

# CITY INSIGHTS

An introduction to the characteristics  
and opportunities of six Indian cities

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# FOREWORD

The UK and Indian Prime Ministers met in Delhi last month and set out a bold vision to strengthen the India-UK strategic partnership. This included support to urban partnerships to build smart and inclusive cities that drive shared prosperity, jobs and growth in India and the UK. By 2025, around half of India's population will live in urban areas making understanding and working with Indian cities essential.

This report provides insights into the economic, education and entrepreneurship trends of six Indian cities and captures the core of India's 'Smart City' initiative that seeks to improve urban life in these cities and is one of the strategic priorities of the Indian Prime Minister, Narendra Modi. A key element of this is international knowledge based collaborations. Combined, Ahmedabad, Bengaluru, Bhubaneswar, Chandigarh, Hyderabad and Pune, are home to 26 million people, are significant players in the Indian economic

landscape and highlight a rich mix of enterprise and rapid development.

Each city hosts British Council offices—while Bhubaneswar is serviced from Kolkata, all have a strong education base, are significant international student markets and host UK education exhibitions.

These findings also inform the British Council's annual flagship higher education conference, 'Going Global' being held in May 2017 in London and focused on '*Global cities: connecting talent, driving change*'—and will explore how universities and colleges support city-regional economies and social and civic engagement, connecting the world's cities to global knowledge and talent and addressing global challenges.

This report follows on from our overview of both the national education system, and insights into the Indian states, and concludes by highlighting the

untapped potential in these six cities to recruit international students, develop academic partnerships and engage in knowledge partnerships under the Smart City initiative.

I hope you find it useful and informative.



A handwritten signature in black ink that reads "Alan Gemmell". The signature is written in a cursive, flowing style.

**Alan Gemmell, OBE**  
Director, British Council India

# FOREWORD

This study explores a theme that resonates with the present condition in India, a fast urbanizing economy that is making a historic shift towards tertiary sector, and services industries that are, naturally and increasingly, urban in nature. For centuries, cities have been the centres of education and the crucibles of innovation and enterprise. While smart cities around the world are rediscovering the umbilical connection between urban settings and knowledge economies, there are also other umbilical connections at play.

A new industrial revolution is afoot. Quite unlike the first industrial revolution that was powered by coal and steam, this one is powered by information technology. Information and communication technologies have challenged the basic premise on which the city is built: that proximity and contiguity are necessary conditions for creativity. Technologies that enable learning across long distances do tend to replace the power of human contact with simulacra, but cities continue to be crucibles of innovation and enterprise by combining the human resources with enabling infrastructure. Technology-enabled learning is extending the gains from the first wave of modern educational reforms that transported the student

out of the classroom and into the natural, social and cultural landscape, thereby enriching her learning with the minutiae of lived experience. Information and Communication Technology (ICT) now enables the student to learn from a world that is limitless, while keeping her firmly 'grounded'.

Will India's smart cities be enabling and empowering spaces where learning, innovation and enterprise will create an economic impact? Will these combine with Digital India, a flagship scheme that forms a backbone of the Government of India's transformative agenda, to deliver the outcomes that are most in demand: livelihoods and maximization of human capability? The answers lie with the readers of this report.

This is a useful scoping study for anyone who understands the power of cities and has stakes in education and enterprise. That it is directed towards the Indian scene is mere circumstance. With both a youth bulge as well as a large number of ageing adults, the second most populous country in the world is a good subject. There is a rising demand for skill development, continuing education and extension programmes, through Massive Open Online Courses (MOOCs) as well as in-classroom. In addition to economic opportunities, this is also a fostering ground for Indo-UK partnership. The UK Government's commitment to supporting education and

innovation in India has been superbly delivered by the British Council for many decades. With its new commitment to supporting the development of smart cities, there is an unprecedented potential for partnership between governments, institutions, businesses and industries. And this study will set up the dialogues that precede partnership.



A handwritten signature in black ink that reads "Jagan Shah".

**Jagan Shah**

Director, National Institute of Urban Affairs, New Delhi

# EXECUTIVE SUMMARY

This report provides an overview of the higher education and economic landscape of six Class 1<sup>1</sup> Indian cities—Ahmedabad, Bengaluru, Bhubaneswar, Chandigarh, Hyderabad and Pune. These cities have a legacy of prominent education institutes and a focus on economic development which, if catalysed appropriately, could be beneficial to both Indian and UK partners.

The report outlines three major focus areas of investment and bilateral knowledge sharing to include direct engagement with state and private universities, the burgeoning enterprise, innovation and the information technology (IT) sector and the new Smart Cities Mission. The three components have their own benefits.

## **Engagement with state and private universities:**

India has a history of student migration for education to the UK. While this report finds that the interest to study in the UK has declined, there is still a strong community of students who are interested in both undergraduate and postgraduate studies. In addition, UK institutes could engage with a local focus at the city and university level to bring systemic reforms, and develop institutional partnerships in mobility, research and entrepreneurship.

## **Engaging with enterprise, innovation and IT sector:**

The six cities lie on different points on a scale of enterprise, innovation and IT sector development. Cities like Bengaluru, Pune and Hyderabad have focused on the IT industry for over two decades and built a formidable reputation as IT hubs across the globe, whereas Bhubaneswar, Chandigarh and Ahmedabad are at a more nascent stage. Bengaluru is start-up capital of India with Ahmedabad and Hyderabad following the trend. All the cities offer strong possibilities



to engage with start-up and incubation centres housed in the city universities. Recently returned UK graduates may also find job opportunities in these incubation centres.

### Engagement with the Smart Cities Mission:

This report briefly explains the SCM as a new project undertaken by the Indian

state to create state-of-the-art and liveable cities. Four of the six cities - Ahmedabad, Bhubaneswar, Chandigarh, and Pune, fall under the mission. These cities have a strong municipal political will to create change, which is supported partly by state funding. UK institutes could engage with the SCM as knowledge partners and

consultants or as investment partners to help create more economically viable cities through creation of value for capital flow.

	Ahmedabad	Bengaluru	Bhubaneswar	Chandigarh	Hyderabad	Pune
Region	West	South	East	North	South	West
State	Gujarat	Karnataka	Odisha	Union Territory**	Telangana	Maharashtra
Population (in million)	5.6	8.4	1	1	6.7	3.1
Size (sq. km)	466	709	146	114	650	244
State Capital	No	Yes	Yes	Yes*	Yes*	No
Smart Cities Mission	Yes	No	Yes	Yes	No	Yes
IT Sector	Mid-Range	Strong	Strong	Mid-Range	Strong	Strong
Enterprise & Innovation	Strong	Strong	Strong	Mid-Range	Strong	Strong
Education Sector	Strong	Strong	Mid-Range	Strong	Strong	Strong

\*Capital to more than 1 state

\*\*No state government, under the central government of India

1 According to the Indian Census these are cities with a population of 1,000,000 or more: [http://censusindia.gov.in/2011-prov-results/paper2/data\\_files/India2/1.%20Data%20Highlight.pdf](http://censusindia.gov.in/2011-prov-results/paper2/data_files/India2/1.%20Data%20Highlight.pdf)





# AHMEDABAD

Ahmedabad is the largest city in the west Indian state of Gujarat and an important economic and industrial hub in India. With a history that dates back to the 15th century, the city has been nominated by the Government of India as a UNESCO World Heritage City. Ahmedabad is 466 sq. km with a population of just under six million according to the 2011 census. Ahmedabad has been identified as one of the five upcoming start-up hubs by National Association of Software and Service Companies (NASSCOM) Start-up Landscape Report 2014. With several prominent development organisations and incubators, along with elite academic institutions and venture capital initiatives, the city is definitely a potential destination for the innovative start-ups.

## Economic and Employment Overview

The state of Gujarat is India’s largest producer of cotton.<sup>1</sup> This, in addition to the large cotton production in the neighbouring states of Madhya Pradesh and Rajasthan, has allowed the development of a large, agro-based cotton industry focussed on textile mills. This is aided by a number of new privately developed ports along the coast of Gujarat and the Indian Textile Industries Research Association in the city. However, after the demand of cotton cloth worldwide declined, the economy of Ahmedabad had to reinvent itself with other industries. Foremost among them is the diamond polishing industry and pharmaceuticals. Zydus Cadila and Torrent Pharmaceuticals—two of India’s largest pharmaceutical companies are based out of the city. After the discovery of petroleum off the coast of Gujarat, Ahmedabad has also become a centre of petrochemical goods, research and development.

Ahmedabad has traditionally been an entrepreneurial city

by virtue of the nature of the Gujarati businessman and the economy of Ahmedabad. As this spirit has created jobs within the city, it is important to note that Ahmedabad, more than the other cities in this report, have seen job creation grow, not solely because of large corporations and migrant populations, but also because

of the inherent temperament of the city. Although a significant portion of entrepreneurship is in the informal sector, the formal sector gross domestic product of Ahmedabad was estimated at USD 119 billion (GBP 15.2 billion) in 2011.<sup>2</sup> The Reserve Bank of India even ranked Ahmedabad as the seventh largest deposit centre

City	Ahmedabad, Gujarat
Population (urban region)	5,577,940
Special Features	<ul style="list-style-type: none"> <li>Entrepreneurial ecosystem and upcoming start-up hub</li> <li>Five new innovation centres and 12 incubation centres</li> <li>Education hub with several reputed national, state and private higher education institutions</li> <li>Pharmaceutical, petrochemical and textile industry</li> <li>Smart City, slum redevelopment and integrated platform for pan-city mobility</li> </ul>
Opportunities	<ul style="list-style-type: none"> <li>UK partnership sought to set up and run an autonomous Biotechnology University</li> <li>Collaboration with A-League consortium</li> <li>Emerging undergraduate international student market</li> <li>English language teaching</li> <li>Urban and transport planning</li> </ul>

and seventh largest credit centre nationwide as of June 2012.<sup>3</sup> The city's employee headcount has more than doubled to about 130,000 in the last five years.

