated in India.

** National Securities Depository Limited (NSDL) and Unit Trust of India (UTI) Infrastructure Technology and Services are agencies that issue the Permanent Account Number (PAN), a unique identifier for income-tax payers in India.

† The TAN is required by all persons responsible for deducting or collecting tax in India.

††The CIN acts as a unique identifier for all companies, listed and unlisted, registered in India.

Sources: World Bank, PwC analysis

It is difficult for companies to spend time on innovation and growth because the majority of the time of business leaders today is spent in fighting fires. We need better regulations and not necessarily lesser regulations.

Gopal Jain
Gaja Capital Partners

Shorter term: clearing the path for business formation

Administrative simplification could substantially ease the process of establishing a new business in India. Doing so could deliver immediate benefits: it would shift informal businesses to the formal economy, it would encourage entrepreneurs to launch new ventures, and it would enable foreign companies to establish operations in India with ease. One radical solution to jump-start business formation would be to remove all administrative

requirements for entrepreneurs with a turnover of less than INR 50 million. But even incremental changes to existing regulations could have a major impact in a relatively short time.

Current procedures for registering a new business require authorisation from multiple and disparate regulatory agencies at both the state and national levels. Adopting a single-window approach, in which the government is responsible for ensuring the distribution

of relevant corporate information to the various appropriate regulatory agencies, would substantially reduce the burden of compliance for new businesses. (See Figure 5.6.)

Administrative simplification could pave the way for further reforms (such as lowering the requirement for paid-in-capital), some of which might require new legislation. This approach could help India advance from laggard to leader in facilitating new business formation. (See Figure 5.7.)

Figure 5.7: How simplification improves a country's "starting a business" ranking



179 ← — — — — — Starting a business rank — — — — — → 1

Sources: World Bank, PwC analysis

Figure 5.8 How India compares in ease of paying taxes

Indicator		India	South Asia	OECD
Payments (number/ year)*	₹	33	33	12
Time (hours/year)**	🕒	243	328	175
Profit tax (%)**	📈	24.4	16.8	16.1
Labour tax & contributions (%)†	📄	20.7	9.0	23.1
Other taxes (%)††	⬆️⬆️	17.7	14.8	2.1
Total tax rate (% profit)	🌟%	62.8	40.6	41.3

*The total number of tax payments per year. The indicator reflects the total number of taxes and contributions paid, the method of payment, the frequency of payment, and the number of agencies involved for a standardised case during the second year of operation.

**The time it takes to prepare, file, and pay (or withhold) the corporate income tax, the value-added tax, and social security contributions (in hours per year).

*** The amount of taxes on profits paid by the business as a percentage of commercial profits.

† The amount of taxes and mandatory contributions on labour paid by the business as a percentage of commercial profits.

†† The amount of taxes and mandatory contributions paid by the business as a percentage of commercial profit that are not already included in the categories of profit or labour taxes.

Sources: Doing Business Project, World Bank, 2014

Shorter-term: consolidating and digitising taxation

India’s performance in all of the components of the ease of paying taxes measure is much lower than that of developed economies, as well as the regional average. (See Figure 5.8.)

India could substantially boost its ranking in this measure through specific, targeted reforms. Permitting annual instead of monthly filings for pension and



related taxes would reduce the number of tax payments businesses must make each year by 24. India has already implemented some tax-simplification measures, such as abolishing the fringe-benefit tax^{II}, in 2011, and adopting electronic filing and payment for the value-added tax (VAT)^{III}, in 2012. These are among the kinds of reforms India should be pursuing in its efforts to implement global leading practices and improve its investment climate.

Longer term: fostering mind-set change

Reforming India's business environment will require close attention to simplifying regulations and alleviating the burden of compliance, both financial and administrative. But there is a broader issue at stake.

To meet India's upper-middle-income objective and the goal of a US\$10tr economy will require levels of spending and investment that are not currently possible, given the government's fiscal constraints. This can happen only in a vibrant economy, in which the private sector—a key source of Winning Leap solutions—can thrive. And the private sector can thrive only when the hurdles to business formation and business activity are removed.

Regulatory reforms, such as the simplification of procedures and reduction of compliance costs, will go a long way toward creating a more welcoming environment for business. But it will take more. India needs a transformation in the mind-set prevailing in the public and private sectors. This new mind-set must be one of mutual trust and respect so that the two sectors can forge myriad new partnerships and foster the cooperation and collaboration needed to solve some of India's greatest economic and social challenges. This shift in mind-set and the ensuing partnerships would in themselves enable Winning Leaps.

Intellectual property rights

Promoting innovation is an important strategy in advancing the Winning Leap. The link between innovation, both technological and organisational, and economic growth is well established in academic research. Indeed, research by Antonio Fatas and Ilyan Mihov of INSEAD indicates that growth in per capita GDP is mainly a function of innovation and its adoption.²

Fatas and Mihov found that promoting innovation is a particularly defining characteristic of countries that are becoming developed economies. To foster innovation, both home-grown and imported, and to attract international partners that bring technology and global best practices, a country

must have in place robust institutional and legal mechanisms to protect intellectual-property rights. Doing so provides the necessary incentives for innovation, business investment, and stability.

To catch up economically, relatively poorer countries must still rely on the joint participation of foreign entities to innovate and share innovation with domestic partners. Incentives must be in place to encourage such foreign-domestic cooperation. Foreign market participants need the assurance that their innovations can generate the right returns. Clearly, intellectual-property protection must be a top priority on India's national agenda.

II The fringe-benefits tax, paid by the employer, was based on the value of the fringe benefits (perks besides wages) provided to employees.

III The value-added tax, or VAT, is an indirect tax on the consumption of goods, paid whenever value is added at a stage of production and at the final sale.

Chapter 6

Capitalising on India's growth story



We want deeper sincerity of motive, a greater courage in speech and earnestness in action.

Sarojini Naidu

If India increases its gross domestic product (GDP) to US\$10tr between now and 2034 (up from US\$2tr in 2014), it could push its per capita GDP from US\$1,500 to US\$7,000 in that same timeframe. To achieve such unprecedented growth, the

country may need to increase its annual investments to six times the figures in 2014—through foreign direct investment (FDI), private domestic investment, and government investment. The amount of

FDI flowing into India would have to more than double as a percentage of GDP by 2034. To boost FDI to these levels, the government and private sector will need to build relationships with international companies. Private domestic investment (bank lending, private domestic capital, retained earnings of Indian companies, and household savings) along with government investment will have to grow five- and ninefold, respectively. These investment boosts have close interconnections with the ten vectors for growth discussed in earlier chapters. For instance, an increase in domestic investment hinges on more financial



inclusion and circulation of savings in the economy (the vector “Access to banking services”). Additionally, those directing new investments must strive to balance regional disparities, keeping in mind the tensions within India’s democracy. They must also weigh the impacts of their investments beyond just economic terms—including social and environmental outcomes.

Raising per capita GDP through smart increases in investment will expand overall prosperity for Indian citizens, enable new businesses to emerge, and help Indian companies grow. However, to make this leap, private-sector and government leaders will need new “will sets” and “skill sets.”

To see how different potential solutions could affect India’s ability to achieve its Winning Leap, we looked at recent history to develop a base-case scenario. This scenario envisions moderate gains based on the current business environment and existing growth constraints.

We then analysed possibilities for the future, informed by an in-depth look at operational changes that may be required for each vector. From this analysis, we defined three alternative scenarios reflecting an accelerated path to growth and development for India. The scenarios emphasise different focuses for investments; different outcomes in terms of GDP growth; and different imperatives for corporations, entrepreneurs, and government.

