CHINA-INDIA DIALOGUE

Delhi Metro: Past and Present

Inadequate Reform Is AIIB's Biggest Challenge

Issue 4 | 2016

GROUNDWORK FOR GROWTH

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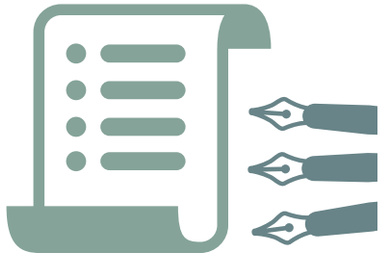
China, India and Bangladesh finalize BCIM strategy paper

Bangladesh, India and China have finalized and shared their strategy paper on the Bangladesh-China-India-Myanmar (BCIM) Forum for Regional Cooperation. "India shared their paper last week with us. We are still waiting to hear from Myanmar," Bangladesh's Foreign Secretary M. Shahidul Haque said on February 18.



Chinese companies active during "Make in India" week

Over 2,500 international and 8,000 domestic companies claimed to have taken part in the "Make in India" week in Mumbai from February 13 to 18. China's heavy equipment giant Sany Group, SAIC Motor and Wanda Group are committed to invest in India.

India interested in China-backed trade bloc

India, concerned at being left out of the U.S.-led Trans-Pacific Partnership (TPP), is stepping up efforts towards an agreement with the China-led Regional Comprehensive Economic Partnership (RCEP). It hopes to reach a deal this year to improve its access to Asian markets, reported *The Economic Times* on February 13.

India-China Town project launched in May

The China-led "India-China Town" project was launched in Beijing on May 6. The town, to be built in India, would be an industrial-commercial complex that combines excess capacity and resource shortage – along with diversified chains – and covers every industry to support social life and commerce.

China and India back US$150m GEF initiative to green cities

A global push to green urban areas across 23 cities in 11 countries was launched in Singapore on March 11, backed by the Global Environment Facility (GEF) and the World Bank. Officials say the Global Platform for Sustainable Cities will drive investments up to US$150m and offer planners in developing countries access to data, ideas and solutions to tackle pollution. The signatories include China and India.

International Observation

China and India account for a third of global mental illnesses

Three papers published in *The Lancet* and *The Lancet Psychiatry* journals suggest that a third of the global disease for mental, neurological and substance use disorders occurs in India and China. Less than 10 percent of people with mental disorders in China and India receive treatment, according to details of the study released, leading to a larger number of patients than all high-income countries combined.

IMF: China and India rank among top three in PPP-based GDP

According to IMF reports, if measured in PPP terms, China ranked first by contributing 17.1 percent to global GDP. India ranked third with seven percent. In nominal terms, the United States and China were the top two, while India ranked sixth.

Chinese and Indian enterprises optimistic about IoT

According to Forrester Research, Chinese and Indians are most interested in the Internet of Things (IoT) application in firms across the globe. Of those interviewed in the two countries, 95 percent showed interest in IoT. About 30 percent have already adopted IoT while 45 percent plan to do so.

Oil demand rises in China and India

Data released by *BP Statistical Review of World Energy 2016* showed India as the world's third largest oil consumer in 2015 after China and the U.S. "By 2040, China and India could double their share again to a third," said Owain Johnson, managing director of Dubai Mercantile Exchange (DME).

Quotes

In order to reduce costs, the prime importance is to develop according to pressing need so as to facilitate development of manufacturing. This is the global trend which India will follow. China's manufacturing industry can settle in India based on India's needs.
– Sun Linfu, member of the National Committee of the Chinese People's Political Consultative Conference (CPPCC) during the two sessions in 2016

The aging population in India is rising gradually, not dramatically as in China. From this viewpoint, we can say that India's facing less pressure from future labor supply and population compared with China.
– Fan Wei, researcher in Center for Public Economic Finance and Governance at Tsinghua University, in The Economic Observer, *on January 19*

"Make in India" campaign is the strategic direction of India. It plans to open its capital market to the world. Since China shares many similarities with India in national conditions, India is more eager to receive China's capital and experience and evacuate China's overcapacity. With China's help, India can fly even higher.
– Y.K. Sailas Thangal, India's Consul-General in Guangzhou, during an interview with 21st Century Business Herald *on February 17*

Figure

Mukherjee: Connecting the Indian Dream and the Chinese Dream

Pranab Mukherjee was in China, on his first visit as President of India, from May 24 to 27.