The city of Ahmedabad also has a robust urban planning sector as part of its legacy from the Bombay Town Planning Act, which has developed into Town Planning Schemes (TPS) to redevelop the city, allowing Ahmedabad to remain a dense, compact city unlike the sprawl created by other neo-liberal economic centres.

### Higher Education Landscape

The city of Ahmedabad has strong business capabilities. Over time, the small family-owned businesses have grown to necessitate a need for a new managerial class. This need is being fulfilled by the numerous schools of business administration that have grown in the city, learning from the famed Indian Institute of Management in Ahmedabad (IIMA). This has been aided by institutions such as the Entrepreneurship Development Institute (EDI) of India and the International Centre for Entrepreneurship and Career Development (ICECD).

The city is an educational hub and hosts some of the finest national institutes of repute like the National Institute of Design (NID), Indian Institute of Technology Gandhinagar (IITG), Gujarat National Law University (GNLU), Mudra Institute of

Communications Ahmedabad (MICA), National Institute of Fashion Technology (NIFT) and the Centre for Environmental Planning and Technology (CEPT). A large number of colleges in the city are affiliated to the Gujarat University and offer courses in medicine, engineering, social sciences, science, commerce, law and management. Other public, private and deemed universities in Ahmedabad are Gujarat Vidyapeeth, Ahmedabad University, Nirma University of Science & Technology, Dhirubhai Ambani Institute of Information Technology (DAIIT) and Dr. Babasaheb Ambedkar Open University. Some of the private universities are keen to develop cross disciplinary programmes based on Liberal Arts and Sciences. The city has witnessed a strong collaborative relationship between the industry and the private players.

Many academic and scientific institutions of national repute were set up in Ahmedabad by Vikram Sarabhai, founder of the Indian space programme. The most important of these are the Physical Research Laboratory and the Space Applications Centre, which fall under the Ahmedabad centre of the Indian Space Research Organisation.

Inspired by the 'One Campus' model in Silicon Valley, some of the Ahmedabad institutions— IIMA, NID, MICA, GNLU, CEPT, DAIIT and Pandit Deendayal Upadhyay Petroleum University (PDPU) formed an informal social collaborative platform—'A-League', conceived by IIMA's Centre for Innovation, Incubation and Entrepreneurship (CIIE), to encourage entrepreneurship and innovation among students and offer them the best possible learning opportunities at social, cultural and academic levels.

For example IIMA and NID students together worked on an Indian Railways project and jointly proposed management and design solutions. DAIIT and IIMA students jointly worked to create an employment app and web portal ([upcv.co](http://upcv.co)) for employers and job seekers to meet on the same platform. The same national institutions have some of the strongest academic partnerships internationally, including the UK. UK universities

could do well by connecting with A-League to explore student and faculty exchanges and work on collaborative projects.

### International Education Trends

The international education market in Ahmedabad is primarily driven by educational consultants. A decade ago, the number of students aspiring to the UK was on the rise due to immigration and settlement opportunities (international graduate scheme and post-study work scheme).

Post the withdrawal of the PSW in 2012, there has been a decline in the number of visitors to the British Council's education exhibitions from 500

plus students in 2011 to 300 plus students in 2015. Educational consultants reveal that Ahmedabad has traditionally been an immigration market, so the trend is towards other competitor countries offering post study work and settlement schemes. US has been a favourite study destination, followed by countries offering softer immigration policies, namely Canada, Australia and New Zealand, which have seen an upward trend on the number of applications, with UK dropping to position five or six. The city has also witnessed low level of English proficiency (IELTS low bands), hence the preference is often towards institutions that offer a low English proficiency band.

The city is predominantly a postgraduate market with majority of the enquiries coming from the age group of 20–27 years. However, an interesting trend at the agents' exhibition held in 2015 was that over 55 per cent of the enquiries came from the age group of 16–20, which demonstrated an emergence of the undergraduate market. This is probably due to proliferation and the establishment of excellent schools offering the IB curriculum and quality 'A' level education in the UK at the undergraduate level.

With regard to demographics, there is predominance in the enquiries of male students over the female. A clear ratio of 1:2



is observed in this case. As far as the popular subjects are concerned, there is an observed dominance across business and management, MBA and Art and Design subjects. Other popular trending subjects are Media, Engineering, IT, Computing and Law. Ahmedabad's finest design and management institutes in the country attract the best students from across India. The stiff competition for admission to these top institutes compels students to apply in other cities within the country and overseas as alternatives.

### **Enterprise in and around Ahmedabad**

The Gujarat state government has a new start-up policy backed by funding to promote entrepreneurship. The knowledge corridor—a stretch on the Gandhinagar-Koba highway

boasts of nearly 10 HEIs of national repute, providing the robust infrastructure and intellectual leadership required to support implementation of the policy. Early in 2016, the President of India declared five of these HEIs—IITG, Gujarat Technological University (GTU), BV Patel PERD Centre, Vallabh Vidyanagar University and NIFT as 'Innovation Clubs'.

The start-up ecosystem is also shaping up with about 12 incubators, which include the Centre for Innovation, Incubation and Entrepreneurship at IIM Ahmedabad, National Design Business Incubator at NID, VentureStudio—Centre for Innovative Business Design at Ahmedabad University, Innovation and Entrepreneurship Centre at IIT Gandhinagar, Design Incubator EDC at MICA, Entrepreneurship and Incubation (DCEI) at DAICT,

NirmaLabs—NIRMA Education & Research Foundation and IDEA—Lab at Nirma University, Innovation Incubation Centre at PDPU, Centre for Entrepreneurship Development at EDI, B.V. Patel PERD, National Innovation Foundation and iCreate.

Apart from these, there is a Spark-up Idea Fund that encourages student innovations, a Grooming Programme for entrepreneurs to remedy the so-called 'last mile hiccup' which often kills good ideas, and incubation programmes to take ideas to the proof of concept stage.

### **Ahmedabad Smart City**

The city of Ahmedabad was placed sixth in the Smart Cities Mission (SCM) of the original 20 cities that were chosen. The two primary focus areas of the SCM in the city are a) an area-based slum



redevelopment project in Wadij and b) an integrated platform for mobility at the pan-city. Given that the city was one of the few cities in India where the BRTS system has worked, this will be a welcome move to digitise the systems, helping to further ease the flow of traffic.

The city, therefore, appears to develop itself both in terms of transport planning and information and communication technology (ICT), which could be indicative of future trends of the city.

### City Futures

There are 60,000 non-resident Gujarati's in UK. With the Make in India programme of Prime Minister, Narendra Modi (who hails from Gujarat), a significant number of these Gujarati Persons on Indian Origin (PIO) have begun to reinvest in the city, giving it a developmental boost. As this trend has begun only two years ago, it is as yet too early to predict where this growth spurt will lead.

Ahmedabad will also benefit greatly from the Delhi Mumbai Industrial Corridor (DMIC) that is being planned between the

financial and political capitals of the country. Not only will its urban planning industry grow because of the need of development of new cities, but its diminishing trade will get a boost as well thanks to infrastructure like the new Dholera Port City that connects to Ahmedabad by a new 16-lane highway. In addition, the DMIC will spawn new industrial clusters that Ahmedabad is poised to capitalise on.

The city is also seen as a centre of innovation with new research and development centres being set up. While these tended to be purely industrial, for e.g. the pharmaceutical industry, these are expanding to the educational institutions facilitated by the standard set by Gujarat Institute of Development Research, Loyola Centre for Research and Development and the CEPT Research and Development Foundation. Of major significance among these is the Indian Railways, once known for conducting most in-house R&D, who have now set up an Industrial Design Centre at the National Institute of Design, Ahmedabad. The city is likely to keep growing as a centre of innovation in the future.

Gujarat has 175 Biotechnology and Life Sciences companies with major sub-sectors such as BioPharma (46 per cent), BioAgri (25 per cent) and BioServices (16 per cent). The Department of Science and Technology has plans to set up a Biotechnology Knowledge Complex (BKC) and an autonomous university to make the quantum leap to strengthen innovation, research and commercialisation and is looking for support from a reputed international university.

1 <http://indianexpress.com/article/cities/ahmedabad/gujarat-top-cotton-producing-state-harvests-108-lakh-bales/>

2 "Know the 10 most developed Indian cities based on GDP". IndiaTVNews. 9 January 2014. Retrieved 10 June 2016; Nicole Bippin. "Ahmedabad- GDP of \$119 billion". The Richest. Retrieved 10 June 2016

3 Top 10 Indian Cities and Their Major Industrial Activities". Listicle. 3 May 2014. Retrieved 27 May 2014.



# BENGALURU

**Bengaluru is the capital city of the state of Karnataka and known as the Silicon Valley of India due to the strong focus on information technology, electronics and engineering. Its legacy of being an early player in the global technology-based economy has advantages in the budding start-up ecology of India, prompting several companies to have grown as start-ups in this city. Bengaluru has several educational and research institutes, including some of India’s finest within the boundaries of the city. Indian Institute of Science (IISc) is ranked among top 15, in BRICS & Emerging Economies University Rankings 2017.**

Bengaluru is the fifth most populous city in the country with a population of 8.5 million people. The city is over 700 sq. km and is governed by Bruhat Bengaluru Mahanagara Pallika, the city level municipal body. The city limits and population grew substantially in 2007 when the original city limits were merged with eight surrounding city and town municipal councils and 110 surrounding villages, creating added demand on the city’s education infrastructure.