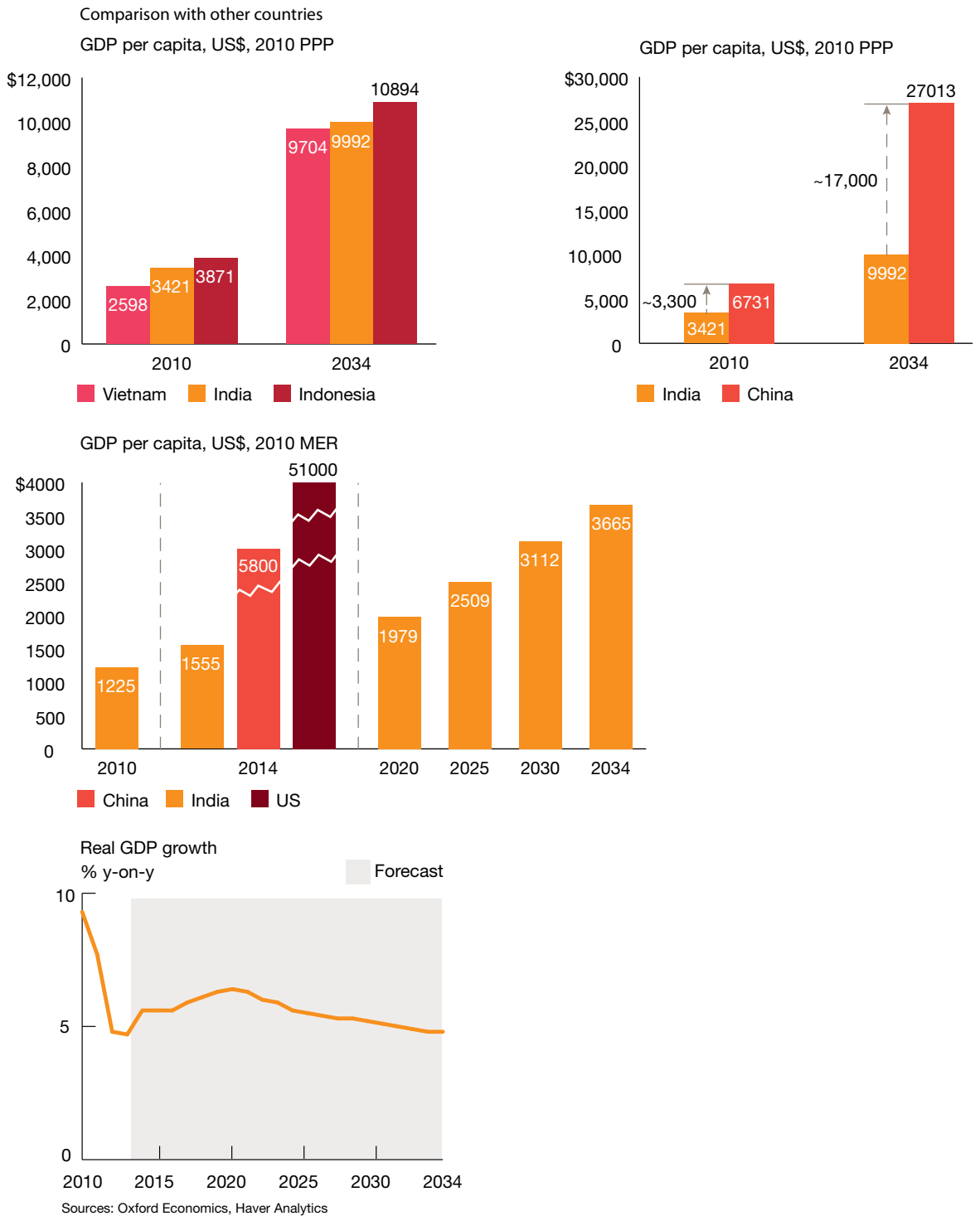
Base-case scenario: Troubled Waters¹

India’s economy doubled in size from 2000 through 2010, powered by an average GDP growth rate of 7.6%. But more recently, performance has proved disappointing, at just 5% average growth in the past two calendar years. Cyclical factors, such as a lower global economic growth rate and high commodity prices, have combined with structural factors (underinvestment in infrastructure, an unproductive business environment, and poor education and health outcomes) to weaken India’s growth.

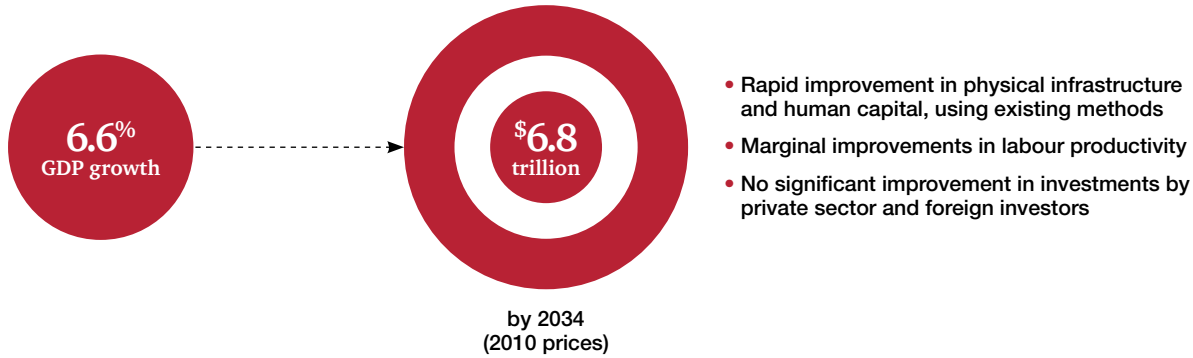
Our base-case scenario, which we call Troubled Waters, takes these realities into account. It forecasts the Indian economy to grow by around 5.5% annually between 2014 and 2034. This is fast growth in absolute terms, but it’s slow when one considers India’s current demographic boom and weak starting position in terms of per capita GDP—which was about US\$1,500 in 2014 (real GDP/capita, US\$, 2010 market exchange rate) versus US\$5,800 in China and US\$51,000 in the US in 2014.

Comparing our base-case forecast with other countries’ expected increases in per capita GDP clearly reveals the constraints on India’s long-term growth potential. (See Figure 6.1.) Over the next 20 years, India’s per capita GDP will lag behind Asia’s growth rate. By 2034, income levels (PPP adjusted) in India could be at par with those in Vietnam, and the income gap between India and Indonesia could widen. The gap between India and China could increase radically—from about US\$3,300 in 2010 to more than US\$17,000 in 2035.

Figure 6.1: Gaps in per capita GDP between India and other Asian countries



Alternative scenario 1: Pushing old ways faster to make incremental improvements²

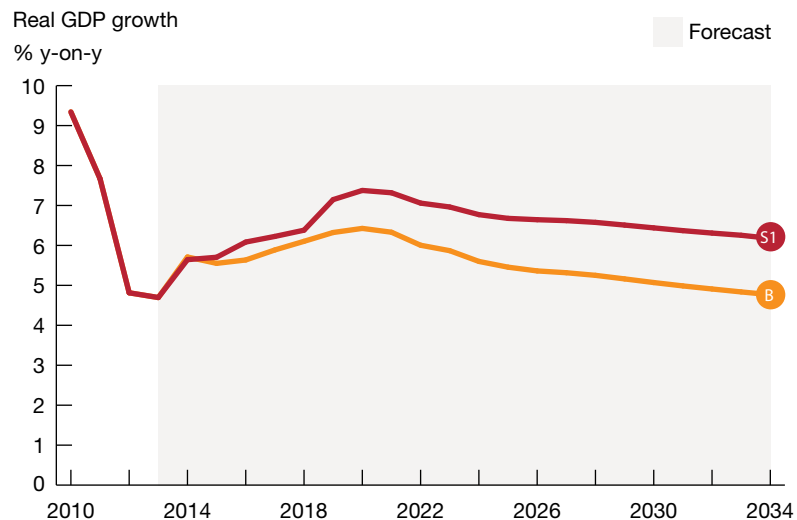


Our first alternative scenario paints a picture in which India continues on its path today with incremental changes that are achieved through faster implementation of existing strategies. In this scenario, rapid improvements in physical infrastructure and human capital would boost growth levels above the 5.5% annual improvements forecasted in our baseline scenario. For example, Scenario 1 assumes that India will achieve universal access to power (one of the ten growth vectors) by the late 2030s. For transportation and communications, the current gap in investment will be narrowed by roughly 33%, primarily through government-led investment.¹

