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Innovation-driven growth in India





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Message from ASSOCHAM

Innovation is a critical component in improving individual and institutional performance. Real innovation is not easy to come by. Innovation is more radical and transformational than an improvement. Innovation is content-oriented, whereas improvement is process-oriented. Every now and then, organisations confront situations that warrant radical changes, which call for out-of-the-box thinking. It is only through innovation that we can bring about such avant-garde transformation.

Inspiration for innovation usually stems from a combination of three factors: an urgent and pressing need to bring about a change; how people perceive and pursue that change till the end; and a congenial environment to accomplish that change.

Innovation is always driven by self-induced passion, pressure of compelling circumstances and undying perseverance for achievement. The assiduous application of technological improvement in transport and communication worldwide has created an unprecedented growth in global connectivity and transmission of information. Globalisation itself is a product of innovation.

The pace of economic and industrial progress is directly proportional to the efforts made towards research and development (R&D), which acts as a reliable measure of innovative capacity. R&D spend in India has grown to 0.9% of the country's GDP. More needs to be done to match the government's target of achieving R&D expenditure of 2% of GDP, as this will also help the nation in increasing the manufacturing base under the Make in India program.

As 11 May was declared as National Technology Day by the government of India, ASSOCHAM—India's Apex Chamber for Commerce & Industry—has decided to organise on 11 May 2015, the Third Innovation Summit cum Excellence Awards with the theme Innovative India @ 2020.

I take this opportunity to thank the Department of Scientific & Industrial Research, Ministry of Science & Technology, Government of India, for supporting the ASSOCHAM Third Innovation Summit cum Excellence Awards.

I also express by gratitude and thank the jury members, our knowledge partner PwC and the ASSOCHAM team for their invaluable efforts and contribution.

With best regards,



D. S. Rawat Secretary General ASSOCHAM

On the occasion of the National Technology Day, ASSOCHAM is organising the Third Innovation Summit cum Excellence Awards 2015 with the theme 'Innovative India @ 2020'. On this occasion, ASSOCHAM is releasing the background paper prepared by the knowledge partner PwC titled 'Innovation-driven growth in India'. I hope this conference and the background paper will further encourage and promote R&D and innovation in the Indian industry.

I wish the event all the success.



Dr BK RAO Chairman ASSOCHAM National Council on Innovation



Innovation: a key driver for growth

Innovation has been the change driver around the world–intervening to provide accessible and affordable solutions to meet ever-shifting consumer needs. Exemplars from around the world clearly depict the role played by innovative solutions in increasing national economic growth and improving standards of living. China, for example, has recorded significant growth in gross domestic product (GDP) over the past few decades. South Korea has also vastly improved its economic status since the 1980s, by promoting the inward transfer of foreign technology and by developing its domestic capacity to digest and improve through reverse engineering and foreign licensing–followed by significant investments in R&D. This paper highlights the need for a similar innovation-driven path for India to achieve non-linear growth over the next two decades, a path that maintains a balance between economic development and social well-being.

There is also a strong correlation between innovation and revenue growth at the enterprise level. Global research conducted by PwC clearly highlights this relationship. PwC studied more than 1,700 businesses across 25 countries and 30 sectors in 2013 and segmented these on their 'innovation potential' based on a range of parameters including spend on innovation, new product launches, co-development work undertaken with partners, etc. Analysing the financial performance of these firms brought out a clear distinction between the top and bottom-most performers, with the leading 20% firms growing 16% faster than the least innovative. This was equivalent to each of the top firms generating 0.25 billion USD of additional revenue over 2010-2013, as compared with the least innovative.¹

Over the last two decades, India's GDP has risen by over 1 trillion USD,² in the process bringing millions of citizens into a new cluster we term as the 'emerging middle' class. Our research indicates that a path driven by R&D and innovation capital will be essential for India to manage its inherent challenges and to grow its GDP by 9% per annum to become a 10 trillion USD economy over the next two decades.³ As of 2014, India's spend on R&D (0.8% of GDP) significantly lagged global counterparts such as China (1.9%), Korea (3.8%) and the US (2.7%).⁴ We estimate the need for India to increase its R&D spend to 2.4% of GDP by 2034, and focus on innovation-driven solutions to attain the growth targets mentioned above. These innovations are restricted to not only new technologies and products, but will also include designing innovative processes and business models that challenge the status quo and help achieve inclusive growth. As per our recently published thought leadership titled **'Future of India - The Winning Leap'**, such new solutions could account for almost 40% of the 10-trillion-USD economy envisaged by 2034.

Case for non-linear growth in India

For India to reach its goals, it will have to blaze a new path. Fortunately, many Indian companies have already ventured into adopting such an approach. The challenge now is to expand this mind-set across key sectors of the Indian economy. The Indian telecom industry, for example, has leapfrogged to mobile telephony, skipping fixed-line technology.