The city produces a quarter of India’s aircraft and spacecraft. There are numerous aerospace companies and Public Sector Units (PSUs) engaged in manufacturing, design and development and Maintenance, Repair Overhaul (MRO) in the city. The headquarters and laboratories of Hindustan Aeronautics Limited is located in Bengaluru. Major defence establishments like Aeronautical Development Agency (ADA), Aeronautical Development

Establishment (ADE) and National Aerospace Laboratories (NAL) also operate from Bengaluru. The state government has already established an aerospace Special Economic Zone (SEZ) at Devanahalli, close to the new Bengaluru International Airport.<sup>2</sup>

In 1972, the Government of India set up the Space Commission and Department of Space (DOS). India’s premier space research organisation, the Indian Space Research Organization (ISRO) was

## Economic and Employment Overview

Bengaluru has been a centre of education since the 19<sup>th</sup> century and has received a significant amount of public sector investment from heavy industrial manufacturing, including aerospace and defence.

Heavy industries in Bengaluru include Bharat Electronics Limited, Bharat Heavy Electricals Limited (BHEL), Indian Telephone Industries (ITI), Bharat Earth Movers Limited (BEML), HMT (formerly Hindustan Machine Tools), Hindustan Motors (HM) and ABB Group.

## Summary

City	Bengaluru, Karnataka
Population (urban region)	8,443,675
Special Features	Research and development hub Aerospace, defence and space research Largest hub of semiconductor design–Silicon Valley of India (IT and ITes) Start-up capital <sup>1</sup> International education market
Opportunities	State-led internationalisation of HE Growing international student market Entrepreneurship ecosystem–23 incubators/accelerators Collaborative research in STEM

created under the DOS and headquartered in Bengaluru. The main objective of ISRO includes development of satellites and launch vehicles. Aryabhata, India's first satellite, was developed and successfully launched by ISRO. Since then, the organisation has successfully launched numerous other satellites, such as Bhaskara, Rohini, APPLE, and the INSAT series, and successfully deployed PSLVs and GSLVs. ISRO also heads India's ambitious moon and Mars programme.

Liberalisation in the 1990s had a significant impact on the city. It marked the beginning of a sustained growth in global multi-national corporations, setting up significant research and development labs and business process outsourcing (BPO) centres across the world to service their global

business. Bengaluru was an early beneficiary of this trend with Texas Instruments being among the first to establish a base in Bengaluru. Today Bengaluru is home to a significant number of global businesses and their R&D activity, such as GE, Texas Instruments, Intel, AMD, SAP, CISCO, Microsoft, Motorola, Nokia, Mercedes Benz and Huawei and also UK companies like Rolls Royce, Tesco, HSBC, Barclays and the Royal Bank of Scotland.<sup>3</sup> Bengaluru is also becoming a destination for the automotive industry. Toyota has a manufacturing plant in Bengaluru, while Daihatsu is planning on building a factory soon. Hindustan Motors also has a manufacturing facility in Bengaluru, as does Volvo Trucks. Other new innovation centres opened in Bengaluru are Airbus' BizLab, which aims to bring

together start-ups and Airbus' internal entrepreneurs, and Visa, whose new technology centre in Bengaluru would house 1000 developers, focused on developing next generation payment solutions.<sup>4</sup>

Bengaluru, more than other Indian cities, was primed to reap the windfalls of the dotcom boom because of its highly educated technically-trained population. Bengaluru's IT industry has been able to attract highly skilled people who were part of the 'knowledge diaspora' from different parts of the globe, especially United States. Studies have found evidence for reverse brain drain to Bengaluru to take advantage of new growth and employment opportunities. The city offers returning Indians career opportunities and familiar western-style work environments in technology, business and industrial parks, research institutions and multinational firms.





The state government has also adopted various policies to make Bengaluru attractive for venture investors and early-seed investors. The state government operates Bengaluru Bio-innovation Centre (BBC), which is an incubation centre catering to the needs of start-ups in the broad areas of life sciences. The centre is located in the vicinity of Institute of Biotechnology and Applied Biotechnology and Centre for Human Genetics and has the capacity to house over 20 SMEs with access to high tech instrumentation facility.<sup>5</sup>

High skill workers who were interviewed for a study to understand trends in reverse migration had cited a combination of pull and push factors and personal and professional reasons that precipitated their decision to return. These factors were exciting work, prospects for advancement and making a difference, a desire to return to their roots, hope for a lifestyle that allowed more time with family, and salaries that were commensurate with those in the United States in terms of purchasing power.<sup>6</sup> It is also interesting to note that around 95 per cent of international companies in software technology parks (STPs) in Bengaluru were

run by Indians who had lived and worked countries like the United States.<sup>7</sup>

### Higher Education Landscape

Bengaluru houses a number of premium institutions and is a strong R&D hub. It hosts the Indian Institute of Science (IISc), which consistently ranks at number one among Indian institutions in India in the THE and QS Rankings. Other prominent institutes are the Indian Institute of Management Bangalore (IIM-B), National Law School of India University (NLSU), Indian Statistical Institute (ISI), Indian Institute of Information Technology (IIIT), National Centre for Biological Sciences (NCBS), National Institute of Advanced Studies (NIAS), Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Raman Research Institute, Indian Institute of Astrophysics, National Institute of Mental Health and Health Sciences, Rajiv Gandhi University of Health Sciences, University of Agricultural Sciences.

The state of Karnataka's early move to privatise engineering education saw an early growth in engineering colleges. Availability of talent was a strong driver for new global overseas businesses to set up business in Bengaluru and recruit batches of 200–300 talented young engineers to help establish the early R&D and BPO centres.

Bengaluru's strategic history played a big role in its development as India's strongest R&D hub. It gained ground for significant private investment in education, including by Jamsetji Nusserwanji Tata (patriarch of one of India's largest companies today—the Tata Group), who conceived of IISc in 1898, and which is still considered India's top university. The impact of these early innovations was felt throughout the century and Bengaluru continues to be at the cutting edge of India's academic and corporate frontier. Just as Bengaluru provides a great environment for new entrepreneurs, it is also the perfect environment for new academic institutions across disciplines. Bengaluru not only leads the way in science, but is a leader in business education, as well as law, engineering and increasingly art and design.

The institutions and universities in Bengaluru have a strong track record for international collaboration with universities in the UK and across the world. The sciences are strongly represented through partnerships by University of Cambridge and University of Exeter with the Indian Institute of Science (IISc), National Centre for Biological Sciences and InSTEM. University of Exeter also has a strong research partnership with the IIM-B. The Srishti Institute of Art and Design, the National Institute

of Design (NID) and the National Institute of Fashion Technology (NIFT) also have strong UK partnerships with Bournemouth University and Nottingham Trent University. In engineering, University of Swansea has a long standing partnership with PES University. The India Office of the Royal Society of Chemistry (RSC), opened in 2010, is based in Bengaluru.

The State of Karnataka has 13,241 foreign students, which is 38 per cent of the total number of foreign students in India.<sup>8</sup> The Government of Karnataka, in 2016, published a new Internationalising Higher Education policy, encouraging its state and private universities to further increase their international reach. So while Bengaluru is already an international city for education, there is clearly even more room for new collaborations.

### International Education Trends

Bengaluru is a significant market for international education. Its academic success is supported by a strong school sector, many of whom provide access to international certifications, like Cambridge Examinations and the International Baccalaureate. In the last five years, the number of Indian students for a Cambridge IGCSE and International A level qualification in Bengaluru increased nearly by 24 per

cent. The demand for study places in Bengaluru's premium institutions is very high, but as not everyone gets a place, there is high outflow of students from Bengaluru to universities abroad. Bengaluru was pre-dominantly a post-graduate market, but the trend is changing due to an increase in international schools. In the last five years, the number of Indian students appearing for a Cambridge IGCSE and International A level qualification in Bengaluru increased nearly by 24 per cent in Karnataka alone.<sup>9</sup>

Bengaluru ranked third in sending students to the US for STEM related subjects, as per the report<sup>10</sup> by Brookings US. After popular subjects like engineering and science, law comes next, mainly because of the number of recognised law institutions in the city, including NSLU, which is of national importance.

The United States remains the priority destination for students from Bengaluru, besides Australia and UK. Given that Brookings reports that students from Bengaluru ranked 14th in terms of volume migrating to the US for education, there is a large pool that can be utilised, if reached effectively.<sup>11</sup> In 2014, 8,835 F1 visas were issued in Bengaluru alone. On the contrary, only 655 applications were received from Bengaluru for a UK visa in 2016, as per recent data from the UK visa office.

### City Futures

The significance of IT in Bengaluru's economy has earned it the popular name of 'Silicon Valley of India'. Similar to the original Silicon Valley, Bengaluru experienced a maturing of the industry and developed start-up ventures. Today it has earned a new name as the start-up capital of India. Around 26 per cent of the start-ups, which are focused on eCommerce, hyperlocal eCommerce, consumer services and analytics, are concentrated in Bengaluru.

With 23 incubators/accelerators and major venture capital like Accel Partners, Sequoia Capital, Nexus Venture Partners, Inventus Capital, IDG Ventures, Ascent Capital, Bessemer Venture Partner, Intel Capital, Kalaari Capital, Matrix Partners, Mayfield Fund, NEA, Norwest Venture Partners and many more, Bengaluru already hosts start-ups like Myntra, Flipkart, BigBasket, ZoomCar, HackerEarth, among others. Due to this climate, successful start-ups like FreeCharge, Ola, Quikr and InMobi had shifted their base to Bengaluru in search of good talent and low real estate cost. However, talent in Bengaluru is more expensive than Pune, Hyderabad and Chennai on an average, while the cost of living is arguably a little cheaper.

With India having become a BPO and KPO capital of the world, and

Bengaluru arguably the hallmark of the Indian IT industry, the city seems ready to continue on its path of becoming a global leader in its own right.