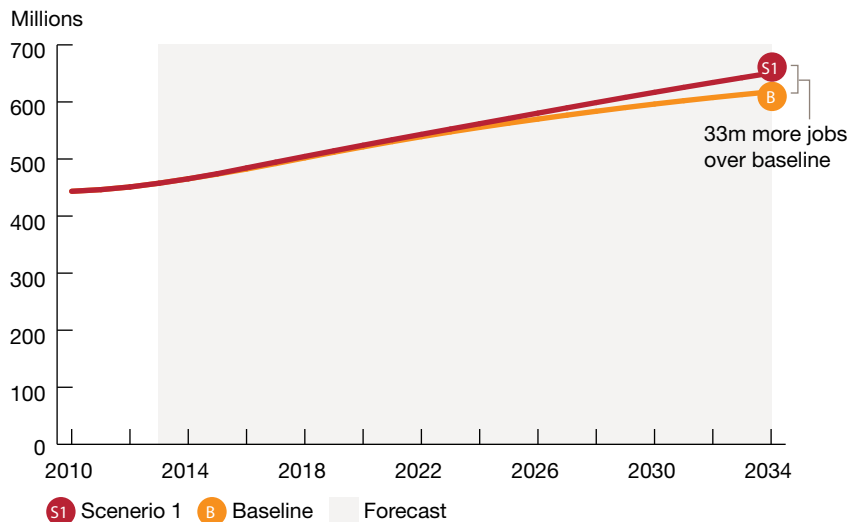
Labour productivity will rise marginally, thanks to improvements in education, health outcomes, and institutional reforms promoting formal employment. By 2035, access to universal primary education and higher-quality secondary and tertiary education will enable one in three students to progress to postsecondary schooling. Although improvements in education outcomes will come gradually, they will

¹ Per the Planning Commission, infrastructure investment in transportation and communications must be 4.2% of GDP to achieve 9% growth. In FY2012, the investment was only 3.5%, and it has fallen since. This scenario assumes that an additional 0.33% of GDP will be invested to partially close the gap.

Figure 6.2: Real GDP growth and employment in alternative scenario 1



Sources: Oxford Economics, Haver Analytics



Sources: Oxford Economics, India LFS

have big impacts—including greater employability for Indian citizens, a rise in the labour-force participation rate to 72%, and greater productivity in multiple sectors.

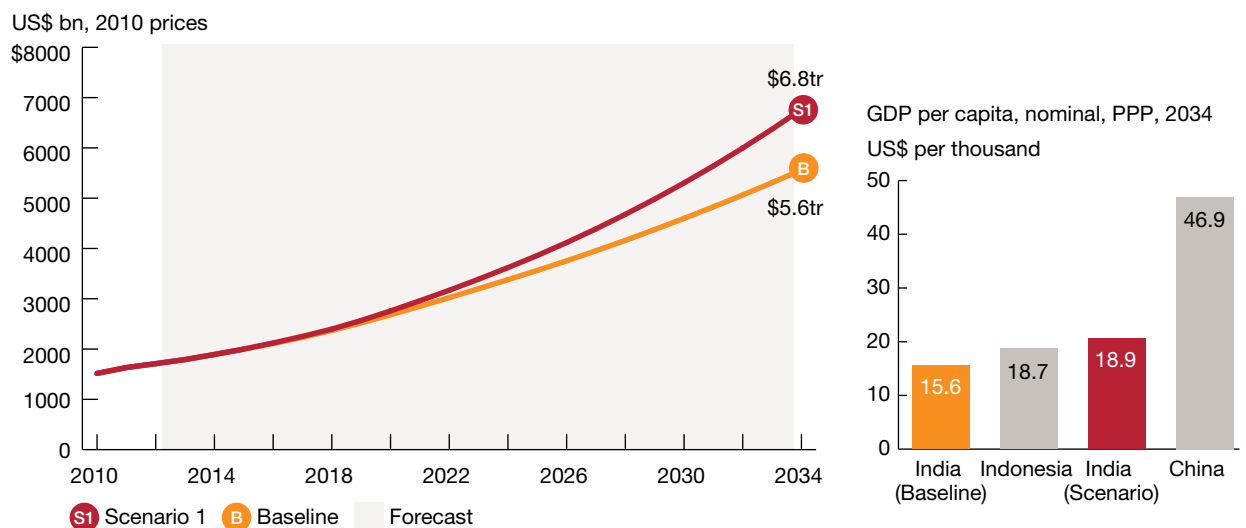
Enabling almost linear economic growth, this scenario assumes no significant changes in the investment plans of private companies and foreign investors compared with their plans in the base-case scenario. Instead, the scenario assumes that the government will finance the bulk of the spending outlined above.

The scenario also assumes a moderate impact on projected GDP. The rate increases steadily relative to the base-case scenario, peaking in the early 2020s. In those years, the bulk of the additional investment will take place—driven primarily by the government. Although the pace falls back slightly over the forecast horizon, it remains elevated over that of the base case. The CAGR for GDP for the scenario is 6.6% higher than that in 2014–2034, compared with 5.5% in the base case. There is also a substantial increase in employment (net job creation), with

an additional 33m people employed by 2034. (See Figure 6.2.)

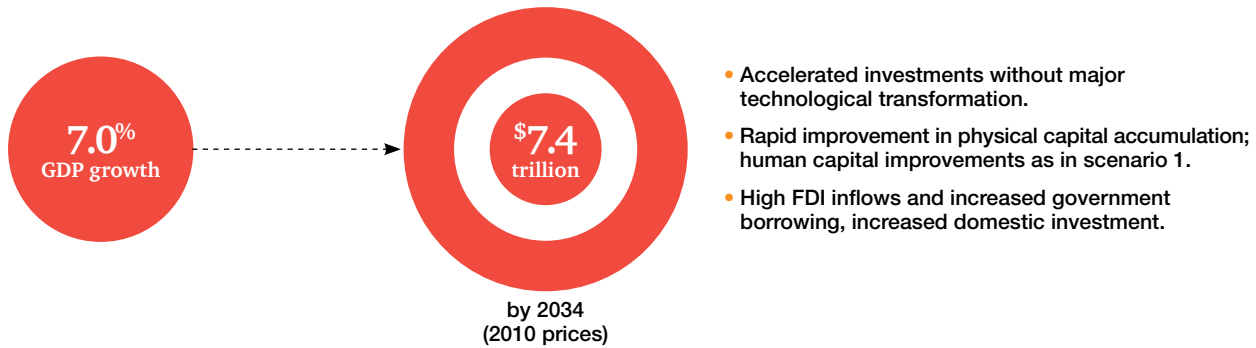
GDP in scenario 1 is 1.2 times larger in 2034 than in the base case and is worth US\$6.8tr (2010 prices). The expansion in output from the various sectors in the economy fuels the growth in per capita GDP, allowing the average Indian to catch up with the average Indonesian (in PPP terms). However, India continues to lag behind China in this scenario (per capita GDP at PPP rates). (See Figure 6.3.)

Figure 6.3: Real GDP and per capita in alternative scenario 1



Sources: Oxford Economics, Haver Analytics

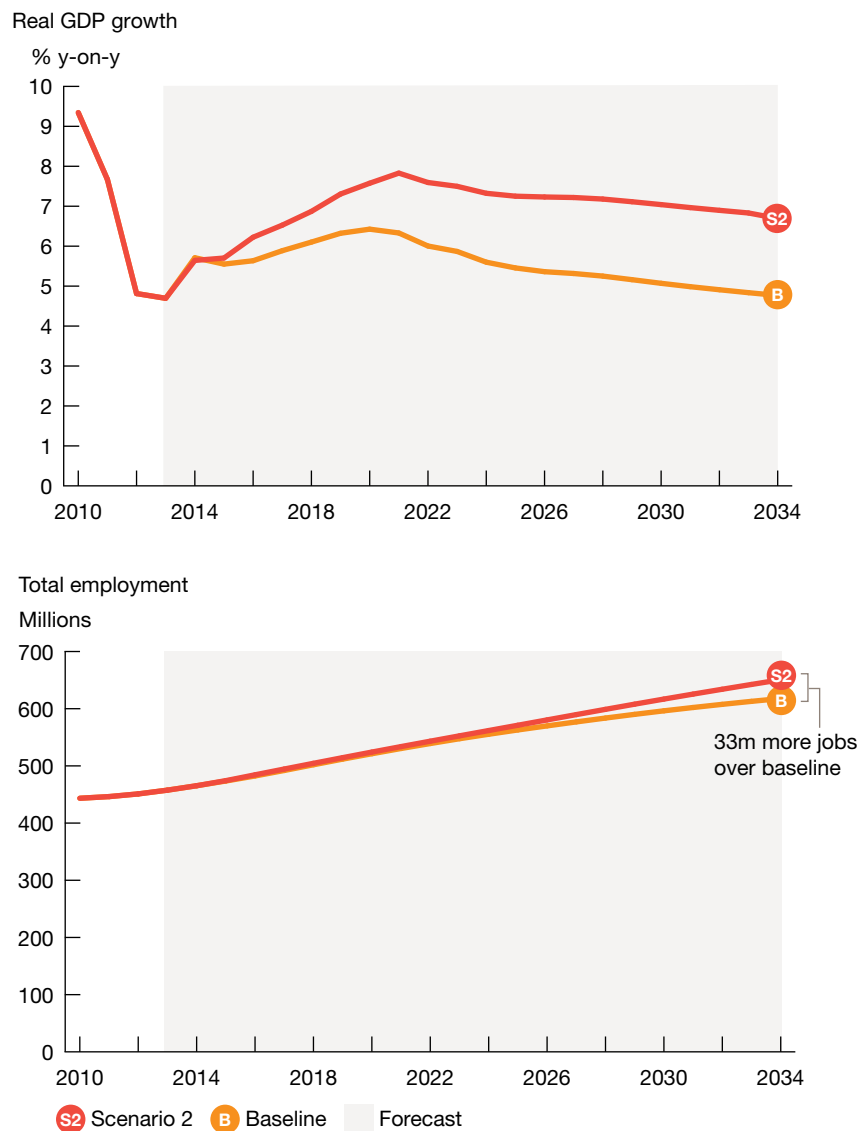
Alternative scenario 2: Turbocharging investments to accelerate growth³