On May 26, Chinese President Xi Jinping held talks with Indian President Mukherjee in Beijing. Xi stressed that the two countries should consolidate mutual political trust and strengthen cooperation in areas such as production capacity, investment, tourism, services and trade. Mukherjee said as China is one of the most important partners of India, New Delhi accords high priority to bilateral relations and is committed to intensifying engagement with Beijing. India wants a strong partnership with China based on mutual trust and friendship, and sensitivity to each other's concerns, interests and aspirations. There are challenges – including the boundary question – that still need to be addressed comprehensively. "While it is natural for neighbors to have different views on certain issues from time to time, I consider it a test of our political acumen when we are called upon to draw on our civilizational wisdom and resolve these differences, to the mutual satisfaction of both sides."

There have been frequent high-level exchanges between China and India since April. On April 16, India's Defense Minister Manohar Parrikar was in China on a five-day visit. Parrikar's visit was the first by a defense minister in the National Democratic Alliance government of Prime Minister Narendra Modi. Another Sino-Indian interaction, around the same time, was in Moscow on April 18, where the foreign ministers of Russia, India and China had gathered for their 14th meeting. India's External Affairs Minister Sushma Swaraj and Chinese Foreign Minister Wang Yi held a bilateral meeting to discuss issues of topical concern in a cordial and friendly atmosphere. On April 20, India's National Security Advisor Ajit Doval arrived in Beijing for the 19th Special Representatives' Meeting on the China-India Boundary Question with Chinese State Councilor Yang Jiechi.

Fiber-optic Cities

光网城市 (Guang Wang Cheng Shi)

Edited by **Li Zhuoxi**

November 19, 2014: **The first World Internet Conference takes place in Wuzhen, Zhejiang Province. The global average internet connection speed increased by 14 percent in 2015. Connection speed is an important indicator to measure a country's internet development. [IC]**

"Fiber-optic networks will be installed in more cities, and 50,000 villages will be linked to fiber-optic networks, enabling more urban and rural residents to enjoy digital lifestyles," remarked Chinese Premier Li Keqiang in his report on the work of the government of 2016. Today, the internet has penetrated every aspect of Chinese life, and China has become a "broadband nation." The government's promotion of fiber-optic cities has created greater data coverage and much faster internet speed.

A fiber-optic network facilitates transmission over longer distances at higher bandwidths (data rates) than wire cables. Fibers are used instead of metal wires because signals transmitted through them lose less data. More importantly, bandwidth can be allocated according to need.

Globally, fiber-optic cities are also on the rise. Governments not only consider fiber-optic broadband basic infrastructure, but also believe it enhances a nation's long-term development prospects and core competitiveness. The American government declared that in five years, 98 percent of U.S. households will be able to access to high-speed networks. India's Prime Minister Narendra Modi is planning to connect the nation's 600,000 villages to a fiber-optic network. South Korea, Japan and Singapore hope to see 90 percent of their households enjoying 1G bandwidth in two to five years.

At the same time, many nations are promoting a digital society in more aspects, which requires fast internet speeds.

Also, fiber-optic networks are crucial components of smart cities, in which the Internet of Things will be applied. For example, Fudan University and Shanghai Construction and Communication Committee are developing an application to control 500,000 street lamps. Whether those lamps can be connected to the Internet of Things depends on available bandwidth.

Fiber-optic networks can also improve public services like security, education and healthcare by delivering a great number of images through cloud computing. At No.1 Hospital of Jiaxing City, Zhejiang Province, as much as 80GB of data is transmitted each day, so doctors at or away from the hospital can immediately check on patients and conduct remote consultation. "Improving patient services and creating an Internet+ hospital require fast internet speed," notes Cao Haoqiang, president of the hospital.