Within a space of 20 years (1995-2014), the sector recorded 910 million⁵ mobile-phone subscriptions—18 times the number of landline connections in 2006 (50 million), the year when landline subscriptions reached their peak.⁶ In the future, growth in smartphone use is expected to further drive innovation through digital means.

Other sectors within India have witnessed sporadic examples of innovation as well. These innovations could be classified as follows:

- Technology-driven innovation, which involves the development of new advanced technology systems, such as the Aadhaar platform, Bajaj Auto's DTS-i technology or Vortex Engineering's solar powered ATMs.
- Market-driven innovation, which includes often disruptive products that create tailored value propositions for new customer segments. Examples include Tata Ace commercial vehicles and GE India's low-cost ECG machines.
- Operations-driven innovation, which includes innovations in processes achieved by adopting cost-efficient practices or by creating new supply and distribution channels, etc. Examples include companies such as the Narayana Health Group and Aravind Eye Hospital that have lowered the cost of heart and eye surgeries through operational excellence achieved from volume-driven business models.

Globally, the paradigm for innovation is fast moving towards more consumer-centric solutions, delivered through the adoption of technology and asset-light business models—a trend expected to have wide-reaching implications for emerging markets such as India. Given the complexity and scale of the challenges facing India, the resources required and the urgency of demands for change from Indian citizens, market players in India will need to develop similar quality-focussed and innovation-driven mind-sets to become competitive in today's globalised environment.

To achieve rapid growth, India needs to view its many economic and social challenges as opportunities for growth and renewal. Companies need to challenge the convention, invest in innovation and R&D and unlock any vested interests—embodied in the antiquated infrastructure that continues to hamper India's growth. This paper aims to confirm for market players in India, the possibility of achieving unprecedented growth by 2034 and the impact of innovation in driving this change.



Alok Verma Director Strategy Consulting, PwC

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Imperatives for the Indian economy

Country-level imperatives

India today could be described as a restless nation, with calls for change coming from almost every segment and region. Everybody recognises that given the scale of the problems facing this vast nation, slow reform may not be an option. India's youth wants to make an economic and social difference. Members of a burgeoning middle class are looking for new customised solutions to address unmet needs. Citizen organisations are pushing to ensure that economic growth is accompanied by improvements in human development. Last year's electoral mandate for development could also be considered a more immediate signal for a desire for growth, while spreading its benefits to all levels of Indian society.



1. Young country with rising expectations

Working age population (between 15 and 64 years) to touch 1 Billion, surpassing China by 2030.



65% of India's population is below the age of 35



Employment challenge – Need **12 million** new jobs a year to

absorb growing working population



Employability challenge – **50 million** people need to be

skilled each year, current capacity only 3 million

2. Growing middle class seeks new value propositions

India's population distribution (millions)			1.19 bn	1.36 bn			
Household income/ year (INR)		\$*/day per capita	2010	CAGR (%)	202 [.]	1 (projection)	(%)
> 8,50,000	Upper middle +	>10 USD	<mark>80</mark>	9.7%		190	14%
3,00,000 - 8,50,000	Middle	5-10 USD	170	6.3%		300	23%
1,50,000 – 3,00,000	Emerging middle	1.7-5 USD	470	1.9%	$\mathbf{\Sigma}$	570	42%
< 1,50,000	Low	<1.7 USD	460	-4.6%		290	21%

Sources: Profitable growth for the globally emerging middle, PwC 2012

* The emerging-middle income bracket, PPP adjusted is 5 to 15 USD per capita per day. Alternately, 1,850 to 5,550 USD per capita per year. All figures are reported at 2010 constant prices.

By 2021, India will have about 900 million people constituting the 'emerging middle and middle class' segment, which will provide new opportunities. To win in this market, companies will need to deploy a shift in mindset to achieve new value propositions delivered through innovative business models.



3. Need for balanced economic and human development



India's HDI is closer to Sub-Saharan Africa than to countries such as China, Brazil and USA

India lagged global HDI on all index parameters –health, education and income, in 2013

Sector-level imperatives

Countering key challenges to growth

Even at the sector level, India's performance across key measurable parameters has been below other emerging markets such as Brazil and China, with a significantly wide gap between India and developed markets such as the US or Korea. We chose 10 such sectors (or growth vectors, as defined in Chapter 2) that constitute over 70% of India's GDP, to understand the extent of challenges being faced in the country today. Each of these sectors will have to improve in a resource constrained manner to achieve balanced growth. This will require a new inventive approach. The table below details the sectoral level imperative where India significantly lags behind countries (Brazil, Korea, China, US) in 9 out of 10 key indicators covered. This task itself suggests that current solutions do not seem to be working and also are not geared to address the huge gap that exists between India and other competing economies.