Our second alternative scenario envisions India accelerating investments to aggressively spur growth, though without making major technological transformations. In this scenario, growth is generated through rapid accumulation of physical capital, partly enabled by improvements in human capital, as in scenario 1. In particular, India's infrastructure network expands rapidly thanks to additional investment in the transportation, communications, and power sectors. Agricultural productivity also improves with expansion in irrigation coverage. The transportation, communications, and power sectors are the main beneficiaries in this scenario, with swift expansions in their networks. But as a result of the improved coverage of these sectors, investment in other sectors (including manufacturing and agriculture) increases as these sectors benefit from more reliable transportation and communication networks as well as access to power.

To support the pace of change envisioned in this scenario, the private sector would need to fund a significant proportion of additional investment required in sectors related to physical infrastructure.

Figure 6.4: Real GDP growth and total employment in alternative scenario 2



Sources: Oxford Economics, India LFS

As a result of the improved coverage in these areas, investment in other areas, including the manufacturing and agriculture sectors, also increases as a secondary effect. Funding for this additional investment will come from increased government borrowing (for government-led infrastructure projects) and higher FDI inflows.

Private-sector investment also receives a boost from reforms in the banking sector. Such reforms expand access to financial services, leading

to higher deposits in banks, which in turn enable greater lending.

Scenario 2 foresees a more substantial impact on GDP growth than scenario 1. Growth rises immediately and peaks in the early 2020s, when the bulk of the additional investment has been made. Although the pace falls back slightly over the forecast horizon, it remains elevated. The CAGR for GDP in this scenario is 7.0%, compared with 5.5% in the base case. However, there is no incremental increase in employment

over the scenario 1. This scenario envisions an additional 33m people employed in 2034, as in scenario 1. (See Figure 6.4.)

GDP is 1.3 times larger in 2034 than in the base case, and stands at US\$7.4tr (2010 prices). The expansion in output helps increase per capita GDP—which again boosts India’s position relative to its peers. Once more, however, this increase is not enough to substantially lessen the prosperity gap between India and China. (See Figure 6.5.)

Figure 6.5: Real and per capita GDP in alternative scenario 2

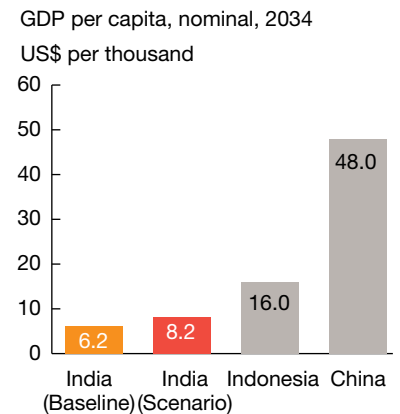
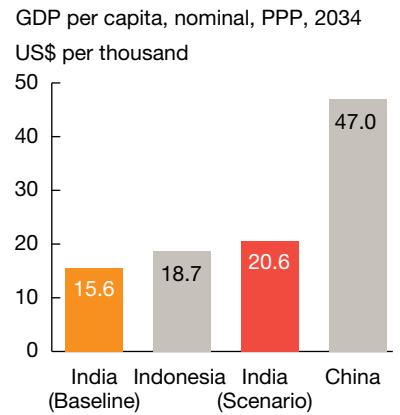
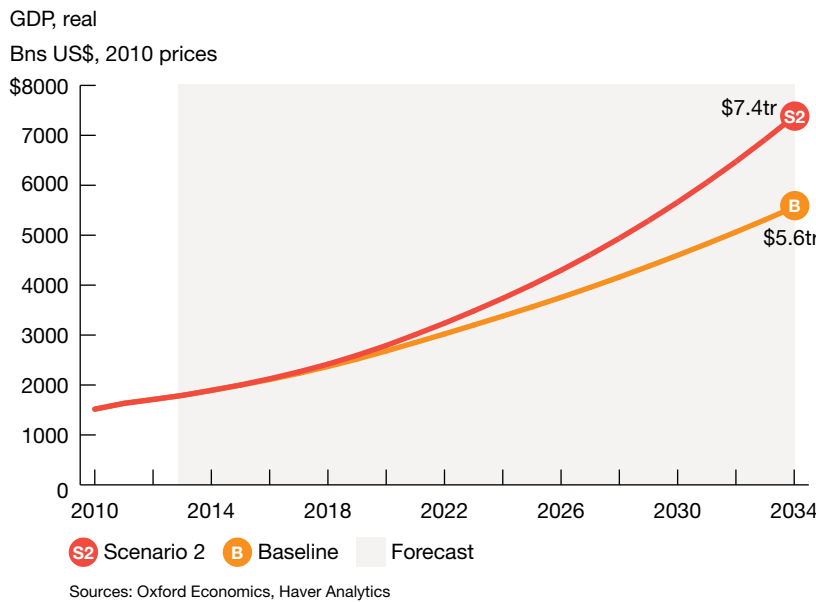
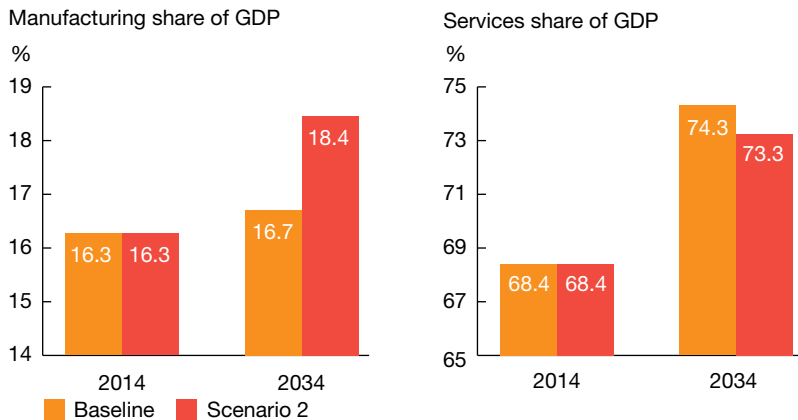


Figure 6.6: Manufacturing and services' share of GDP in alternative scenario 2



Source: Oxford Economics

Scenario 2 envisions an increase in manufacturing's share of GDP relative to the base case. However, the increase is larger than in scenario 1 and baseline, primarily owing to the sharpened focus on physical-infrastructure investment, which disproportionately benefits manufacturers. (See Figure 6.6.)