Infrastructure

Little Things Make It Big

By **Shastri Ramachandaran**

April 1, 2016: **A subway construction site in Beijing. [CFP]**

Infrastructure is a long, boring word. By the time you've finished saying it, the audience has yawned and gone to sleep. Yet life could be impossible without infrastructure. The everyday essentials for living – water, food, shelter, electricity, petrol, roads, bridges, schools, colleges, hospitals, trains, buses, planes, phones, telecom, internet and so much else – add up to infrastructure. It is almost as difficult to describe or define as civilization.

Perhaps, it is not a coincidence that, through artefacts, when civilizations are re-imagined and re-constructed, they are marveled at for the 'infrastructure' they had in their time. Infrastructure is taken so much for granted that few spare a thought to how it makes life livable, comfortable and convenient. Only when it is not there, does one realize how essential and invaluable infrastructure is for living. Infrastructure is at the core of development. In the absence of infrastructure, development is not attainable. Doubtless, 'development' itself is a controversial term.

Development means different things to different people. Thanks to freely flowing information and images in this age of media and rising aspirations in the Southern nations, the word has gained worldwide currency. In spite of its loaded, conflicting meanings, 'development' has acquired an implied clarity of meaning across the world, among the poor as well as the prosperous, the deprived and the 'developed.' The word has acquired universal acceptance and awe across countries, cultures, religions, ideologies and political systems.

In his seminal work, The History of Development: From Western Origins to Global Faith, Gilbert Rist defines development as: "A set of practices, sometimes appearing to conflict with one another, which require – for the reproduction of society – the general transformation and destruction of national environment and of social relations. Its aim is to increase the production of commodities (goods and services) geared, by way of exchange, to effective demand."

In the course of my early travels to the West, I understood that 'development' is the difference between 'developed' and 'developing' countries. As much as the skyline and city lights of London, Paris, Berlin and New York, what amazed me was the uninterrupted supply of electricity and water, various modes of efficient and rapid public transport, telecommunication and the many structures of convenience that made for a better quality of life and higher standard of living. These, in turn, made for better health, higher efficiency, more productive work and improved economical functioning.

That exposure imprinted in my mind that development is just another word for infrastructure, which I then translated as 'structures of convenience for living.' Equally etched in my mind was that infrastructure – a word I never liked to use – was something for 'Them' in the advanced industrialized countries and not for 'Us' in the developing Southern nations. That was until I visited China.

Travelling to Beijing, first with Prime Minister Manmohan Singh in 2008 when he went for his economic summit with Premier Wen Jiabao and, thereafter, on work for long and short spells, opened my eyes to how much of the 'developed' can be achieved as development in a 'developing' country.

After a few long visits and short stays in Europe, I concluded that these small countries with populations so much smaller than India and China, could afford the infrastructure and the development flowing from it. Without going too far back in history, it can be said that Europe could afford a better life based on appropriation of the wealth, resources and products of the colonies over a long period. After World War II, there was the Marshall Plan, under which the U.S. pumped in huge resources. The Cold War may have been a bad time, but it was also a good time for Europe with its West and East being developed and bankrolled by their respective superpower-patrons. NATO gave West Europe an advantage over East Europe, although the East lagged behind and remained, relatively, backward. With so many governments for a population of about 600 million in 50 states (excluding Russia), great infrastructure, high employment, good quality of life and higher standard of living were no big deal.

In contrast, for the nearly three billion people of India and China taken together, there are only two national governments. Both countries have been victims of colonialism and imperialism and were blocked for long from access to technology and the goodies of the industrialized West that could have hastened their development. Given this background, the political stability along with economic, social and human development achieved by India and China, since 1947 and 1949 respectively, is indeed impressive.

China's achievements are more impressive than that of India despite the different political systems of these two countries. What struck me most during my first visit in January 2008 was China's stupendous infrastructure, and the breakneck speed at which it was being developed in the months leading to the Olympic Games scheduled to

be held later that year in Beijing. In the years since then, during visits to the provinces and work stints in Beijing, I noticed that the development of infrastructure – housing, business districts, commercial buildings, malls, markets, metro lines, ring roads, bridges, flyovers, power stations, schools, universities and new hubs of technology, transport, telecom, energy, transshipment, and railways – continues unabated. The momentum of development remains much as it was during the countdown to the Olympics.