#	Vector	1993	2013		2013		
		India	India	Brazil	China	Korea	US
1	Life expectancy at birth (years)	59	66	74	75	81	79
2	Average years of schooling	5	7	8	9	12	11
3	Agricultural yield (tonnes/hectare)	3.1	4	5.3	7.4	7.7	9.2
4	Access to banking services	-	35%	56%	64%	93%	98%
5	Share of organised retail	<4%	8%	35%	20%	15%	85%
6	Value added manufacturing	15%	12%	13%	32%	31%	13%
7	Access to power (Per capita kWh)	318	684	2,438	3,298	10,161	13,246
8	Manage growth of urbanisation (population)	250 mn	400 mn (+250 mn)*	+28 mn	+ 250 mn	+4 mn	+ 52mn
9	Improve digital connectivity (internet penetration)	-	15%	52%	46%	85%	84%
10	Improve physical connectivity (logistics costs % of GDP)	-	13%	12%	18%	9%	8%

*Note: + xx mn indicates projected growth in urban population over 2013-2034

Enterprise-level imperatives

Need for a breakout growth strategy across the enterprise ecosystem

A major factor behind the lag in India's country-level performance over global counterparts has been the lacklustre performance of its enterprises, be it government bodies, the corporate sector, SMEs or educational institutes. For instance, India has only five companies among the leading 500 brands worldwide, while China has 32.¹⁴ In terms of creating global businesses, only three Indian firms were listed on the NYSE International 100 Index as of 2013, as compared to 22 Canadian firms and 16 from the UK.¹⁵ Meanwhile, only three Indian nationals won the Nobel Prize during 1995-2015, while the UK had 20 Nobel Laureates during the same period.¹⁶ On the sports front, Indian athletes won only six medals in the London 2012 Olympics, while the US secured 104.¹⁷

The state of India's SME sector also requires a special mention. Although SMEs employ 40% of India's overall workforce, they contribute only 17% to the nation's GDP. This is mainly due to an unfavourable regulatory environment marked by the need for multiple procedures and high paidin capital to start a new business. As a result, 94% of SMEs are currently unregistered, which leaves them struggling with issues such as shortage of skilled workers, limited market exposure, and restricted access to capital. Such an unfavourable regulatory environment discourages Indian SMEs from growing. Of the total number of SMEs, only 0.2% are medium-sized firms, employing between 100 and 1,000 people. Lack of growth finance results in limited technology adoption within these firms, leading to system inefficiencies that lower national productivity.¹⁸ The German Mittelstand (GM), comprising small and medium-sized enterprises (SMEs) is an example that highlights the potential within this segment to contribute to national growth. GM firms account for almost 60% of the employment within Germany and contribute more than 50% to the national economic output. Buoyed by adequate policy support, these companies have largely achieved success through investments in innovation and through product specialisation in niche areas within electrical engineering and industrial products.¹⁹

New ventures also need talent, a steady supply of which could lead to the creation of industry leapfrogs such as the one witnessed in India's IT sector, in centres such as Hyderabad and Bangalore. These examples demonstrate how educational institutions provide crucial support for the development of the entrepreneurial ecosystem. The presence of a large number of engineering colleges in the state of Karnataka has provided a steady flow of skilled workers for IT firms in the state's capital, Bangalore. The city is also growing as a hub for R&D, boasting of a number of institutes catering to industry needs, such as the National Centre for Biological Science, the Jawaharlal Nehru Centre for Advanced Scientific Research, and the Indian Institute of Science.²⁰ Public and private educational institutions will therefore need to play a leading role in supporting education and training for India's talent, with the corporate sector contributing in areas such content generation and in designing new delivery mechanisms such as on-site learning, online solutions, etc.



Need for innovation-driven solutions

As per our analysis, India could boost its current GDP of 1.9 trillion to 10.4 trillion USD by 2034 (and elevate per capita GDP from 1,490 to 6,800 USD) by achieving a GDP CAGR of 9% over the next two decades.²¹ Reaching this level of growth will require transformation—a difficult task, given that India has battled structural deficiencies such as underinvestment in infrastructure, an unproductive business environment, poor education and low-quality health outcomes over the past few decades. However, our research indicates that such a transformation is possible and will be steered by innovation.

Target economic transformation with human development

Consider China, which had a somewhat weak economy back in the 1970s, and is today the second-largest one in the world. GDP growth rates in China have averaged 10% over the last 30 years,²² proving that it is possible for large, populous countries to sustain periods of high growth. If India could replicate this trajectory, it would achieve upper-middle-income status by 2034.

India's economic leap









To improve its HDI, India could learn from exemplars such as South Korea. Up until the 1960s, South Korea's economy was based on subsistence agriculture. It was a developing country with poor resources and production bases and had only two science and technology institutes. Over the next few decades, Korea invested heavily in machinery, turnkey projects, human resources and R&D institutes and went on to become a high-income advanced economy.