1 <http://www.citylab.com/tech/2015/07/the-worlds-leading-startup-cities/399623/>

2 <http://www.hindustantimes.com/business/siddaramaiah-woos-us-aerospace-firms-to-make-in-karnataka/story-qKwW4JXPoayerVqZiaBqJ.html>

3 Economic Survey of Karnataka: 2015-16(2016), Department of Planning, Programme Monitoring and Statistics, Government of Karnataka

4 Digital Dynasties: The Rise of Innovation Empires Worldwide: Update on Original Research "The Innovation Game: Why and How Businesses are Investing in Innovation Centers (2016), Capgemini

5 <http://www.bioinnovationcentre.com/>

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# BHUBANESWAR

**Bhubaneswar is the capital city of Odisha and one of the centres of political and economic power in eastern India. The historical city has recently gained much recognition after it was ranked the highest of all the competing cities in the Government of India’s flagship programme–Smart Cities Mission.**

The city, which has an area of 146 sq. km, had a population of under one million in 2015. Bhubaneswar is home to over 70 protected monuments and is a popular tourist destination with under two million tourists ever year. Urban planning, through the German architect Otto Koenigsberger, sought to marry the historic portions of the city with the idea of a more planned and organised city in the late 1940s. The city has been one of the fastest growing cities in India, with a strong focus on IT and manufacturing.

Bhubaneswar is a little over a hundred kilometres from the Paradip Port, the largest port in Odisha. This proximity could be leveraged by the city, especially with the proposed expansion of the port, to increase the trade and commerce of the region.

The city of Bhubaneswar is administered by the Bhubaneswar Municipal Corporation (BMC), which consists of elected representatives of the citizens and appointed bureaucrats. The jurisdiction of the BMC is 146 sq. km, and since the initial stages of planning in the mid-1950s, the city has grown considerably. To

constructively engage with the city expansion, the Bhubaneswar Development Authority (BDA) was created in 1983. The BDA oversaw a total area of 1,110 sq. km, including the surrounding villages, to ensure a more uniform development process for the rural and peri-urban areas.<sup>1</sup>

## Economic and Employment Overview

Bhubaneswar was a late entrant into the rapid economic development stage of the country, relying primarily on its role as the ‘Temple City of India’ to become a base of religious

tourism. Bhubaneswar has been traditionally home to handicrafts industry, including silver filigree work, appliqué work, stone and wood carvings and *patta*<sup>2</sup> painting, which significantly contributes to the city’s tourism related economy.

In spite of a fledgling economy dominated by retail and small and medium scale industries, Bhubaneswar has been a fast bloomer with Software Technology Parks of India (STPI), estimating a growth from nil 20 years ago to a turnover of GBP 180 million today. During the

## Summary

City	Bhubaneswar, Odisha
Population (urban region)	843,402
Special Features	Private sector growth in higher education Proactive governance and 3rd best place to do business in India Tourism and heritage management Mobility and traffic planning
Opportunities	Partnerships with private universities for business incubators Short term vocational training English language teaching

Government of India's Make in India flagship programme, MoUs with companies from the non-mineral sectors amounted to GBP 7,100 million and drew an investment of GBP 4,170 million.

Due to a robust governance structure, Bhubaneswar has been ranked 3<sup>rd</sup> best place to 'do business in India' by the World Bank in 2013. After India's economic liberalisation in 1991, Bhubaneswar received multiple investments in higher education, telecommunications and IT. In 2011, according to a study by Associated Chambers of Commerce and Industry of India, Bhubaneswar had the highest rate of employment growth among 17 tier II cities in India. Cushman and Wakefield, ranked it among the top ten emerging cities in India, taking into consideration factors like demographics, physical, social and real estate infrastructure, current level and scope of economic activities and government support.

### Higher Education Landscape

The city has emerged as an education hub in eastern India after Kolkata. Oldest and one of the premier higher education institutes is the Utkal University, started in 1939. Though the Gross Enrolment Ratio (GER) of the State is 17.5 (below national average of 23.6),<sup>3</sup> the city of Bhubaneswar has seen steady expansion of public and private higher education institutes, and

niche national research over last two decades.

The city has around 140 higher education institutes, 85 per cent of which are self-financed. The city has eight universities, 65 engineering, technology and management, medicine and pharmaceutical colleges/institutes, 55 general degree colleges and 10 niche national research institutes. Bhubaneswar is emerging as a hub for technical and management education in East India.

The prominent central government institutes are the Indian Institute of Technology–Bhubaneswar (IIT-BBS), National Institute of Science Education and Research (NISER), Institute of Life Sciences (ILS), Institute of Physics (IoP) and Institute of Minerals and Materials Technology (IMMT). The state government institutes are Utkal University, Utkal University of Culture, Orissa University of Agriculture and Technology (OUAT), International Institute of Information Technology (IIIT) and College of Engineering and Technology (CET). The private universities are Kalinga Institute of Industrial Technology (KIIT), Centurian University, Siksha O Anusandhan University, Xavier University and CV Raman College of Engineering.

While universities run by the central government are free to enter international collaborations, state public universities seem

less active in this area. Utkal University science departments have research collaboration with institutes in US, Japan and Australia. Private HEIs have several international partnerships, faculty and student exchange programmes, joint degree programmes and regularly organise international conferences and seminars. For example, KIIT University has academic partnerships with more than 80 world class HEIs across the globe in biotechnology, law and engineering. The institute is further looking for possibility of joint degrees with reputed foreign institutes. KIIT also draws some international students to the city.

National institute like IIT Bhubaneswar has research collaborations with UK universities through bilateral programmes like UK India Education and Research Initiative (UKIERI), and has signed MoUs with institutes in the US, Canada and Australia. As part of MHRD's Global Initiative for Academic Networks (GIAN), faculty from UK and other countries have been visiting and lecturing in this institute. IIT Bhubaneswar is keen to develop new partnerships with research-focused foreign HEIs, particularly in the area of climate science, materials, manufacturing and energy. IIT Bhubaneswar has set up a Design Innovation Centre (DIC) with the College of Engineering (CET) Bhubaneswar, Ravenshaw University and couple of other institutes nearby.<sup>4</sup>



Bhubaneswar, over the last two decades, has witnessed a significant surge in private education institutes that are self-financed and cater mainly to engineering, technology, management and medicine. One of the highlights among these is the Centurian University, which is widely recognised for its vocational courses imparting skills training, while engineering, biotechnology, pharmaceuticals, dentistry, nursing and medical sciences are popular in KIIT, Siksha O Anusandhan University, and management in Xavier University. Very recently, the Odisha State Assembly has sanctioned another new private university, Birla Global University, in the city.

### International Education Trends

With emergence of private institutes, government institutes are also being challenged to maintain their reputation. Private universities have been flexible in providing innovative curriculum, with focus on skill development, and their interface with the industry has been a major success parameter in drawing students.

In Bhubaneswar, the proportion of students opting for higher studies abroad is low in comparison to those entering the job market, but is second only to Kolkata in East India. British Council organised annual agents exhibition in

Bhubaneswar, which attracted an average of 360 visitors per event.

Data from one of the international education agents indicate that each year, around 30 students have been going to the UK from Bhubaneswar in recent years. This number used to be higher, but has gone down in the last few years, since PSW was retracted. Besides UK, the other popular destinations for students are USA, Australia, New Zealand and Canada. It is a post graduate focused market, with students going to study mostly engineering, management, hospitality and law.

### Bhubaneswar Smart City

Bhubaneswar emerged as the highest ranking city in the SCM for a variety of reasons. Through a participative process that included the voices of technocrats, administrators and the citizenry, the Bhubaneswar SCM proposal has elected to undertake immediate steps to improve the mobility options in the city, as well as focus on enhancing the Bhubaneswar Town Centre District. The area-based plan in the town centre will focus on improving mobility options, while simultaneously working on the physical and social development of the area. This component will include repairing streets and creating special lanes for pedestrians, motorised and non-motorised forms of transportation, while also

focusing on solar energy, water recycling plants and integrated management of water, in addition to slum redevelopment, public art and health care.<sup>5</sup>

### City Futures

According to a study conducted by ASSOCHAM, Bhubaneswar has been ranked among the top tier cities in terms of employment opportunities.<sup>6</sup> Dominated mainly by the mining and mineral industry due to its geographical location in East India, and having recently become a regional education hub, Bhubaneswar was benefitted from the availability of human capital at the time of the 1991 economic liberalisation. Today, Bhubaneswar is the only tier II city in the country to host the top five Indian IT companies—Infosys, Wipro, Tata Consultancy Services, Tech Mahindra and Mindtree.<sup>7</sup>

Bhubaneswar is touted as a city with immense potential to join the big six cities of India (Bengaluru, New Delhi, Mumbai, Hyderabad, Pune and Chennai) as a major hub for entrepreneurial activity.<sup>8</sup> Some key factors that make Bhubaneswar a start-up paradise are its proximity to educational institutes and a research environment, comparatively lower operational cost, exposure to the global markets and government support. The government fostered growth by developing of IT parks such as Infocity-1, Infovalley, STPI-Bhubaneswar

and JSS STP. The city is being promoted as an Information Technology Investment Region (ITIR) by the local government.

The development of INR 20 billion (GBP 233 million) Infovalley project is significant as the state's new ICT policy aims to achieve employment generation for 60,000 IT (information technology) professionals and a turnover (including exports of software and IT services and Electronic System Design Manufacturing, domestic consumption and training) of USD 4 billion (GBP 3.2 billion) by 2020.<sup>9</sup>

Private education institutes are key in this development. KIIT TBI (Technology Business

Incubator), for example, has attracted significant support from government bodies like National Science and Technology Entrepreneurship Development Board (NSTEDB)–Department of Science and Technology (DST), Biotechnology Industry Research Assistance Council–Department of Biotechnology (BIRAC–DBT) for technology incubation and entrepreneurship nurturing. It started with biotech in 2008 and slowly diversified its portfolio in ICT, social enterprise and CSR–digital health. Multiple incubatees have matured to exit as revenue generating companies. The ecosystem at KIIT, along with KISS targets 40 incubatees in its newly bagged social enterprise fund from DFID. In addition, their beta customer support (through CSR

funds) for their incubatees has a wide network with all the TBIs of the country and international links with AABI (Asia Pacific), European UKBI and US NBIA.