Seeing this in China convinced me that infrastructure development is achievable even for countries with a large population; and, that scale and size need not be a deterrent. On the contrary, in a larger country, the cost and benefits can be spread over a larger area and population. I now believe that the high level of development once seen only in Europe and the U.S. (besides parts of Asia like Japan, Singapore and Malaysia) need no longer be a distant dream for India and other developing countries in the region.

China's transformation in a short time is awesome in scale and sweep. More than 700 million people have been lifted out of poverty in the last three decades. Thirty years of turbo-charged economic growth has changed for all time the semi-feudal, semi-colonial condition of the Chinese people who were dirt poor. Once condemned as irrelevant, isolated and backward, China has emerged as a global power that is at once both courted and feared. Its rise as the world's second largest economy, stable and prosperous enough to feed 1.3 billion people and hold its own against any and all is without precedent in history.

Given this background, the political stability along with economic, social and human development achieved by India and China, since 1947 and 1949 respectively, is indeed impressive.

Not once during my long periods of stay in China have I faced water shortage or power outage. At no time did I experience a single minute's cut in electricity or water supply. In China, everything – power and water supplies, infrastructure, systems and services – works and, where required, round the clock for 365 days in a year. It is, therefore, no surprise that today, much like the U.S., 'the business of China is business.'

India has much to be proud of. In many spheres, its achievements surpass or compare favourably with that of the West. Yet, India's potential remains unrealized because it is weighed down by poverty, unemployment and poor infrastructure which, in turn, retard development and growth with equity and justice.

Regardless of the many social, political and cultural differences between the Asian giants, China's experience, poverty alleviation measures and development trajectory are of immense relevance to India. Therefore, China can play an important role in India's development agenda. The 'Make in India' program is a leaf taken out of China's experience for development of the manufacturing industry as a prerequisite for the millions of jobs that have to be created. Manufacturing and infrastructure development are inextricably linked. Both go together, and it is together that infrastructure and manufacturing can generate employment, boost productivity, drive growth and make the developmental leap out of poverty and inequality.

India has the advantage of being able to choose what is appropriate from the Chinese experience. China has much to profit from partnering India. It would be serving its own interest by exporting infrastructure projects, setting up manufacturing units and finding a new market of over a billion for its companies, projects, products and services. The outcome, to use a phrase the Chinese love, would be 'win-win' for both.

The author is Senior Consultant and Editor of China-India Dialogue, *CIPG.*

Sino-Indian Infrastructure Cooperation

Opportunities & Challenges

By **Mao Keji**

CORRECTING THE MISMATCH OF NATIONAL RESOURCES BY INCREASING CHINESE INVESTMENT TO INDIA, ESPECIALLY IN THE FIELD OF INFRASTRUCTURE, MAY BRING ABOUT A MACROECONOMIC "PARETO IMPROVEMENT," GIVING RISE TO A WIN-WIN SITUATION BETWEEN CHINA AND INDIA.

I. Infrastructure is crucial to Sino-Indian economic relations

China and India, the Asian twin giants, have drawn much attention around the globe. Never before have such mammoth economies with a combined population of 2.3 billion grown so fast and steadily for so long. However, if one subjects Sino-Indian economic ties to scrutiny, an anomaly looms large: while China has been the largest trade partner of India for some years now, the volume of bilateral investment has been disproportionally small to the scale of bilateral trade and unusually meager considering the sheer sizes of the two emerging economies.

Statistics may better reveal the situation. In bilateral trade between India and China, the largest trade partner – China – registered a record high of US$70 billion in 2014, with an imbalance as large as US$38 billion in favour of China; however, China has only contributed 0.15 percent or US$313 million of India's total foreign direct investment (FDI) inflows between April 2000 and December 2013. As this heavily skewed trade-investment relations breed the double-layer issue of trade deficit and underperformed investment inflows for India, the economic relations with China has caused much concern among decision-makers in India.