India's human development leap





Source: UN Development Programme

While smaller than China, South Korea's economic and human development achievements distinguish the country. The nation ranks high in education, quality of healthcare, rule of law, ease of doing business, government transparency, job security and financial inclusion. As of 2014, South Korea was the world's seventh-largest exporter, its success driven by high-tech multinationals such as Samsung, Hyundai-Kia, and LG-each of which built its capabilities during the country's growth spurt. Its balanced focus on both economic growth and inclusion has resulted in major improvements in universal healthcare, education, and other safety-net benefits for its population. In the 1980s, South Korea's HDI reached 0.63, slightly higher than India's today (0.59). Over the next 30 years, South Korea's HDI leapt by 26 points.²³ To make a similar improvement in its HDI by 2034, India needs to follow the innovation-led South Korean model. If it succeeds, its HDI will reach 0.85, and its per capita GDP could jump from 1,490 to 6,841 USD within the next two decades. But these achievements will be possible only if India invests in sectors that build the social chassis on which an economic engine can be mounted.

Focus on growth constraints across key sectors

Speed, inclusion and sustainability will be key elements to achieve our national growth targets, ensuring that change occurs across multiple sectors and population segments. We have identified 10 such areas of change, termed as 'vectors' on which India must excel to achieve its growth ambition. These vectors could be grouped into three classifications: (i) Human development (life expectancy at birth, average years of schooling, agricultural yield, and access to banking services), (ii) Institutional development (share of organised retail, value-added manufacturing, access to power, and managed growth of urbanisation) and (iii) Enabling vectors (improving digital connectivity and improving physical connectivity). These vectors were arrived at by looking at countries at a similar stage of growth as India, and through consultations with sector experts. Performance targets by 2034 across vectors have been ascertained by benchmarking against countries that have made significant progress on a particular challenge over the last 10 to 20 years.

Ten vectors of growth

#	Vector	2013	2034 targets
1	Life expectancy at birth	66 years	80 years
2	Average years of schooling	7 years	10 years
3	Agricultural yield	4 tonnes/ hectare	7.4 tonnes/ hectare
4	Access to banking services	35%	90%
5	Share of organised retail	8%	50%
6	Value added manufacturing	12% of GDP	>25% of GDP
7	Access to power	75% access	100% access, 3 x consumption
8	Manage growth of urbanisation	400 mn	650 mn
9	Improve digital connectivity	15%	80%
10	Improve physical connectivity (Reduce logistics cost)	13%	8%

1 Increase life expectancy at birth 66 to 80 years, reduce MMR from 190 to 27 & IMR from 44 to 12, 2 Increase average years of schooling from 7 to 10 years, 3 Land productivity in tonnes per hectare to increase from 4 to 7.4 (for rice), 4 Expand access to financial methods among adults from 35% to 90%, 5 Shift organised retail from 8 to 50%, 6 Increase value added manufacturing from 12 to > 25% of GDP, 7 100% power access connect 300 million more citizens and per capita consumption from 672 to 1800kWh, 8 Manage housing shortages and public transport for growth in urban population from 400 mn in 2013 to 650 mn, 9 Increase internet penetration from 15 to 80%, 10 Reduce overall logistics cost from 13 to 8% of GDP.

Businesses in India have a major opportunity to help improve performance on each vector. Players who 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 competitors.

New solutions to achieve unprecedented results

Market players cannot rely on traditional solutions to surmount challenges across the 10 listed vectors. Achieving desired results using traditional approaches alone will either take too long or will be too expensive to implement. New solutions therefore will be required. Our research suggests that designing a successful approach to change will require a combination of the following elements:²

- *Fierce catch-up*, entails following traditional approaches or technologies to surmount challenges, but at an accelerated pace. It focusses on removing roadblocks and improving the efficiency of working with existing solutions. Using traditional solutions to maximum capacity, this element creates the right momentum for the next two to take place.
- *Significant leap*, involves adopting new or different approaches or technologies, which may have been developed elsewhere but would also work in India.

2 Termed as the 'Winning Leap' approach as per PwC's recent publication titled the 'Future of India: The Winning Leap' These solutions are mostly exemplars that have successfully countered similar challenges across the world. These will be required to cover the distance with relatively lower risks, learning from successful approaches adopted worldwide.

• *Leapfrog* represents a radically different approach—a paradigm shift—that entails applying a new and potentially disruptive business model. It includes creating the environment to test and adopt emerging solutions that have the potential to disrupt existing mind-sets and approaches to solving these challenges. These are required to maximise the impact, to cover the final lap without which the end targets cannot be met.

Each sector of the Indian economy will need to execute solutions drawn from all three categories. With the right mix in place, India could achieve its 9% annual GDP growth target.