Besides KIIT, Centurian University and Xavier Institute of Management Bhubaneswar have entrepreneurship development cells with large Indian industries like Tata Steel, NALCO, JINDAL Group to support HEIs in setting up entrepreneurship as part of their CSR activity.





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# CHANDIGARH

The city of Chandigarh was established in 1948 as a union territory and capital city for the states of Punjab and Haryana. Chandigarh was envisioned as the model of modern India—planned, orderly and equipped to service the future. The city planning ensured that economic activity and environmental security could co-exist to create an urban centre that was liveable and sustainable. This city has ensured significant space for education, business and innovation as it houses some of the strongest educational institutions in the region and zones reserved for information technology.

The city is currently a political hub and is the capital for two states—Punjab and Haryana. It houses the government and administrative institutions for the city itself and the two states. Given its history of urban planning and political significance, Chandigarh has a strong core of infrastructure and these early investment dividends are paying off. The city has consistently performed well economically, is well placed on the nation’s Human Development Index<sup>1</sup> and has been selected as one of the cities in the Smart Cities Mission. Chandigarh was recently recognised as one of the cleanest cities in India.<sup>2</sup>

The city was a political and planning experiment, undertaken by Nehru and Le Corbusier, and it is this strong foundation of structure and institutional power that makes Chandigarh an interesting and safe site of investment. As a Union Territory, Chandigarh is not under the administrative control of any one state (i.e. Haryana or Punjab) but is under the direct administration of the Central Government of India. The city also has a municipal body that engages with civic administration at the

city level. The city houses the legislative bodies for the states of Haryana and Punjab. The Union Territory of Chandigarh has been ranked in the top three states in terms of per capita income, thus allowing for greater income for expenditure.<sup>3</sup>

The city has an area of 114

square kilometres and has a population of a little under one million.<sup>4</sup> The city is flanked by two satellite towns of Mohali and Panchkula, which have given rise to the tri-city regional plan 2008-2058 to facilitate planning and growth.<sup>5</sup> The satellite towns are compact at 20 and 22 square kilometres respectively and could

## Summary

City	Chandigarh, Union Territory of Chandigarh
Population (urban region)	961,587
Special Features	Planned city and an education hub High per capita income High international education market Entrepreneurship, hardware, logistics, agriculture and software technology parks, light industry Emphasis on vocational studies
Opportunities	Engagement with the Chandigarh Region Innovation and Knowledge Cluster (CRIKC) Upcoming education city for skill development training Stable international student market Innovation and start-ups Fashion and design manufacturing ICT-enabled citizen service delivery and intelligent safety and traffic management systems

act as support systems for the expanding city.<sup>6</sup>

### **Economic and Employment Overview**

The twin capital of Chandigarh has over a quarter of its working residents employed by the government or in allied sectors, with most of these resident families being single income households.<sup>7</sup> As a result, a large service sector has developed to cater to their socio-economic needs, especially for the youth demographic. While this defined the population of Chandigarh in relation to the development of the city, today, being over 60 years old, Chandigarh is moving from a second generation to a third generation population.

As a city that has developed in phases, the southern part of the city is now being settled in, thereby creating a constant influx to the building construction sector. The construction and

allied sectors employ almost an eighth of the population.<sup>8</sup> As a regional employment centre, Chandigarh also services the architecture and planning needs for the surrounding provinces with its reach spreading into the bordering state of Himachal Pradesh.

The planning of the city envisaged Chandigarh developing into a multi-faceted employment centre from the primarily government centre it began as. The Master Plan demarcated 2.35 sq. km for non-polluting, light industry on the extreme south-eastern side of the city, away from the Educational Sectors and the Capitol Complex.<sup>9</sup> The 136 hectares developed initially and the entrepreneurial nature of the population allowed for the creation of a light industry sector involved in metal and alloy works, pharmaceuticals and textiles and hosiery. In addition, the city industries manufacture

paper, chemicals, machinery and electrical and transportation equipment. About 40 per cent are ancillary units producing components for the major tractor industry around Chandigarh.

Chandigarh Industrial and Tourism Development Corporation Limited (CITCO) is the agency responsible for creating an atmosphere for rapid industrial growth in the city. To help small scale entrepreneurs, CITCO disburses grants of seed money/margin money, procures and distributes raw material for iron and steel, IPCL products and constructs industrial sheds. CITCO also runs a Quality Marking Centre where products of small scale units are quality tested. The results are seen by the fact that there are now 2950 small scale industries (SSI) and 15 large and medium scale industries, along with two Public Sector Enterprises (PSEs) and five functional Export Oriented Units. The total annual output of the industries is INR 6.5 billion (GBP 75.9 million).<sup>10</sup>

Given the geographical location of Chandigarh at the foothills of the Shivaliks in the Outer Himalayas, it is the last major transportation node before the terrain of the mountain ranges. This has allowed Chandigarh to develop as a major tourist destination for tourists making their way to the hill states of Himachal Pradesh and Jammu and Kashmir. Trading, hotels, restaurants, banking and real estate are among fastest growing industries in Chandigarh.

In addition to all these secondary and tertiary sectors, the UT of Chandigarh benefits from being at the heart of two agrarian states, which produces around 2800 tons of wheat, 250 tons of rice and around 40 tons of corn every year.<sup>11</sup>

### Higher Education Landscape

As a planned city, Chandigarh allocated space for institutes of higher education as per global standards. This availability has attracted institutes of higher learning and has made it a hub of education, attracting students from Punjab, Haryana and the region at large. Chandigarh has three universities within its boundaries. The primary universities in the city are the state-run Panjab University, the deemed university PEC University

of Technology, and the privately governed Chandigarh University. Panjab University is consistently being ranked at the top among comprehensive Indian universities in international rankings

The Chandigarh DOE has also established the Regional Institute of English (RIE), formerly called the Punjab Institute of English, for qualitative improvement in the teaching of English at the secondary level. It fulfils the English Language Teaching (ELT) needs of North India, primarily in the states of Punjab, Haryana, Himachal Pradesh and Jammu and Kashmir.

Approximately 18,000 students are enrolled in degree colleges, and receive instructions in a wide range of academic subjects in social science, commerce, computer applications and science streams. Prominent Institutes in Chandigarh include Post Graduate Institution of Medical Education and Research, Indian Institute of Science Education and Research (IISER), Mohali, Punjab Engineering College, Department of Chemical Engineering and Technology, Indian School of Business (ISB), Mohali, Institute of Nano Science and Technology (INST), Mohali, University Institute of Engineering and Technology, Chandigarh College of Engineering and Technology (CCET), Chandigarh College of Architecture (CCA), Institute of Microbial Technology (IMT), National Institute of

Technical Teachers Training and Research (NITTTR), Chandigarh College of Education for Women (CCEW), Chandigarh College of Pharmacy (CCP), Chandigarh College of Hotel Management and Catering Technology (CCHM), National Institute of Pharmaceutical Education and Research (NIPER), Centre for Development of Advanced Computing (C-DAC) and National Agri-Food Biotechnology Institute (NABI).

The Chandigarh Region Innovation and Knowledge Cluster (CRIKC) is an interesting consortium of 20 reputed higher education institutions in and around Chandigarh, formed to promote and sustain excellence in research. It aims to foster and sustain close academic alliances between institutions of higher education and research in the Chandigarh region, facilitate innovation and knowledge creation and achieve excellence in all academic spheres.

The University of Birmingham signed an MoU with CRICK in November 2016 to focus on research collaborations, exchange of faculty and students, organisation of joint conferences and creation of a joint programmes to develop innovations and discoveries for large scale applications. The University of Nottingham signed a MoU with Panjab University, opening up new opportunities for collaborative research, new



business ventures and economic investment, in both Nottingham and India.

The administration of Chandigarh plans to set up a multi-institutional Education City at Sarangpur institutional area, Chandigarh, for which 16 sites, measuring six acres each have been set aside. A total area of 130 acres has been made available for the Education City by the administration.

The vision in setting up the Education City is to make available human resources for the growing economy, for equipping the youth of Chandigarh and the region with the skills required in today's context. The areas which are being focused in the Education City are those that are rare in terms of available talent, but which are urgently required in today's context. Hewitt Associates was appointed by the administration to advise it about the types of courses which should be offered in today's scenario, keeping in view the future projections as per the needs of the region.

The Education City thus would be a project which is both visionary and comprehensive in its scope and would fulfil the requirement of training and educating young people in high end areas required in today's context and also keeping in mind future projections.

### **International Education Trends**

Chandigarh has always been the hub for the international education market. Over the last few years however, it has seen a decline in student numbers opting to go the UK. There is an increased interest in Computing as opposed to other course choices for students going overseas. There is an encouraging mix of course interests across literature, business and engineering, hospitality, journalism and fashion.

The presence of Universities like Chitkara University, Panjab University, Chandigarh University, and Punjab Engineering College (PEC) still makes it a potential market. In addition to this, the region also has a good mix of CBSE and IB Schools. There are multiple opportunities for academic collaborations with these institutions, some of which are listed below–

- 1 Semester exchanges allow students to visit partner universities for six months to one year for completing semesters abroad.
- 2 Summer programmes are short duration programmes of 15 days to one month on various specialisations. It adds to the international exposure of the students.
- 3 International conferences that help participating

students to experience international academic standards.