Every cloud has a silver lining, however. Sino-Indian infrastructure cooperation may present a golden solution. While India is undergoing an "enormous infrastructure deficit," China has plenty of financial and technological resources ready for its global investment campaign-perfectly embodied by the Belt and Road Initiative and the creation of the Asian Infrastructure Investment Bank (AIIB). Correcting this mismatch of national resources by increasing Chinese investment to India, especially in the field of infrastructure, may bring about a macroeconomic "Pareto Improvement," giving rise to a win-win situation between China and India. After all, India needs Chinese investment, and China sees in India a great opportunity for growth.

II. Sino-Indian infrastructure cooperation is gathering momentums

The Indian government has resolved to make India a business-friendly destination, especially as Prime Minister Narendra Modi initiated his ambitious scheme of "Make in India." However, it is the infrastructure deficit that largely checks his ambition. In the World Economic

A worker picks tea leaves on an estate in Coonoor, Tamil Nadu, India. The tea trade has played a unique and significant role throughout the history of Sino-Indian commerce. [CFP]

Forum's *Global Competitiveness Report 2014-2015*, India's infrastructure ranked 87th out of 148 countries, even falling from 85th in 2013-2014. Likewise, according to a recent report from UN-Habitat, New Delhi and Mumbai – India's two leading cities – lag far behind other regional capitals in terms of infrastructure.

Infrastructure shortcomings including insufficient power generation, unreliable power grids, overcrowded and unpaved road networks, and aging and cumbersome railway system all severely cripple India's economic ambition, as it not only stifles domestic entrepreneurial dynamism, but also thwarts inbound international investment which India is thirsty for. This negative effect has been measured quantitatively by a McKinsey report which calculates that the problematic infrastructure on average drains away two percent of India's GDP every year.

For India, the need for better infrastructure is surely pressing, but it lacks domestic resources to meet the demand. Traditionally, the public sector almost entirely covered India's infrastructure spending. However, for the US$1.07 trillion – which the Confederation of Indian Industry calculated India would need to revamp its infrastructure over the 2014-19 period – the government now expects half of it to come from private capital, be it foreign or domestic. Driven by the thirst for funding, India started to look for potential overseas investors interested in filling the gaps in infrastructure spending.

A Shanghai power plant established in 1958, which is affiliated to China Power Investment Corporation. [CFP]

Bearing India's dire need in mind, China took a proactive stance to help out. During Chinese President Xi Jinping's trailblazing state visit to India in 2014, the two countries signed 12 agreements, one of which specified that China is projected to invest US$20 billion in India's infrastructure sector over five years. Under this scheme, specific investment projects for upgrading India's decrepit rail, road and power infrastructure besides telecom were also listed with details. If these projects are implemented, Xi's offer will propel China from a minor player to a major foreign investor in India.

In economic terms, infrastructure investments from China are highly appealing to India. Such inbound investments will not only help India cover its huge trade deficit vis-a-vis China, but also comprehensively strengthen India's economic foundation. After all, measures that enhance the basic infrastructure are equivalent to an across-the-board rise in the productivity of a country's industry. But, however economically attractive China's offer might seem, Sino-Indian infrastructure cooperation achieved only limited progress, definitely short of the scale projected in the 2014 agreements.

III. Constrained albeit promising infrastructure cooperation

Currently, China has made some inroads into India's infrastructure sector. With state-of-the-art railway technologies and relatively low costs, Chinese companies have won several deals in construction and equipment procurement. For specific items such as tunnel building, electrification, high-speed upgrade, carriages production, last-mile connectivity and gauge conversion, Chinese companies are particularly competitive. For example, together with various Indian partners, Shanghai Urban Construction Group (SUCG) has undertaken major tunnelling projects for the Delhi Metro Rail Corporation (DMRC) since the early 2010s, including the New Delhi Elevated Subway as well as the Delhi Metro Airport Express. In July 2015, China Railway Rolling Stock Corp., Ltd. (CRRC) also successfully sold Kolkata Metro 14 subway engines and 112 carriages in total.