Enabling enterprise innovation

Innovation is often the result of a continuous step-wise approach towards product or process improvement. In today's globally competitive world, companies need to adopt a somewhat low-risk approach towards bringing innovation or new solutions in the market—which as described by PwC's 'Winning Leap' approach is about finding the right mix between 'significant leap' and 'leapfrog' solutions—even at the enterprise level. Taking a 'significant leap' at a corporate level involves identifying markets adjacent to one's business and building the capabilities required to successfully cater to market needs. These adjacent areas may be defined in terms of products or services, customer groups, value chain positions, or geographic markets. However, companies need to prioritise options that could enable an economic or competitive advantage by exploiting existing areas of strength such as customer base, technology or network resources and business relationships, along with new sets of easily acquirable capabilities required for market success. By entering into these adjacent growth markets from time to time and building upon the required capabilities, companies will be able to equip themselves for a potential 'leapfrog' in the long run. This will often be the result of a combination of new capabilities acquired over time, such as enhanced customer intelligence, cross-sector and international business relationships, knowledge of more flexible and adaptive operating models, and improved human capital and intellectual property, which could be exploited to design new non-traditional solutions.

The example of Disney highlights the step-wise approach taken by the company for market success. Home-grown examples also demonstrate the continuous step-wise approach to innovate on product and services which over a period of time will redefine the company's core proposition. External market factors could also enable certain opportunity areas, such as entering the aerospace and defence or the electronics sector, which are increasingly getting a lot of focus from a 'Make in India' perspective.

A partial history of Disney's expansion





Impact of innovation on economic growth

The solutions suggested for each of the growth vectors could transform markets in India by expanding the market size, enabling growth, triggering innovative products and services, reconfiguring competitive dynamics, and creating new businesses. According to our estimates, new solutions across the 10 vectors have the potential (both significant leap and leapfrog) to account for almost 30-40% of the Indian economy by 2034.²⁴





All three solutions combined would cost much less to deliver than the traditional approach being followed today; thus they will not require as much investment. As per our estimates, enabling universal access to healthcare through this approach could help save 90 billion USD in capital costs in healthcare delivery infrastructure, while up to 250 billion USD could be saved in capital outlays across power generation, transmission and distribution. As for education, this new approach has the potential to save 170 billion USD over the next two decades, owing to lower upfront capital costs as compared to traditional approaches. Similarly, the adoption of branchless banking channels and cross-sector partnership models could help banks in reducing their infrastructure investments by almost 40%.²⁵

Outlining non-linear solutions across sectors³

	I. Fierce catch-up	II. Significant leap	III. Leapfrog		
	(Traditional solutions)	(New innovation-led solutions)	(New innovation-led solutions)		
<i>Healthcare</i> Raise life expectancy	 Develop healthcare infrastructure through public-private partnership models 	Shift the point of care from hospitals to home.	Shift the point of care from hospitals to home.		
Ô	 Standardise operations and para- skilling. 	 Government should be the principal payer (and not the provider) of healthcare 	 Government should be the principal payer (and not the provider) of healthcare 		
Education Increase average years of schooling	 Fast-track expansion through traditional brick and mortar channels. 	 Introduce online courses (MOOCs) for vocational education. 	 Allow for-profit models in formal education. Enable internet, satellite and 		
	 Adopt public-private partnerships for school education. 	 Allow interoperability of credits between vocational and mainstream education. 	mobile based distance learning to increase reach.		
Agriculture Improve productivity	 Increase mechanisation to improve farming efficiency. 	Forge partnerships between complementary input players for monuted access.	 Invest in research capabilities, e.g. biotechnology. 		
	 Scale ICT-based farmer education for informed decision-making. 	 Shift towards data analytics- driven precision farming. 	 Develop an integrated digital platform with pre and post-harvest modules. 		
Financial services Improve access to banking services	 Regulatory intervention to ease barriers such as KYC checks. Expansion through branchless 	 Expand reach of banking infrastructure through non- traditional partnerships (public- 	 Deploy alternative channels (mobile or online) to expand last- mile reach at lower costs. 		
	channels such as ATMs.	private, cross-sector)Implement national ID platforms such as Aadhaar.	Explore emerging infrastructure solutions such as solar ATMs.		
Retail Increase the share of organised retail	 Co-opt rather than compete with unorganised players to increase reach. 	Adopt digital channels for hyper expansion.Use technology to improve	• There are no additional leapfrog solutions envisaged in the sector as it is already witnessing		
	 Use data analytics-driven CRM to differentiate. 	customer engagement (virtual shopping, social media, gamification, etc.).	significant technology and business model innovation worldwide.		
<i>Manufacturing</i> Increase value-added manufacturing	 Remove regulatory hurdles to improve ease of doing business. 	 Increase value-added output via rapid technology transfers. 	 Shift from low-tech industries to high-tech industries. 		
	 Focus on efforts for national skill development. 	 Create a level playing field for foreign and domestic firms. 	 Increase competitiveness through advanced technologies (materials, analytics and automation). 		
Power Expand access to power	 Expand generation capacity towards non-coal options. 	 Allow private participation in power retail. 	 Invest in new technologies such as distributed power. 		
¥	 Increase distribution capacity for greater access. 	 Adopt components of smart-grid solutions to lower transmission and distribution losses. 	 Focus on advanced storage and transmission technologies. 		
Urbanisation Manage growth in urban population	 Expand affordable housing through peri-urban construction models. Make policy interventions such as 	 Explore pre-fab construction models in housing for scale- based cost advantages. 	 Housing: Shift focus from ownership to rental-based models for affordable housing. 		
	restricted road access, congestion pricing, low-cost housing loans etc.	Adopt ICT solutions in transport to optimise traffic movement.	Transport: Create an 'Integrated Public Transportation Network'.		
Digital connectivity Broaden access to internet networks	 Make regulatory changes to ease right-of-way barriers. Improve digital literacy, esp. in 	 Expand wireline broadband infrastructure (back-haul & access). 	 Explore low-cost alternatives such as cable TV networks, white space Wi-Fi and satellite broadband. 		
	rural areas. Create multi-lingual content to address India's diverse landscape.	 Develop low-cost access devices (smartphones and tablets) that support broadband services. 	Create infrastructure to host data content within India.		
Physical connectivity Reduce logistics cost	Expand national and state highway connectivity.	 Improve freight-handling capacity of rail, water and air to reduce stress on read traffic 	• Shift towards third party logistics (3PL) systems.		
Ś	 Systemic changes to lower cost or time implications of institutional checks. 		 Adopt technology-enabled solutions to improve safety standards. 		