- 4 Study-based scholarships by partner universities offering full year scholarships and semester-long scholarships to students through which study is absolutely free for the students for those terms.

### **Chandigarh Smart City**

Chandigarh has been selected as part of the SCM. Globally, the notion of smart cities has been associated with the information technology of technology-enabled solutions that streamline urban life. In the Indian context of overburdened cities, the SCM has allowed for more leeway in defining the notion of 'smart'. Thus, a variety of urban regeneration programmes, a bulk of which are not ICT-based, have been promulgated in the SCM.

Chandigarh however, is a city with much of the basic service delivery in place and this has allowed for the governing body and the citizenry to focus on creating a smart city plan that is more akin to international definitions. The city will focus largely on ICT-enabled citizen service delivery and intelligent safety and traffic management systems.

In addition to this, one of the aspects of the proposal is a focus on innovation and start-ups. The proposal will focus on students who have graduated



from Punjab University and PEC University of Technology. As part of the SCM, the city will receive half the funding from the central government and half its funding must come from the state government. These monies can be raised and education and innovation could be spaces of investment within the realm of the SCM, for British institutions.

### City Futures

To give a fillip to the small scale industrial manufacturing, the administration of Chandigarh has developed a hardware park in the Phase III development of the industrial areas. The Chandigarh Logistics Park is also set up at Raipur Kalan to promote high-tech manufacturing, logistics and supply chain management facilities. However, over the last decade, Chandigarh is renewing its focus on more non-polluting economies that are not as space intensive and capitalising on its potential role in the knowledge sector, in view of the rapidly increasing activities of the service sector.

This is especially in the fields of financial services, IT services, insurance services, hospitality, health and education services. As the knowledge sector matures in the major cities of the country and employees seek a better quality of life, Chandigarh offers space for expansion into the North Indian zone with a large base of Human Resources and proactive policies

of the administration which are conducive to such investment. Case in point is the Chandigarh Region Innovation and Knowledge Cluster (CRIKC), which offers a unique opportunity for engagement. The Rajiv Gandhi Chandigarh Technology Park (RGCTP) was conceived in 2001 by the Chandigarh Administration over an area measuring 123 acres under Phase I, including a 12-acre Entrepreneurs Development Centre and 250 acres of land under Phase II, as a part of the notified Chandigarh SEZ.

Accordingly, high speed data communication facilities for software development and its export has been arranged by providing a NODE at Punjab Engineering College (PEC), Chandigarh through the Software Technology Parks of India-STPI (an autonomous Society under the Dept. of Electronics, Govt. of India), which has set up an earth station at Mohali for the proposed Software Technology Park/Complex being set up by the Punjab Government.

The agrarian centre status that Chandigarh is accorded due to Punjab and Haryana, is also being developed by means of an Agricultural Park supported by a logistics hub and serviced by the Chandigarh Railway Station and the National Highway 21. This is poised to improve the agro-based exports of the city-region to the rest of India and South Asia.

In addition, textile manufacturing and Chandigarh's proximity to Ludhiana have contributed to the development of a significant fashion industry, ranging from design and manufacture to wholesale markets. Significantly, a large wedding fashion industry has also taken shape, catering to a large part of India. While the fashion industry has steadily been growing, it is poised to soon become an international centre of mass-produced, medium-range clothing.

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# HYDERABAD

The city of Hyderabad is currently the capital of two states – Telangana and Andhra Pradesh. The information and communication technology boom has transformed the image of Hyderabad from a manufacturing and research hub to that of a global services destination. The strong presence of world’s major companies like Microsoft, Google, Facebook, IBM and the recent opening of Apple’s Maps development office in the city would provide a new momentum for the growth of the city. The city is also home to ‘Genome Valley’ – a systematically planned cluster dedicated to life sciences industry. With an evolving ecosystem for nurturing innovation and start-ups, Hyderabad gets an important place in the Government of India’s flagship initiative ‘Start-up India’.

The state of Andhra Pradesh was bifurcated to form two states – Andhra Pradesh and Telangana, with Hyderabad as the capital for both until 2024.

Hyderabad was one of the early investors in IT parks, like the Hyderabad Information Technology and Engineering Consultancy City (HITEC City), which is a 200-acre hub of technology and service delivery. The city, in this form, has come up in the last three decades. However, Hyderabad is a historical city with a clear political standing from the 16<sup>th</sup> century, when it was ruled by the Nizams—a breakaway from the Mughal Empire. The city has seen a variety of rulers and, as such, is a diverse city, with a variety of communities, language groups and religions living together.

Till 2007, the city stood at 175 sq. km and was governed by the Hyderabad Municipal Corporation, after which the surrounding districts were merged into the city and it grew to 650 sq. km. The population also rose tremendously and stood at over 6.7 million people in 2011.

## Economic and Employment Overview

Under the Nizams of Hyderabad, the city developed into a cultured and cosmopolitan space. There were numerous institutions set up in the name of the dynasty, including hospitals and schools, colleges and universities that imparted education in Urdu.

Inspired by the Indian Civil Service, the Nizams established their own local Hyderabad Civil Service. In addition, the building of reservoirs and irrigation systems and the introduction of electricity, developed roads, railways, airways, and all major public buildings in Hyderabad City were built, proving their skill in engineering.

## Summary

City	Hyderabad, Telangana
Population (urban region)	6,731,790
Special Features	IT-enabled services, business process outsourcing, entertainment industries, and financial services Genome City of India International student market, especially for post graduate education Life sciences and pharmaceuticals
Opportunities	Information Technology Investment Region (ITIR) Life sciences knowledge centre Entrepreneurial ecosystem– seven new research parks, T-hub Medical tourism Agro-based research partnerships Media, film and entertainment Food and culinary science partnerships English language teaching

As a capital city, Hyderabad pioneered in trade within and between kingdoms and even today, has bustling markets that work as the gateway to South-Central India. Due to its royal heritage, Hyderabad had a large pearl industry with swathes of population involved in the processing, grading and drilling of pearls, servicing the international market and earning itself the epithet 'The City of Pearls'.<sup>1</sup>

After Hyderabad State joined the Indian State in 1948, it was reorganised in 1956, with the city of Hyderabad as the capital of the state of Andhra Pradesh, which was bifurcated only in 2016. The state of Andhra Pradesh created the most number of engineers in India, which, at the time of IT boom, came as a boon to Hyderabad. Today, 23 per cent of the IT professionals of India have been educated in the erstwhile Andhra Pradesh.<sup>2</sup> The IT industry took Hyderabad by storm, earned it the name of 'Cyberabad' and

gave it almost an overnight facelift.

The city's IT sector includes the IT-enabled services, business process outsourcing, entertainment industries, and financial services. During 2008–09, Hyderabad's IT exports reached USD 4.7 billion<sup>3</sup> while 22 per cent of the NASSCOM's total membership is from Hyderabad.<sup>4</sup> The development of a township with related technological infrastructure called HITEC City prompted global and particularly US-based companies like Microsoft, Google, Facebook, IBM to establish their operations in Hyderabad.

Life sciences related manufacturing began in Hyderabad in the late 1960s with the establishment of the Indian Drugs and Pharmaceuticals Limited (IDPL). Over the years, IDPL has facilitated the growth of a sector, which today covers all aspects of pharmaceuticals like bulk drugs, formulations, generics, vaccines, etc. The impetus to life sciences related

R&D also came with the establishment of International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Centre for Cellular and Molecular Biology (CCMB), Centre for DNA Fingerprinting and Diagnostics (CDFD), Indian Institute of Chemical Technology (IICT), National Institute of Nutrition (NIN) etc. The headquarters of Pharmexcil–Pharmaceutical Export Promotion Council of India is Hyderabad. Pharmexcil is the authorised agency of the Government of India for promotion of pharmaceutical exports from India, with products like bulk drugs, formulations, biotech products, Indian systems of medicines, herbal products, diagnostics, clinical research, etc. This sector has continued to grow as 'Life Science' is one of the thrust areas of Telangana's new Industrial Policy and the state is planning to set up a 'Life Science Knowledge Centre' in the city,

The city is also home to 'Genome Valley'—a systematically planned cluster dedicated to life sciences that focuses on biotech research, training, collaboration and manufacturing activities. It is spread over 1,500 acres. Genome Valley has rapidly expanded with the largest concentration



of multi-tenanted lab space infrastructure in an organised cluster in the country. The cluster has over 150 life science companies, with a perfect blend of knowledge parks, special economic zones, multi-tenanted wet laboratories, incubation facilities, office spaces and outstanding support facilities.<sup>5</sup>

Hyderabad is also a major centre of seed companies in India with around 400 seed companies operating in and around the city. The city is also known for the presence of international, national and state agencies engaged in seed development, such as National Seeds Corporation (NSC), International Crops Research Institute for Semi-Arid Tropics (ICRISAT), Indian Institute of Rice Research (IRR), Indian Institute of Oilseeds Research (IIOR), Indian Institute of Millets Research (IIMR) Telangana State Seeds Development Corporation (TSSDC), Telangana State Seed Certification Agency (TSSCA), and State Agricultural Universities.<sup>6</sup>

Hyderabad is also the centre of the INR 100 billion (GBP 1.17 billion) Telugu movie industry dubbed 'Tollywood'. However, the effects after the bifurcation of the state remain to be seen as both the states are actively wooing the industry.

### Higher Education Landscape

The fact that Hyderabad is a centre of learning is evidenced by the number of universities

in the city. In addition to the public universities, there are a number of private and deemed universities as well. To date, there are 19 universities located in the city—including those of central and state importance.