Similarly, India's rocketing power demand has presented massive opportunities for Chinese equipment suppliers and construction contractors. In Mundra thermal power station of Gujarat, for instance, Beijing Beizhong and Harbin Boiler supplied the boilers and generators for the first four units; Sichuan Dongfang Machinery supplied the turbine; and SEPCOIII from Shandong was the EPC contractor for the five 660MW units, which featured super critical technology. In Odisha, SEPCOIII was also the EPC contractor for Jharsuguda Thermal Power Plant. According to an Indian official, Chinese suppliers, who in general offer 15-20 percent lower price than their Indian competitors, have claimed more than 50,000 MW capacities across India.

As India gets increasingly involved in the multilateral institutions led by China, the stance of the two countries can be gradually massaged to align with each other.

Similar stories can also be found in TBEA Energy, a Xinjiang-based company, which is now developing a major green energy park near Vadodara, Gujarat.

Despite these individual and scattered examples of success, a large portion of China's endeavours and passion for infrastructure development in India has been rebuffed for non-market reasons. First of all, India's undue anxieties against China largely prevent many Chinese enterprises from entering the fields that are regarded sensitive, such as telecom and railway networks. Secondly, non-market risks – rampant red tape and political inertia – render Chinese investors very vulnerable, as infrastructure projects often take a long period and depend very much on a cooperative local government. Thirdly, some Indian decision-makers have unnecessarily pit their

The Park Circus Railway Station in Kolkata, India. [CFP]

geostrategic designs against the Chinese ones, thereby making it impossible for Chinese regional infrastructure initiatives – the BCIM (Bangladesh, China, India, Myanmar) Economic Corridor or the 21st Century Maritime Silk Road – to receive New Delhi's cooperation.

Given the above-mentioned hurdles and distortions, China's infrastructure bids, which appear economically attractive in general, are often turned down for non-market reasons. For example, the BCIM Economic Corridor, which plans to connect China with India through Myanmar and Bangladesh by highways, railways and sea ports, has had only a lukewarm reception in India. Bridging two major emerging economies together, the BCIM Economic Corridor is expected to bring multiple benefits such as improved connectivity, economic diversification and poverty reduction to the region. However, as these considerations of social and economic well-being are largely overshadowed by misplaced concerns over "security and stability" of the region, different players from the Indian side have poured cold water on China's enthusiasm, burdening Sino-Indian infrastructure cooperation with an extra layer of complexity.

VI. Multilateral institutions present a way out

As a matter of fact, many Chinese offers have been turned down because of political and security concerns in the past. Although such refusals bring short-term psychological or ideological relief, they may backfire and hurt India's economic potential in the long run. However, some new elements may bring new dynamics and increase cooperation in Sino-Indian relations. India has accepted China's invitation to join the AIIB as one of the first founding members. It even became the second largest stakeholder only behind China, securing the post of vice-president for an Indian. Moreover, China and India, together with other BRICS countries, have also established the New Development Bank – also known as the BRICS bank – of which Mr K. V. Kamath from India holds the first presidency.

The deep-rooted anxieties among Indian hard-liners can hardly be dissipated soon. However, as India gets increasingly involved in the multilateral institutions led by China, the stance of the two countries can be gradually massaged to align with each other. As scholar Angela Stanzel insightfully observed, "as a member of the AIIB – a potential financing source of some Silk Road projects – India is already part of the Silk Road project, whether it likes it or not." As capital inflows can be routed via the AIIB and BRICS bank in which New Delhi has a say, India turns out to be better positioned to receive the Belt and Road Initiative, especially China's infrastructure investments which it has long been thirsting for.

Even where there are common interests, cooperation is not always straightforward. However, with the help of these newly-established multilateral institutions, the prospect for Sino-Indian infrastructure cooperation may turn out to be promising like never before.

The author is research analyst of the International Cooperation Center of the National Development and Reform Commission. He mainly engages in research in developing countries.

India's Development Agenda and China

By **M. K. Bhadrakumar**

CHINA'S EXPERIENCE AND DEVELOPMENT TRAJECTORY ATTRACT THE INDIANS. WE INDIANS WOULD LIKE TO CHERRY PICK FROM CHINA'S EXPERIENCE.