3 These solutions were shortlisted through detailed sector analysis to understand the need, applicability and implications of innovation-driven solutions to the Indian economy, validated through interviews with about 80 corporate leaders in India and abroad, workshops with sector experts and insights from academic and economic specialists. Please refer to PwC's The Winning Leap report for details.

Growth scenarios for the Indian economy

To see how these different potential solutions could affect India's ability to achieve its national growth targets, 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. In addition to the base-case scenario, we defined three scenarios reflecting an accelerated path to growth and development for India. The scenarios emphasise different focus areas for investments and, therefore, result in different outcomes in terms of GDP growth.

Source: Oxford Economics, Future of India- The Winning Leap, PwC 2014.

Baseline scenario plots India's growth based on historical trends and current growth constraints being witnessed in the economy. 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 is slow considering India's demographic boom and weak starting position in terms of per capita GDP, which was about 1,500 USD in 2014 (real, 2010 USD at MER¹) versus 5,800 USD in China and 51,000 USD in the US in 2014.²⁶

Scenario 1

Scenario 1 focuses on investment in education, health and other dimensions related to *development of human capital*. Our analysis suggests that in this scenario, India's GDP could see a 6.6% compound annual growth rate (CAGR) between 2014 and 2034.²⁷

Scenario 2

Scenario 2 outlines the impact of rapid and significant *investment in physical infrastructure*, particularly in transportation, communication and the power sector, and envisions a 7% CAGR for GDP leading up to 2034.²⁸ Agricultural productivity also improves with expansion in irrigation coverage. In this scenario, growth is

generated through rapid accumulation of physical capital, partly enabled by improvements in human capital, as in scenario 1. This scenario envisions India significantly accelerating investments to spur growth, though without major technological transformations.

Scenario 3

Scenario 3 includes investment in both human and physical capital as per the previous two scenarios but also focuses on *investments in R&D and innovation*, a key requirement to attain 9% CAGR for GDP by 2034. Growth is pushed by enhanced labour productivity, which emerges from domestic reforms fostering innovation and an opening up of the economy to foreign participation, which encourages technological spill-over from international markets to India.

As the economy is opened up, foreign companies bring their production techniques into India and adapt them to the Indian business environment. The impact on total employment is broadly similar across all three alternative scenarios, with an additional 86 million jobs created relative to the base case over 20 years in scenario 3. This scenario forecasts the most aggressive growth and is the only scenario which will generate 240 million new jobs over next 20 years, required to meet India's demographic needs.²⁹

Speed of technological progress and need for innovation is the key differentiator between this scenario and the previous two. It assumes that productivity increases are pushed by additional investments in digital technology, technological know-how from abroad, indigenous innovation, improvements in human capital and financial sector reforms encouraging more active use of bank accounts by consumers and more efficient allocation of financial capital. The scenario expects spending on research and development (R&D) to grow significantly to attain the 9% GDP growth target, as market players seek to investigate new production methods and implement successful innovations to remain competitive.

As per our estimates, *the Indian economy would need to collectively ramp up its R&D spending from mere 0.8% of GDP in 2013 to 2.4% by 2034, similar to developed markets such as the US (2.7% in 2014).*³⁰ The figure shown on the previous page also depicts the impact achieved through a growth path focussed on innovation. An innovation-driven approach will allow India's GDP to touch almost twice the figures achievable through baseline growth, i.e. 10.4 trillion USD as compared to only 5.6 trillion USD by 2034 as per baseline. It further shows the necessity to invest in new solutions and R&D to attain an incremental impact of more than US\$3tr over other interventions in the Indian economy, focussed purely on alternative levers of growth, i.e. human capital and physical infrastructure (scenarios 1 and 2).