Some of the prominent institutes are the University of Hyderabad (UoH), NALSAR University of Law, Birla Institute of Technology and Science, Pilani-Hyderabad (BITS-H), English and Foreign Languages University (EFLU) (earlier CIEFL), National Institute of Fashion Technology (NIFT), International Institute of Information Technology, Hyderabad (IIIT), Indian Institute of Technology, Hyderabad (IIT-H), Tata Institute of Fundamental Research (TIFR) Hyderabad, Osmania University, Jawaharlal Nehru Technological University (JNTU), Hyderabad, Acharya N. G. Ranga Agricultural University, Andhra Pradesh Open University (Dr. B.R. Ambedkar Open University), Maulana Azad National Urdu (MNU) University, GITAM University Hyderabad Campus, Potti Sreeramulu Telugu University, Institute of Chartered Financial Analysts of India (ICFAI), Institute of Public Enterprise (IPE), Nizam's Institute of Medical Sciences (NIMS), Mahindra Ecole Centrale (MEC), Symbiosis International University (SIU), Narsee Monjee Institute of Management Studies (NMIMS) Deemed to be University, and Institute of Management Technology (IMT) Hyderabad.

The government is also planning to promote a pharma university in the upcoming Hyderabad Pharma City. This University will be focused on creating qualified professionals to serve the pharmaceutical sector.

There are multiple international collaborations happening between higher education institutes in the city and abroad. Under the UKIERI project, there are a number of partnerships with institutions in Hyderabad and the UK institutions. For instance, University of Hyderabad, Osmania University and IIT Hyderabad hold partnerships with UK institutions under thematic partnerships. IIT Hyderabad also holds collaborations with Japanese universities.

The immense pool of qualified human resource, thanks to these universities and institutions, has helped Hyderabad to become a serious competitor to other Indian cities in information technology, pharmaceuticals and biotechnology. The availability of human capital in the form of highly skilled workers, including locals as well as returning first-generation Indian immigrants from developed countries, also makes Hyderabad different.

### International Education Trends

Hyderabad has always been a potential city for students who opt to go abroad for higher

education. Due to the high availability of quality education at the graduate level, Hyderabad is predominantly a post-graduate market.

As per a report released by Brookings US, Hyderabad ranked amongst the top ten cities in the world to have sent students to the US for higher education. For the years between 2008 and 2012, Hyderabad alone issued 26,220 students visas to the US for higher education. Additionally, Hyderabad sent the largest number of STEM students (20,800) to the United States and ranked fourth for the percentage of its students pursuing a STEM degree (80 per cent) during the 2008-2012 period.<sup>7</sup>

Hyderabad ranked highest in sending students to the UK for higher education. USA ranked second as a preferred destination, followed by Australia and Canada. However, the student share from Hyderabad to UK dropped. US took advantage of this situation and now US has become the number one priority, followed by Canada and Australia. Hyderabad had the highest number of agents in South India who promoted UK education. This, too has declined and a number of the agents have closed business or have started promoting other countries for survival. This is one of the reasons that the US market in Hyderabad has picked up. A recent study indicates that Hyderabad sends the most number of students

abroad as compared to Delhi or Mumbai.<sup>8</sup>

Since the US has deported a lot of students back to Hyderabad, there has been an increase in interest among students to study in the UK. The British Council exhibitions have also shown that there is a steady increase in students attending the exhibitions in the last five years.

This was the situation until recently, but the landscape is shifting as parents are now keen on quality education. Also, post bifurcation of the state, there has been opportunities in the state to grow economically. This has led to opening of newer international schools in Hyderabad. There are currently 11 IB schools in Hyderabad. A study recently found that the number of students opting for an international curriculum are on the rise. Also, parents are keen to send their children for quality education abroad.

This can be a target opportunity for higher education institutions of the UK. Past events indicate that the interest level of education in the UK from Hyderabad has shown a gradual increase in terms of undergraduate enquiries. Preferred subjects of interest abroad are business, engineering, and computer science.

### City Futures

The Information Technology Investment Region (ITIR),

Hyderabad is an upcoming IT investment region jointly being developed by the Government of India and the Government of Telangana. The ITIR will have development of self-contained integrated knowledge clusters for growth of IT and electronic hardware manufacturing in 50,000 acres in and around Hyderabad.<sup>9</sup> The project which is modelled along the lines of Shenzhen SEZ in China, is aimed at attracting an investment of INR 2.19 trillion (GBP 25.57 billion) in the IT, ITES and electronics sectors and providing direct employment to 1.5 million people.

Under the mega project, special economic zones (SEZs), industrial parks, free trade zones, warehousing zones and export-oriented units would come up in three corridors around the city which includes the areas Madhapur, Gachibowli, Uppal, Mamidipalli, Raviryal, Adibatla, Maheswaram, and Pocharam. The Government has proposed to develop the infrastructure for ITIR at an estimated cost of over INR 219 trillion (GBP 2.56 trillion).

The new industrial policy of the State Government of Telangana has identified 14 thrust areas and core sectors. Life sciences, including bulk drugs, formulations, vaccines, nutraceuticals, biologicals, incubation centres, R&D facilities, and medical equipment, is one of the prominent core

sectors identified in the policy. The government is planning to establish a Life Sciences Knowledge Centre in Hyderabad for nurturing existing talents in the sector. The government is also planning to promote a pharmaceutical university in the upcoming Hyderabad Pharma City. This university will be focused on creating qualified professionals to serve the pharmaceutical sector.<sup>10</sup>

Hyderabad has an important place in the Government of India's flagship initiative 'Start-up India'. The new initiative is intended to build a strong eco-system for nurturing innovation and start-ups in the country to drive sustainable economic growth and generate large scale employment opportunities. Of the seven new research parks being planned in the country with an initial investment of INR 10 billion (GBP 117 million) each, one will be set up at IIT Hyderabad.<sup>11</sup>

The Telangana government has established a 'T-Hub' for nurturing and shaping innovations into start-ups.<sup>12</sup> It is located in the Indian Institute of Information Technology, Hyderabad (IIIT-H) campus, in Gachibowli. T-Hub is a unique public-private partnership between the government of Telangana, three of India's premier academic institutes (IIIT-H, ISB and NALSAR) and key private sector leaders. It stands at the intersection of the start-up,

academic, corporate, research and government sectors. T-Hub is designed for technology-related start-ups, and its mission is to catalyse the creation of vibrant entrepreneur communities to encourage and fuel more start-up success stories in India.<sup>13</sup>

Medical tourism is also a growing industry in Hyderabad. The Apollo Group of Hospitals treated the most overseas patients—150,000 and ten other major hospitals in the city catered to another 20,000 patients. A majority of the foreign patients are from Africa, the Commonwealth of Independent States, and the United Arab Emirates.<sup>14</sup>

The combination of the movie industry and the IT profession has together made the city home to a number of gaming and animation companies and the government has identified Hyderabad as one of the potential places for the growth of gaming and animation industry due to the presence of a vibrant industry and talented IT professional workforce.<sup>15</sup>

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# PUNE

**Nestled in the western state of Maharashtra, lies the city of Pune, one of fastest growing cities in the South Asia. Being only a few hours south of Mumbai—the financial capital and historic trading port of the country—Pune has benefitted because of the easy connectivity. The city’s governance and its engaged population have contributed to the evolution of a city with an advantage of centuries of international engagement and political power into a strong focus of education and economy.**

Pune is a district head and is often identified as the ‘cultural capital’ of the state, if not the country. After Mumbai, Pune is the second largest city in the state with an area of 244 sq. km and, as of the last census in 2011, houses a population of 3.1 million citizens. Pune is administered by the Pune Municipal Corporation (PMC), which was instituted in 1950 and is constituted by both directly elected representatives and bureaucrats. It is important to note that the city has grown significantly both in size and population since the creation of the PMC. The population in 1951 was under half a million, while the area was limited to 125 sq. km.

## Economic and Employment Overview

After India’s independence, Pune saw a number of important institutions, including national-level research and development laboratories being set up. The city, which was a key location for defence-related activities, such as research and development and ammunition production prior to independence, started emerging as a major industrial hub with strong economic contribution

from the fabrication, automobile and fast-moving capital goods sectors. Being production-based, the city has been a magnet for core disciplines such as mechanical, electrical and civil engineering. With the growth of such enterprises, there has been an induced demand for a business management cadre to help grow and manage these corporate sectors. The Pune automobile cluster has been identified as one of 19 clusters under the Industrial Infrastructure

Upgradation Scheme (IIUS) of the Department of Industrial Policy and Promotion of the Ministry of Commerce and Industry, Government of India.

In addition to being an industrial hub, Pune has seen the rise of over 12,500 Small and Medium Enterprises (SMEs) in 2008, which act as supporting factors to the major industries. A study titled “Emerging SMEs: Pune 2008” predicts a 20 per cent increase every year with 62 per cent of the

## Summary

City	Pune, Maharashtra
Population (urban region)	3,124,458
Special Features	‘Oxford’ of the East—education hub, strong human capital International education market Manufacturing and automobile hub Food processing BPO and KPO industries
Opportunities	Exchange programmes and joint degrees with numerous city institutions Design education, summer school—especially automobile and industrial design Short term management training Satellite schools of UK institutions

companies involved in exports and 30 per cent having more than one manufacturing facility.

Pune lies in the midst of an agrarian region and provides the opportunity for trade in agricultural produce and food processing industries. This has been aided by connectivity afforded by the new six-lane Mumbai-Pune expressway which has improved the trade potential of the city to the rest of the country and the world. Agricultural & Processed Food Products Export Development Authority (APEDA) is promoting floriculture and growing of tulips and orchids, which are internationally in demand, by setting up large-scale parks and an Agriculture Export Zone in Talegaon on the outskirts of Pune.