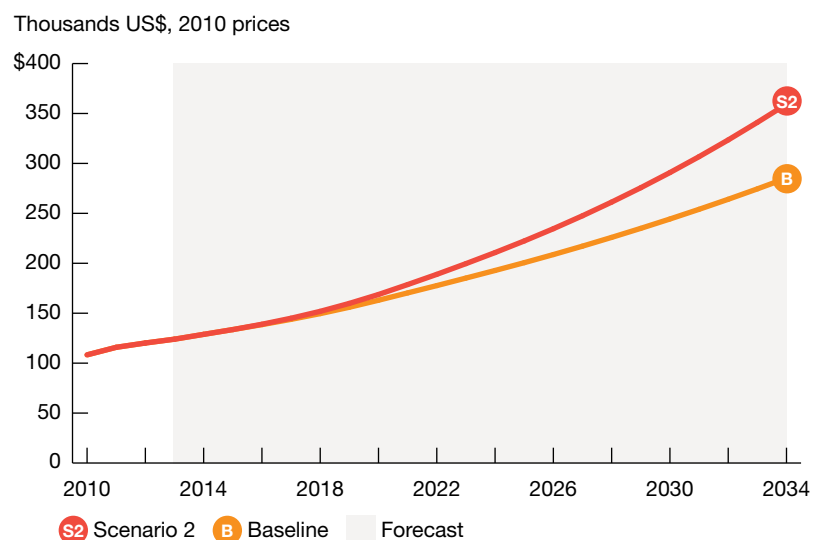
With the economy growing significantly faster in scenario 2, labour productivity rises well above that in the baseline. This increase stems

from improvement in human capital, which directly enhances the average worker's productivity; an enhanced infrastructure network, which enables workers to be more productive; and spillovers from these two effects to other workers across industries, which benefits the whole economy. (See Figure 6.7.)

The key difference between scenario 1 and scenario 2 is the second scenario's additional investment in physical infrastructure, which exerts

secondary impacts in the form of more private sector investment and higher labour productivity. We can grasp this difference by examining total investment and FDI inflows. (See Figure 6.8.) The bulk of the increase in FDI inflows comes from the additional investment in infrastructure. But domestic private-sector investment receives an added boost when the strengthened economic environment encourages companies to expand capacity to meet new demand.

Figure 6.7: Output per worker in alternative scenario 2

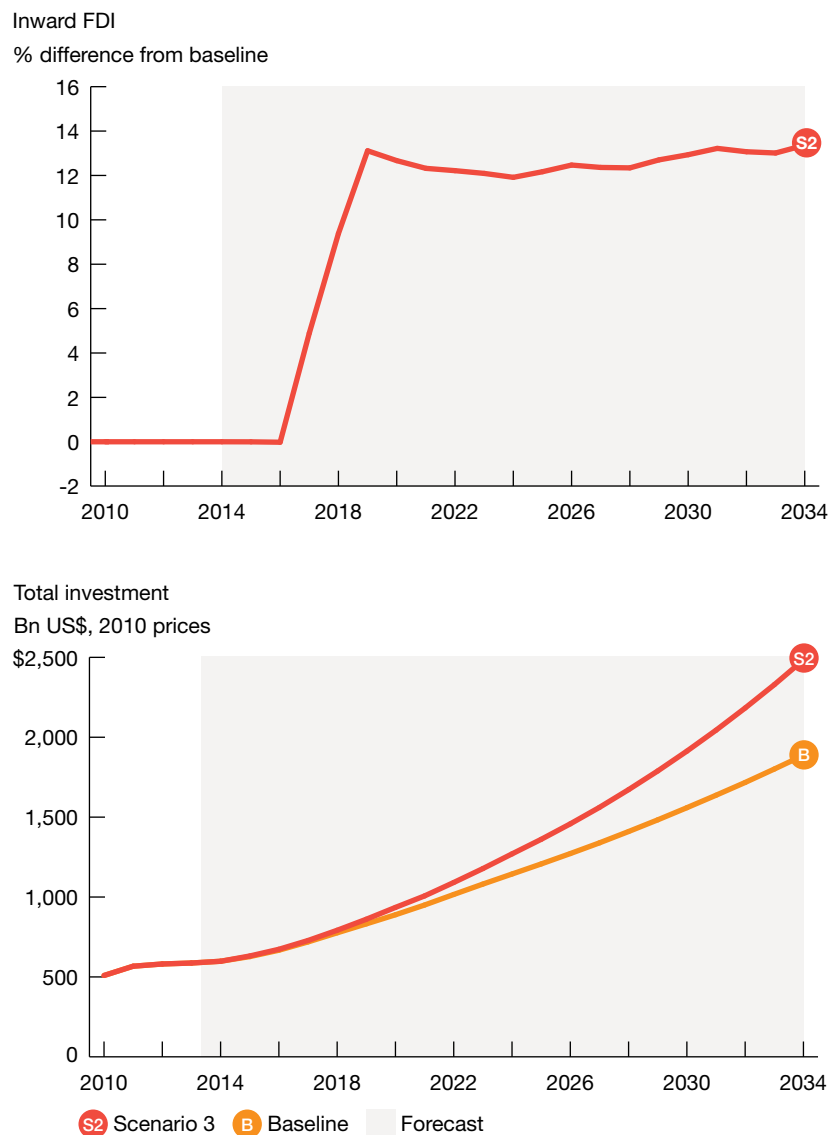


Sources: Oxford Economics, Haver Analytics

We have to take cognizance of four important factors for the leap to happen. Firstly, we need to understand the demographics of the country. Secondly, we need to look at the way global markets and the regulatory environment is moving. The third aspect is to adopt technology required to create scale. And lastly, we need to permeate into untouched rural markets.

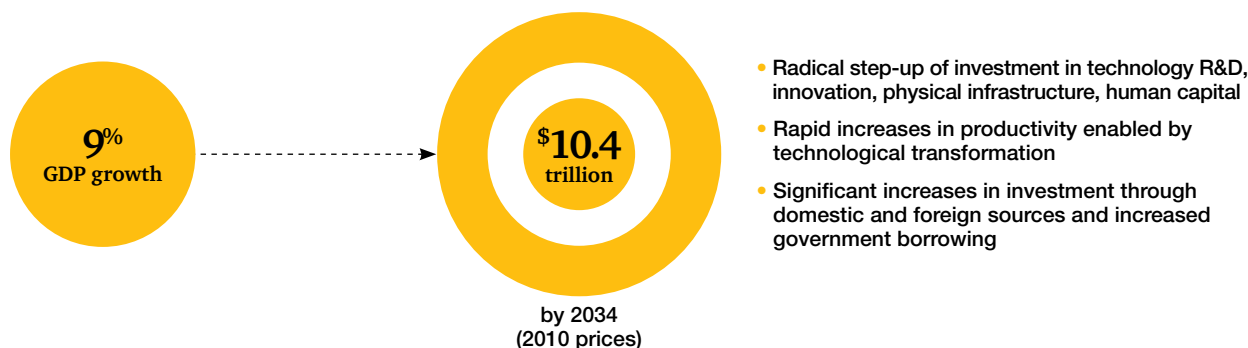
Sanjay Purohit
Infosys

Figure 6.8: Inward FDI and total investment in alternative scenario 2



Sources: Oxford Economics, Haver Analytics

Alternative scenario 3: Making the Winning Leap with new methods and technologies⁴



Scenario 3 builds on scenarios 1 and 2. In this scenario, India radically steps up investment on all three important fronts—technology R&D and innovation, physical infrastructure, and human capital—leading to a significant and sustainable jump in economic growth. The growth is fuelled primarily by greatly enhanced labour productivity. This improvement in productivity stems from domestic reforms fostering innovation across large parts of the economy and an opening up of the economy to foreign participation, which spurs technological spillover from international markets into India.

This scenario assumes the much-needed remedial investment in physical infrastructure and human development laid out in scenarios 1 and 2. But in addition, it assumes that productivity increases are further spurred by additional investment in digital technology, technological know-how from

abroad, indigenous technological innovation, further gains in human capital, and reforms that encourage more active use of bank accounts by consumers as well as more efficient allocation of financial capital.

Speed of technological progress is the key differentiator between this scenario and the previous two. In this scenario, private sector investment in physical and human capital (and in some cases, support by the government) enables Indian companies to better serve the domestic market. Spending on R&D soars, as companies seek to investigate new production methods and implement the most successful innovations.