Key stakeholders in the innovation ecosystem

Designing the innovation ecosystem in India would require participation of three key stakeholders: the corporate sector, the entrepreneurial sector and the government. Each of these will need to play critical roles in developing and deploying innovation-driven solutions in India in the coming years.

Role of the corporate sector: Lead and implement change

India's private sector—including both established corporates and entrepreneurial companies—is more agile than the government and the social sector in terms of its ability to design new business models and to leverage new technologies. Given their experience with globalisation, private sector companies are well-positioned to learn and experiment with best practices developed by their global counterparts. International companies looking to participate in high-growth markets are also well-equipped to develop relevant solutions for the Indian market. Corporates would also need to support the entrepreneurial ecosystem in the country, making them partners on this growth path. The corporate sector could help small and medium-sized enterprises (SMEs) by engaging them as providers. By bringing them into their supply chain, the corporate sector could connect new ventures to markets. Private sector players could enable innovative solutions to develop and prosper in various ways:

Product development

New ideas would need funding to develop into prototypes and products for the market. New ventures need financial support to sustain operations during product refinement, and the epertise to customise the product for the eeds of the target segment. Established private sector players also enjoy the customer's trust, a key requirement for new non-traditional solutions to be adopted.

Idea selection

Private sector companies through their market experience and proximity to the consumer could play a role in identifying and incubating solutions that are scalable to a level that could create meaningful impact. Establish scale or reach Corporates could use their brand strength and market trust to establish key partnerships to penetrate markets and share market development costs. Introducing new radical solutions may require educating customers or undertaking high costs of infrastructure development and creating new delivery mechanisms, which could be beyond the capacity of SMEs. Corporates also have the institutional know-how to overcome barriers to accessing markets across India's states, such as cross-border taxes and different legal and regulatory requirements.

4

Price effectively

Existing companies will be better placed to use economies of scale or scope, use learnings from market experience, cross-subsidise costs or influence suppliers etc. to price solutions at an affordable level for the consumer. Entrepreneurs by themselves may not have the capacity to price products at levels required to make profits and remain competitive, especially for new solutions. The Tata Consultancy Services (TCS) Co-Innovation Network (COIN) is an example highlighting the role of the corporate sector in fostering innovation. The network comprises customers, alliance partners, venture capitalists, start-ups, academic institutions and industry groups organised to create a research and innovation ecosystem. Through COIN, TCS identifies new products, and disruptive innovations, and then supports the entrepreneurs in developing client solutions, through its own capabilities and with the help of other COIN partners. COIN has also established alliances with entrepreneurs in the US, Europe, and Asia focusing on emerging areas such as data-centre optimisation, on-demand distributed software development, and compliance-cost-reduction solutions.³¹ Other such initiatives include Mahindra Rise and Google Launchpad, which are focusing on funding innovation and mentoring start-up firms.

Role of the entrepreneurial sector: Generate ideas for change

Like established corporations, entrepreneurial companies in India will play a critical role in developing and deploying new solutions. Indeed, the large Indian companies of tomorrow will emerge from the entrepreneurial sector of today. On its own, India's corporate sector lacks the capacity to generate the 12mn jobs needed each year to absorb new entrants into India's working population. The entrepreneurial sector possesses various qualities critical for developing innovative solutions: nimbleness in operations, depth in ideas, willingness to take risks, an aptitude for fast decision-making and bold leadership. India therefore needs to cultivate entrepreneurs on a scale unprecedented in its business history. A groundswell of entrepreneurial energy in India has sparked recent, wellpublicised successes in the e-commerce sector alone, and our research suggests the potential for similar entrepreneurial growth in virtually all of India's sectors.

Role of the government: Facilitate and direct change

This growth journey will require a public-private partnership at the broadest level. The government will be required to continue to build national platforms such as improved physical connectivity as well as better digital infrastructure, which will enable a number of other sectors to progress. In addition, a key role of policymakers is to create an environment conducive to business formation: making it easy to launch and operate a business, establishing a regulatory environment that enables competitive markets to flourish, while protecting consumer interests. It will have to play the role of a facilitator, providing incentives and policy support to new technologies and businesses.

Government stakeholders have the responsibility to understand national priorities and set milestones for socioeconomic development. Accordingly, they need to create incentives for solutions to be devised in a particular direction, while fostering development of industry standards for new solutions to be designed. For example, regulatory alignment with market dynamics has been a key enabler across different successful financial inclusion models worldwide. Regulations in Kenya allowed mobile money transactions to be conducted without linking them to bank accounts, thus enabling Safaricom to offer an e-wallet solution at low registration costs that widened its reach to the unbanked population. Similarly, the regulator in China allowed the entry of non-traditional players such as technology companies to extend financial services. AliFinance, a subsidiary of Alibaba, extends credit benefits to micro-entrepreneurs. Its Taobao platform has 16 million vendors, with 90% being small microenterprises that face issues around access to finance. AliFinance extends credit to these vendors based on a scoring model developed using online trading data, analysing criteria such as revenue growth, transaction data, user ratings, usage levels and repeat buyers, among others. Such solutions need significant support from policymakers to be designed and implemented at a scale that creates positive change.