While the city has always been a hub of research and development for the sciences with research institutions like the National Chemical Laboratory and the Serum Institute of India, the Maharashtra Industrial Development Corporation (MIDC) has instituted a public-private joint venture Biotechnology Park near Vadgaon to trigger a biotechnology revolution. The 81-acre park caters to research and manufacturing in the fields of life sciences, chemical, pharmaceutical and biotechnology, aided by 25 acres of a notified Special Economic Zone. As of date, the Serum

Institute of India is the 5<sup>th</sup> largest producer of vaccines in the world.

The understanding of the after effects of the country's economic liberalisation in 1991 is of importance in the socio-economic profiling of Indian cities. . In Pune, the strong base of technically trained English speakers gave rise to a blossoming IT industry in the form of Business Process Outsourcing (BPO) and Knowledge Process Outsourcing (KPO). In a short span of time, around 1,500 Information Technology-enabled Services (ITeS) companies came up in Pune, reporting USD 10 billion (GBP 8 billion) in software exports currently. According to a Dun & Bradstreet report, while 57 per cent of the IT and ITeS-BPO companies in Pune are involved in export, 23 per cent earn more than 50 per cent of their revenue from the international market.

The Information Technology sector, being a service-intensive and export-centred industry, generates substantial revenue with the creation of a neo-upper class with high disposable incomes. This industry has led to an increase in population by 225,000, which has had a ripple effect on the hospitality and tourism sectors of the city.

The effect of the incentivisation and economic development is evidenced by the per capita income in Pune being the second highest in the state after Mumbai.

At INR 127,000 (GBP 1,483), this marks a 170 per cent increase over the last decade (Indian Statistical Report, 2011).

### Higher Education Landscape

Pune has always been an educational hub. In 1854, Poona College of Engineering (currently College of Engineering Pune, COEP) was the first professional college to be established in India and in 1885, Fergusson College was established by the Deccan Education Society as the first privately managed college. By the end of 1937, there were three liberal arts colleges, three professional colleges and 21 other special and technical schools. These institutions laid the ground for Pune to become an industrial capital during the early to mid-20<sup>th</sup> century.

In 1948, the University of Pune (UoP) was established and in a year had 18 affiliated colleges and over 8,000 students. Since 2004, the University has 46 graduate departments, 269 affiliated colleges, 11 colleges exclusively for women and 129 research institutions, with enrolments of 170,000 per year. There are 14,000 foreign students from over 99 countries. The next in terms of number of foreign students would be the Symbiosis International University (SIU) in Pune, which has over 3,000 foreign students from 75 different countries. What was established as an international cultural centre



to cater to the needs and welfare of international students studying in the city of Pune, later grew by way of establishing academic institutions in English language, management, health sciences, humanities, media, liberal arts, law etc.

Indian Institute of Science Education and Research (IISER), Pune is emerging as one of the top institutions in the country for education and research in basic sciences. The University of Pune has 57 engineering colleges affiliated to it, covering three districts. Pune city itself has 21 engineering colleges, amongst the highest in the world in a given city.<sup>1</sup> Today, Greater Pune attracts as many as 500 fresh foreign students every year and has 20 per cent of the entire 70,000 foreign students' population in the country. In addition, almost 80 per cent of students in public-private professional universities and non-aided professional institutions affiliated to Pune University (and this number integrated over four to five years comes to almost 60,000), are coming from other states in the country. Other key institutions include Inter-university Centre for Astronomy and Astrophysics, National Chemical Laboratory, National Institute of Virology and National Centre of Cell Sciences which have strong research capabilities.

If one adds the students coming from different districts in Maharashtra in affiliated colleges and University of Pune post graduate departments, as well as students enrolling in private professional-skills providers and specialised central government institutions, then, presently Greater Pune has around 200,000 students that have come from outside its geographical boundaries. If one adds another 100,000 local students from both the corporations, the total number of students comes close to 300,000, which makes 6 per cent of the population.

With time, Pune has been able to create one of the strongest human capital and economic growth engines among Indian cities. With 811 colleges, it is often called the 'Oxford of the East'. This has resulted in a more than 30 per cent graduate workforce, which has been instrumental in triggering the economic revolution in the city.

### **International Education Trends**

Pune has been a historical market for high international education. Despite a decline in the number

of students aspiring to pursue higher education in the UK over last one decade, it draws over 1,000 students each year to British Council exhibitions. India has predominantly been a postgraduate market. However, there is a growing interest in undergraduate education. The rationale behind this could be the increase in the number of schools offering the international baccalaureate and 'A' levels. There is also some interest in research programmes from approximately 10 per cent of the respondents.

The significantly popular disciplines for international education include business and management, engineering and technology. Other disciplines like architecture, the applied sciences and law are also emerging as competitive options. The US is the preferred country for its HEIs, followed by Australia and Canada.

State and private universities in Pune have shown a strong potential to collaborate with foreign countries with regards



to academic exchanges, either in the form of faculty, student or research, and are a potential market for interested institutes in the UK.

### **Pune Smart City**

The city of Pune has a strong history of civic engagement and this, along with the administrative system, has been instrumental in developing and improving the quality of life in the city. The citizenry and government have worked together on a variety of issues, ranging from education, environment, health, transportation and sanitation, and this partnership has helped the city grow into what it is today. This relationship was especially valuable when Pune applied for the Government of India's flagship urban programme—the Smart Cities Mission (SCM) in 2015.

Pune was among the first 20 cities to be selected for the SCM and was one of the top

contenders of the competition, being second only to Bhubaneswar in the final ranking. As part of enacting the SCM, the city is required to create a Special Planning Vehicle (SPV) to channel the funds and raise funding for the project. The Pune SPV, also known as the Pune Smart City Development Corporation (PSCDC), was created in March 2016 as a 50:50 partnership between the state government and Pune Municipal Corporation, with 15 board members to oversee and implement Pune's smart city plan. The SCM offers three possibilities of urban renewal—pan-city, area-based and greenfield development. The first requires for improvements to be made across the city, the second is a focus on a particular or a few areas in the city and the third is the creation of a new satellite space outside the current built form of the city. Pune chose a combination of area-based and pan-city development projects.

The SCM is viewed as a deeply participatory process and a movement away from top-down technocratic development paradigms and much of Pune's distinction in the mission has been a clear and deep engagement with the ground level, using a mix of technology, print and real-time engagement. Thus, while the mission used social media and internet-based processes to reach out to the public, there was also a strong emphasis on text messaging, print media, public consultations and door-to-door engagement.

The Pune Smart City proposal outlays a plan of INR 348 billion (GBP 4 billion) over five years. A large proportion of this amount of INR 293 billion (GBP 3.42 billion) needs to be raised by leveraging innovative financing methods and raising money from the bond market against the freshly rated AA creditworthiness of the city. The city has decided on three areas, Aundh, Baner and Balewadi (ABB), for the area-based development and the issues of water and transport in terms of pan-city improvement.

In terms of focus areas the proposal outlines the following activities:

- 1 fix core urban infrastructure and make it future proof
- 2 leverage multiple sources of funds to fulfil long term infrastructure demand
- 3 transform Pune into the most liveable city in India
- 4 focus on creating sufficient high-end jobs to leverage Pune's human capital
- 5 build city's attractiveness further through iconic riverfront development.

### City Futures

Although Pune proved its mettle in the SCM in 2016, it had already embarked on that path over a decade ago with the incorporation of Smart Urban Solutions, especially in the realm of ICT in the service provision and management, solid waste management, traffic management etc. This was allowed by a start-up economy that had grown in the city and given rise to home-grown ideas that were suited to the local context, both in their suitability and financial requirement.

Angel investing forums in the country show a 10-15 per cent representation from the city of Pune because of which NASSCOM, in association with MIDC, have developed a start-up co-working and incubation space under its 10000 start-up initiative. With the added focus and possible government incentive, such trends will continue their rapid growth, necessitating other

elements of the pop-up sharing economy to develop alongside.

While the city continues to innovate to accomplish its urban agendas, this has also continued in its traditional manufacturing industries. In fact, the trend has been developing over the last few decades. Looking at the automobile industry, for example, vehicles being imported were once in a "totally knocked down" (TKD) state, only to be assembled here. But today, not only are the vehicles fabricated here, they are exported for other markets from India. This has given rise to a cadre of product and industrial designers who are now designing from Pune itself. While this is a niche field currently, it is on an upward trend, with the rise of institutions imparting design knowledge and the recent setting up of international offices like Applus+IDIADA, the Spanish firm providing design, engineering and testing to the automotive industry worldwide. The design sector will soon infiltrate and encompass innovations across the entire manufacturing sector in Pune.

Pune has a growing food processing industry and is developing as a wine and cheese production centre.

Pune is the culture capital of the state and has a rich tradition of all art forms, especially music. Art and design is a growing sector with many studios being set up. Pune is a historic cosmopolitan centre following

similar trends of urbanisation and city development as in other developed cities of the world. This offers great potential to work alongside the city and its people and accord it the innovation and directed growth to take it to the future stages of a metropolitan centre.

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# GLOSSARY

The following abbreviations can be found throughout this publication:

ASSOCHAM	The Associated Chambers of Commerce of India
BPO	Business Process Outsourcing
CSR	Corporate Social Responsibility
EDI	Entrepreneurship Development Institute
IELTS	International English Language Testing System
HEI	Higher Education Institute
IB	International Baccalaureate
ICT	Information and Communication Technology
IT	Information Technology
ITeS	Information Technology-enabled Services
KPO	Knowledge Process Outsourcing
NASSCOM	National Association of Software and Service Companies
PSUs	Public Sector Units
PSW	Post Study Work
SEZ	Special Economic Zone
SCM	Smart Cities Mission
SME	Small and Medium Enterprises
STEM	Science Technology Engineering and Mathematics
STPI	Software Technology Park of India
UKIERI	UK India Education and Research Initiative

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