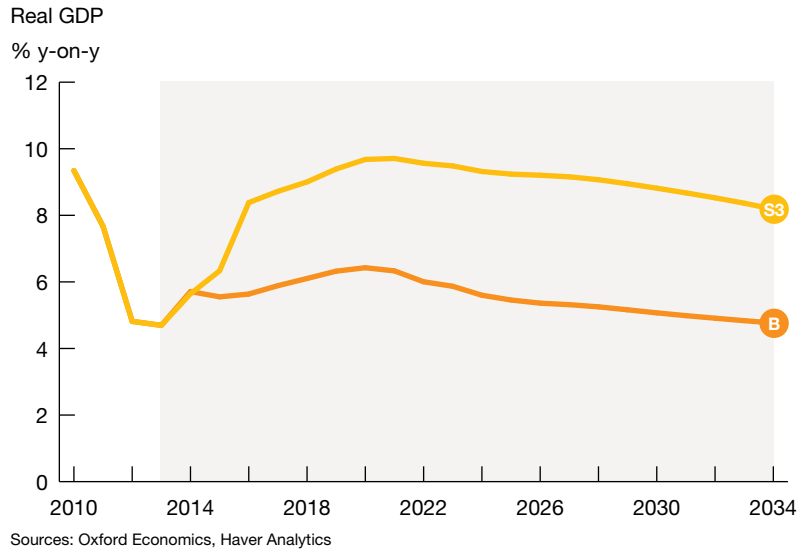
In addition, as the economy is opened up, foreign companies bring their production techniques into India and adapt them to the Indian business environment. FDI flows more heavily into India, and greater numbers of foreign companies

are allowed to set up operations. These changes generate significant technological spillovers, which help boost GDP.

Thanks to the shift in focus to higher-value-added sectors (such as high-tech manufacturing and communications), more young people delay entering the labour force so that they can attain higher levels of education; in particular, tertiary education. Those who do enter the job market benefit from strengthened on-the-job training programmes, such as apprenticeships.

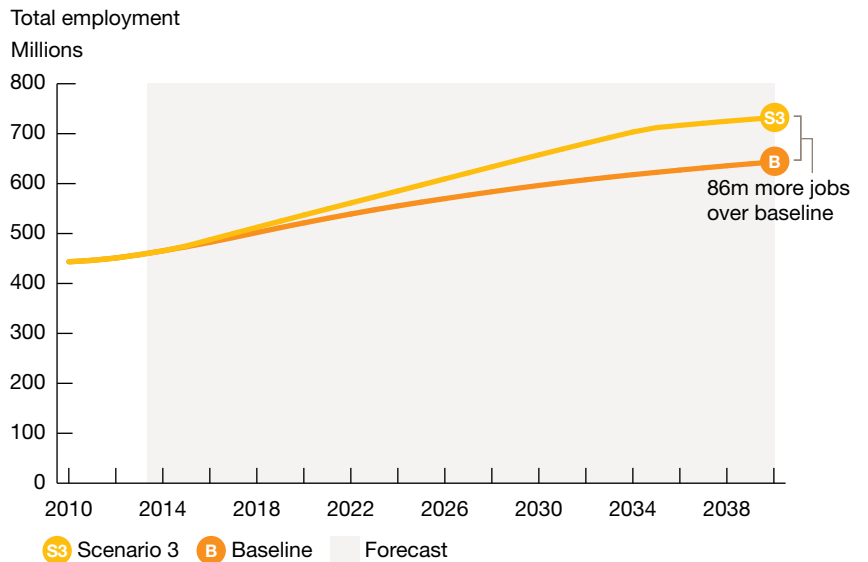
Reforms in the financial sector encourage greater private participation in banking and support more efficient allocation of financial capital. This, in turn, raises the productivity of investments undertaken, which further spurs GDP growth. In addition, the government invests more to improve and expand India's digital connectivity.

Figure 6.9: Real GDP and total employment in alternative scenario 3



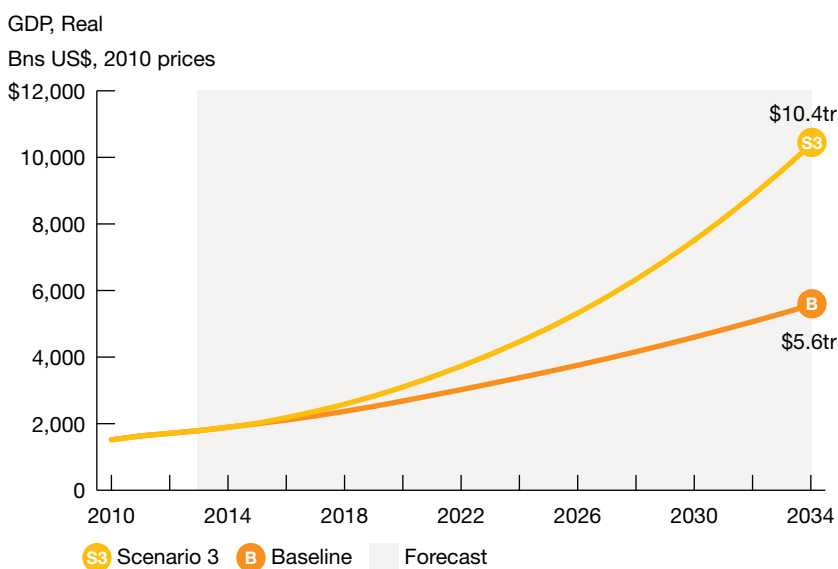
Encouraged by progress on these fronts, businesses collectively ramp up their R&D spending from a mere 0.8% of GDP in 2013 to 2.4% in 2034. The potent combination of more investment in R&D, technological spillovers, and better allocation of financial capital rapidly accelerates GDP growth, which reaches 9% per year over multiple years.

The key driver of this transformation is technology. Thus, the impact on total employment is notable with an additional 86m jobs created in scenario 3 relative to the base case over 20 years. (See Figure 6.9.) That translates into roughly 12m new jobs created per year over the 20 years. And almost all workers are far more productive in scenario 3, demonstrating the beneficial impact of additional investment in technology, R&D, and human-capital development.



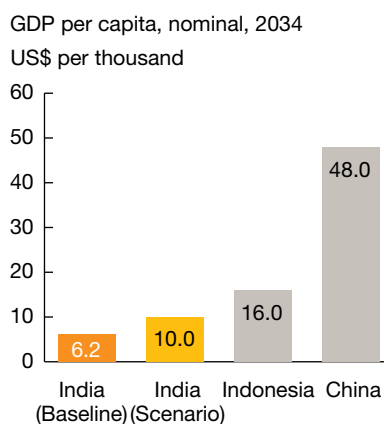
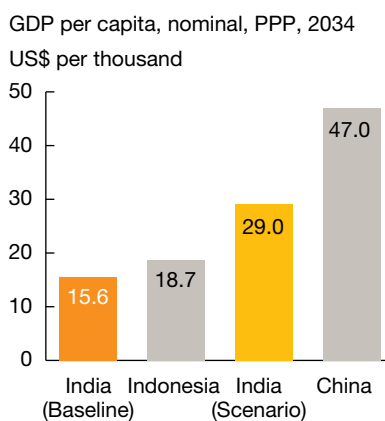
Sources: Oxford Economics, India LFS

Figure 6.10: Real and per capita GDP in alternative scenario 3



Scenario 3 sees the Indian economy reaching US\$1.9tr in 2024 and US\$10.4tr in 2034—almost twice the size in the base case. This shift is also reflected in the country comparisons, with per capita GDP in PPP terms comfortably overtaking that of Indonesia by 2034. (See Figure 6.10.)

The transformation envisioned in this scenario catalyses dramatic shifts in the economy’s composition. The proportion of GDP contributed by value-added manufacturing reaches about 25%—a change comparable to that experienced in other emerging markets that have transformed their economies, such as China and South Korea.

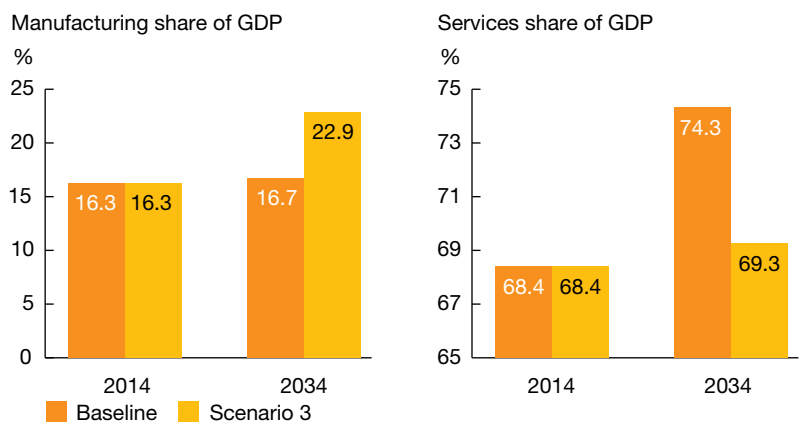


Sources: Oxford Economics, Haver Analytics

Gains in manufacturing come at the expense, primarily, of the service sector, which benefits less from the improvements in infrastructure and the technological revolution characterising this scenario. Thus, the service sector registers slower growth than manufacturing during 2014-2034. (See Figure 6.11.)