A call to arms

The likelihood of any vision becoming realised depends upon the efforts and commitment of all stakeholders. No one can guarantee that India's growth vision will come true in the future. However, owing to various factors described at the start of this paper, India does seem to have the opportunity to record unprecedented growth and create global corporate powerhouses of tomorrow. To foster the emergence of such world-class Indian players, the private sector will have to invest significantly in R&D, particularly for solutions to challenges facing similar emerging markets, where India has already established a leadership position. It will have to develop a mind-set of value growth—one that is committed to multiplying value in every way possible. Such a mind-set promotes experimental thinking and is oriented to solving customer problems in new ways.

A key action item for the government is enabling intellectual property rights (IPR) protection. India was ranked second from bottom among 30 countries examined for IPR protection, as per the 2015 GIPC Index of the US Chamber of Commerce.³² Weak IPR laws and enforcement continue to limit the ability of businesses to invest in R&D. Inadequate IPR protection could further discourage multinationals from setting up operations in India or in bringing their technology into the country.³³ To foster innovation, both home-grown and imported, and to attract international partners who bring technology and global best practices, a country must have in place robust institutional and legal mechanisms to protect IPR. This needs to be prioritised by the Indian government as part of its national growth agenda.

Overall, as per our analysis, if India can achieve a 9% per annum GDP growth trajectory, its economy would become the world's third-largest by 2034, after the US and China. By achieving such a feat, through adoption of technological and business model innovations, India could provide the world with a new sustainable model for development—one that counters development challenges within populous, democratic nations with rising aspirations of its indigenous talent and the purposeful leadership within its corporate sector and the government.

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Evolution of value creator

ASSOCHAM initiated its endeavour of value creation for Indian industry in 1920. It has in its fold more than 400 chambers and trade associations and serves more than 4,00,000 members from all over India. It has witnessed upswings as well as upheavals of the Indian economy and contributed significantly by playing a catalytic role in shaping the trade, commerce and industrial environment of the country.

Today, ASSOCHAM has emerged as the fountainhead of knowledge for the Indian industry, which is all set to redefine the dynamics of growth and development in the technology -driven cyber age of the 'knowledge-based economy'.

ASSOCHAM is seen as a forceful, proactive, forward-looking institution equipping itself to meet the aspirations of corporate India in the new world of business. It is working towards creating a conducive environment for India business to compete globally.

ASSOCHAM derives its strength from its promoter chambers and other industry/regional chambers/associations spread all over the country.

Vision

Empower Indian enterprise by inculcating knowledge that will be the catalyst of growth in the barrierless, technology -driven global market and help them upscale, align and emerge as formidable player in respective business segments.

Mission

As a representative organ of corporate India, ASSOCHAM articulates the genuine, legitimate needs and interests of its members. Its mission is to impact the policy and legislative environment so as to foster balanced economic, industrial and social development. We believe education, IT, biotechnology, health, corporate social responsibility and environment to be the critical success factors.

Members: Our strength

ASSOCHAM represents the interests of more than 4,00,000 direct and indirect members across the country. Through its heterogeneous membership, ASSOCHAM combines the entrepreneurial spirit and business acumen of owners with management skills and expertise of professionals to set itself apart as a organisation with a difference.

Currently, ASSOCHAM has more than 100 national councils covering the entire gamut of economic activities in India. It has been especially acknowledged as a significant voice of Indian industry in the field of corporate social responsibility, environment and safety, HR and labour affairs, corporate governance, IT, biotechnology, telecom, banking and finance, company law, corporate finance, economic and international affairs, mergers and acquisitions, tourism, civil aviation, infrastructure, energy and power, education, legal reforms, real estate and rural development, competency building and skill development, to mention a few.

Insight into 'new business models'

ASSOCHAM has been a significant contributory factor to the emergence of new-age Indian corporates, characterised by a new mindset and global ambition for dominating the international business. The chamber has addressed itself to the key areas like India as investment destination, achieving international competitiveness, promoting international trade, corporate strategies for enhancing stakeholder value, government policies in sustaining India's development, infrastructure development for enhancing India's competitiveness, building Indian MNCs, role of financial sector the catalyst for India's transformation.

ASSOCHAM derives its strengths from the following promoter chambers: Bombay Chamber of Commerce & Industry, Mumbai; Cochin Chambers of Commerce & Industry, Cochin: Indian Merchant's Chamber, Mumbai; The Madras Chamber of Commerce and Industry, Chennai; PHD Chamber of Commerce and Industry, New Delhi; and has over 4 lakh direct or indirect members.

Together, we can make a significant difference to the burden that our nation carries and bring in a bright, new tomorrow for our nation.

D. S. Rawat Secretary General d.s.rawat@assocham.com

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Data Classification: DC0

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PD 367 - May 2015 Innovation driven growth in India.indd Designed by Corporate Communications, India