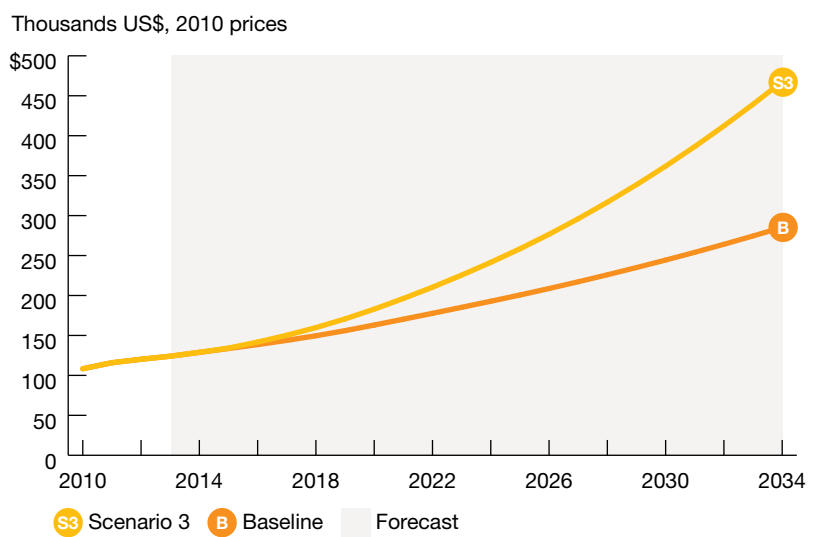
With the major gains in this scenario coming from indigenous technological progress, labour productivity advances rapidly compared with the base case. (See Figure 6.12.) But when we consider those advances in an international context, even this transformation doesn't have India overtaking many other countries. China, Brazil, Russia, and most other major emerging markets will remain well ahead of India in 2034 in terms of labour productivity.

Figure 6.11: Manufacturing and service share of GDP in alternative scenario 3



Source: Oxford Economics

Figure 6.12: Output per worker in alternative scenario 3

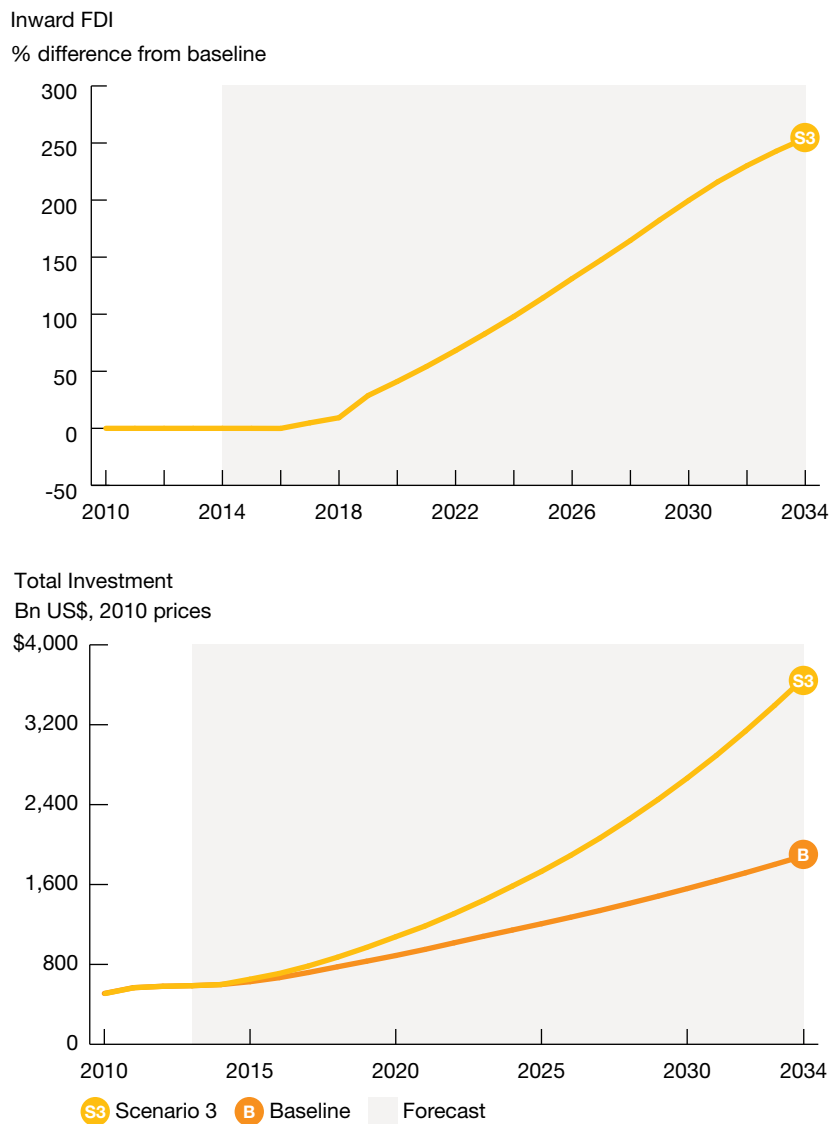


Sources: Oxford Economics, Haver Analytics

In contrast to scenario 2, scenario 3 assumes that foreign companies have significantly more access to India's economy. As a result, FDI into India increases rapidly (more than doubling by 2034), facilitating technological spillover. (See Figure 6.13.)

In addition, domestic companies feel encouraged to invest more. Although the increase in productivity reduces the cost of any specific project, the reduction in production costs boosts consumer demand. Thus companies expand their capacity more rapidly than in our baseline scenario.

Figure 6.13: Inward FDI and total investment in alternative scenario 3

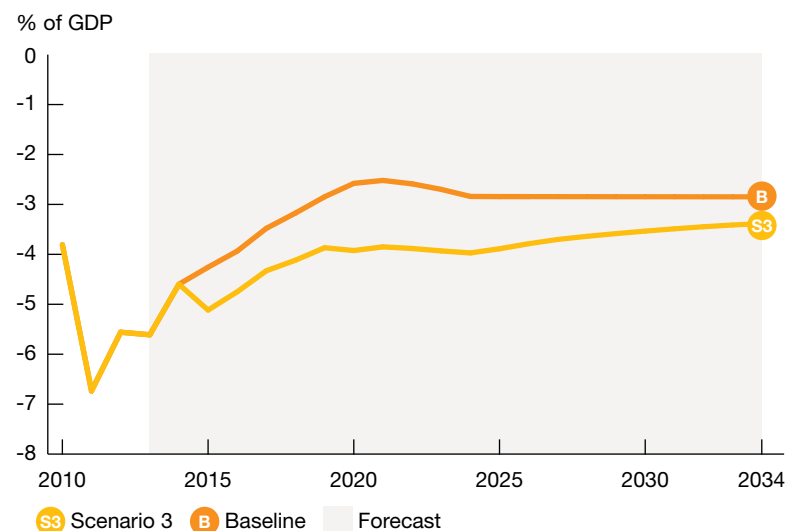


Sources: Oxford Economics, Haver Analytics

India clearly needs systemic changes around gender equality and security. These have not only social equity implications but also economic implications. For instance, negative realities of security of women in India not only impede the tourism sector but also raise fundamental questions on the efficacy of citizen protection mechanisms.

Naina Lal Kidwai
HSBC

Figure 6.14: Government budget in alternative scenario 3



Sources: Oxford Economics, Haver Analytics

The government makes additional investments to expand the economy's digital connectivity, and this worsens India's budget deficit in the short run. (See Figure 6.14.) But over time, the rosier economic outlook eases financial pressure on the government, and by the 2030s, its borrowing position is not much worse than in the base case.

By 2034, India would have to invest on an annual basis six times the investments it did in 2014. The nature of the economy will also shift

toward the private sector, in terms of solution development and delivery. However, the government will continue to play an important role by building national platforms that enable improved physical and digital connectivity. In addition, the government will have to manage increased urbanisation in India, which it has already initiated with its smart-cities initiative. Investments in the physical and digital connectivity platforms will require significant contribution from the government, which could increase the national deficit.

Roadblocks to the Winning Leap⁵

Becoming a US\$10tr economy is an alluring vision for India, but realising that vision won't be easy. The nation will almost certainly encounter a number of daunting roadblocks. Some of these will present short-term execution challenges, and others will pose longer-term difficulties because they stem from complexities in India's economy, society, political processes, and environmental conditions. In the preceding chapters of this report, we've focused on some of the immediate challenges. In the pages that follow, we turn to the more complex and persistent roadblocks.

We have used the Earth Security Index (ESI) 2014 as a framework for highlighting key roadblocks and risks. The ESI examines security issues related to risks in eight key areas: land, population, fiscal stability, energy, water, food, crops, and climate. The ESI provides a template for formulating resource-efficient growth strategies for India's corporate and entrepreneurial sectors. It also analyses 200 countries, of which 17 are identified as having the highest relevance to security. India is one of the 17.⁶

Using the ESI, we've organised long-term roadblocks to the Winning Leap into the three categories mentioned earlier—human capital, physical capital, and innovation capital—reflecting the major investment emphases featured in the alternative growth scenarios.

Human-capital roadblocks

Roadblocks to strengthening human capital include demographic pressures as well as inadequate personal and digital security.

Demographic pressure

India's demographic dividend will serve as a wellspring of long-term economic growth if the economy can create an adequate number of jobs for India's young people in the coming decades. Our economic modelling suggests that only in scenario 3—the Winning Leap—can India accomplish this scenario, creating 240m new jobs, compared with the 150m in the base-case scenario. If only the base case is realised, the resulting low employment levels could trigger social instability in India. Early signs of unemployment-related stress are evident in India's northern states, as huge numbers of people migrate to the Mumbai and Delhi metropolitan areas in search of paid work.

Personal and digital security

Citizens participate in making their society a better place when they believe that they're safe, that the rule of law prevails, and that anyone can work and mingle in society without fear of suffering harm or being subjected to prejudice and discrimination. A number of leaders in our study voiced reservations about the ability of India's security apparatus, judiciary, and jail system to provide adequate protection for citizens. In addition, as more and more business and personal interactions take place online, cybersecurity has become an imperative. The government's ability to provide both personal and digital security to its citizens will be crucial for achieving the Winning Leap.

Physical-capital roadblocks

Roadblocks to building up India's physical capital include water scarcity, insufficient food and energy security, and climate change.

Water scarcity

The ESI points out that India will suffer acute shortages of clean, safe water starting as early as 2025. In some larger Indian cities, water scarcity is already eroding the quality of daily life as well as hampering industrial growth, as evidenced by the shortage of water in power plants



and other industrial facilities. In India's northern agrarian zone, traditionally dependent on groundwater for irrigation, the water table is falling because of overuse of this scarce resource.⁷ The inability to irrigate crops would imperil food security. To avoid this situation, businesses will have to find innovative ways to use water more efficiently or decrease its use in their operations, and growers will need new approaches for keeping their crops irrigated. Progressive multinationals like The Coca-Cola Company are already actively working to make their bottling plants water neutral. Indian companies can take a page from such enterprises' books to achieve similar gains.

Food security

With an already large and growing population, food security is an intensifying concern in India. Low crop yields and concerns about the security of land tenure make it difficult for land owners to make sustainable investments in agriculture. Moreover, rapidly growing urbanisation and industrialisation are further increasing the demand for agricultural land to be used for nonfarming activities such as development of urban housing or manufacturing facilities. Also, as a consequence of overuse of fertilisers, as much as one-third of India's farmland has become overly

concentrated with salt, and thus less productive. Food production, security, and distribution as well as related areas of water management for agriculture must be on the discussion agenda in all public and private forums.

Energy security

Even with resource-efficient methods implemented in Winning Leap solutions, to realise India's US\$10tr GDP vision will require a considerable jump in energy consumption. India's fossil fuel capacity is insufficient to meet energy demand, and the situation will likely worsen, owing to insufficient mining and

exploration activities that need advanced technologies.⁸ The nation is importing energy resources; net energy imports in India were 6.3% of GDP in 2013-2014.⁹ But in the long term, this approach will put an enormous drag on economic growth. To avoid this consequence, India will have to rethink its fuel supply and bolster its power-generation capacity. The government will also need to define policies enabling the development of infrastructure for the use of alternative energy sources and expansion of energy production. Fostering public awareness of energy conservation as a way of life would help as well.

Climate change

India's economy, particularly in its rural regions, is vulnerable to the vagaries of the monsoons. The ESI considers this a serious risk to the nation's development, given long-term climate change trends. The Himalayan ecosystem is also environmentally fragile, and major changes in the conditions there

could have sobering implications for the country's overall climate. Recent work done by TERI and USAID also points to the impact of rising sea levels on India's coastline.¹¹ Although climate change risk is difficult to mitigate, businesses, insurance companies, and government leaders should factor it into their decisions regarding long-term investments in Winning Leap solutions.

Innovation-capital roadblocks

Roadblocks to bolstering India's innovation capital are shortfalls in protection of intellectual property (IP) rights and inadequate building of local governmental capabilities.

IP-rights protection

Continued weak IP laws and enforcement that's average (at best) would limit businesses' ability to invest in the R&D so critical to innovation. Inadequate IP rights protection could also discourage multinationals from setting up operations in India or bringing their

technology into the country.¹² As India contemplates building a much larger and more complex technological and digital economy, the ability to drive inclusive, sustainable growth will hinge on organisations' willingness to invest in R&D. Companies will make such investments only if they believe that the IP delivered by the investments will be protected by stringent IP laws and timely intervention by the judiciary to enforce such laws. Without such protection, the Winning Leap will take place mainly on borrowed IP from international markets, which will weaken its true potential.

Local capabilities building

In India, delegation of power to the individual states is encouraging local development. Institutions at the village, district, and state levels are gaining more decision-making power. Establishing tri-entity partnerships among corporations, entrepreneurial companies, and more empowered local governmental bodies will be critical to



the Winning Leap. For instance, a water-utility company can understand the municipal and social requirements of a small town only if it has forged a relationship with the local municipal head.

Yet a number of leaders participating in our study commented on the deficit of leadership and technical capabilities at local levels. Such capabilities are essential for enabling decentralised growth, which is critical for innovation. While central and state authorities may have adequate training, knowledge, and attitudes, there is a risk that local bodies—municipal corporations, gram panchayats, and district administrations—won't be sufficiently equipped to help implement Winning Leap solutions. To mitigate this risk, the government will have to give local bodies adequate financial and other resources so that they can become more powerful growth enablers.

The roadblocks highlighted above don't cover all possible risks to the Winning Leap. However, understanding these longer-term, particularly challenging hurdles can help all stakeholders in India's economy craft more informed and thoughtful growth strategies for the coming decades.

The Winning Leap and decentralisation



A focus on decentralised solutions, approaches and empowerment should be at the heart of the Winning Leap. India is a vast nation with a multitude of different ethnic, linguistic, geographic sub-divisions that call for very different solutions. The devolution of power outlined in the 73rd and the 74th amendments to the Indian constitution were first steps, albeit baby steps in this process. However, building local capabilities, avenues for greater local fiscal responsibility, and empowering local administration need renewed focus over the coming decades. Corporations and entrepreneurs will also have to build capabilities to work with this decentralised polity and administration. .

While the US democratic experience has a 170 year head start over India, there are a number of lessons from its devolved polity. My personal experience living in the County of Boston shows how beneficial this can be. The County has local control over education till high school, police, services like fire, parks, and waste removal, and local tax collection. In a nutshell it's an empowered local government body that is able to deploy its financial heft for the benefit of citizens. Budgeting takes place after looking at specific local needs and spends. Solutions are developed with local citizens, keeping them in confidence. This brings about a virtuous cycle where the authority of the local administration is matched by commensurate financial powers and amplified by collaboration with citizens. My own involvement in the affairs of the county has been enriching and far more than I had anticipated before I moved here.

Clearly the circumstances, evolution of polity, and socio-economic context of India and USA are starkly different. But the underlying democratic gene is similar. Can the Panchayat, municipal and district structures of India sink much deeper roots of development that the Winning Leap deserves?

S.P. Kothari
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