The present Indian government led by Prime Minister Narendra Modi enjoys a mandate that was secured largely for the promises made to advance the so-called 'development agenda.' In the flush of an impressive victory in the 2014 elections, addressing his first public rally on May 17 in Ahmedabad, Modi said: "In this election the majority has voted for the development agenda. ...This election has laid the foundation for a modern India."

Modi went on to say, "Development is not a government programme. It has to be the public agenda." It was a combative speech. Modi knew he was entirely at liberty to set the yardstick of 'good governance' for his government. No one disputed him.

To be sure, Modi assiduously cultivated a reputation for himself in India and abroad as a 'business-friendly' political

leader. India likes to hear comparisons being drawn with China wherever it can, and it must have come naturally to *Time* magazine when it wrote on a cover story lauding Modi as a "firm, no-nonsense leader who will set the nation on a course of development that might finally put it on par with China."

Indeed, high hopes were raised all around that Modi as Prime Minister would turn around India's relationship with China and reset it on a new course orientated toward economic partnership. The American think tank Carnegie Center for International Peace assessed the emergent paradigm of Sino-Indian partnership as follows:

"When it comes to dealing with big powers, geo-economics...will likely guide Modi's foreign policy.... For instance, geo-economics will play a central part in driving Sino-Indian relations. Modi is well aware that China needs the big Indian market, while India desperately seeks large Chinese investments to build transit and other infrastructure critical to its economic revival. Acrimony over borders and geopolitical rivalry in the region notwithstanding, trade will be the centrepiece of India's policy toward China.... In all likelihood, Modi will highlight issues relating to trade, investment, infrastructure, and the other economic and development inputs necessary to revive economic growth. In short, his government's priority is to bridge the gap between the country's development goals and its foreign policy."

GALVANISING JOB CREATION

Without doubt, a reset of India-China ties riveted on "geo-economics" makes great sense. For one to fully grasp it, an understanding of what constitutes the 'development agenda' in the Indian context and how China comes into it becomes necessary. India is a vast country full of paradoxes. One of them is that it can be proud of achievements in the economic sphere comparable to Western standards, but on the other side it is also characterised by extreme poverty affecting nearly one-third of its population.

Where China fires up India's imagination is by its incredible record of pulling up 200-300 million people above the poverty level within a generation or two, which is unprecedented in human history. Certainly, analogies do not hold between any two ancient countries such as India and China, since so many variables are at work – cultural ethos, political system, social formation, external environment, and so on. Nonetheless, China's experience and development trajectory attract the Indians. We Indians would like to cherry pick from China's experience.

The Chinese experience is real and, therefore, relevant. For a political economy like India, it is unacceptable that after nearly seven decades of Independence, the backlog of poverty weighs it down like an albatross. India too needs to create jobs in their millions for its youths. Employment generation on such a massive scale is only possible if India emulates China's example and creates a manufacturing industry.

Viewed from such a perspective, manufacturing industry and the infrastructure development that goes with it are the principal locomotives of India's development agenda. Both can create jobs in large numbers, and at the same time provide a big stimulus for the overall revival and growth of the economy.

Amidst the mayhem in the world economy today, India may seem a rare exception with a projected growth rate of 7.3 percent during the 2015-2016 financial year (FY). The government draws satisfaction – and the International Monetary Fund probably endorses it – that India is today one of the fastest-growing big economies in the world.

On the other hand, on a closer look, a different picture emerges. For one, there has been a controversial revision of the methodology of computing the national income figures, which gives the economy a larger-than-life look. There has been much criticism within India and abroad that the actual growth of the economy may only be somewhere around five percent.

Secondly, the fall in the price of oil has come as a windfall. India's oil imports as a percentage of GDP have come down from nine percent in the 2011-2012 FY to five percent currently. Obviously, this is a significant factor contributing to growth. But then, it is a transient factor. Big oil producing countries such as Saudi Arabia, Russia, Venezuela, and Iran are seized of the need to keep production at levels that assure higher market price.

Equally, it becomes evident that the sector-wise performance of the Indian economy also doesn't convey such a rosy picture. Poor monsoons for two consecutive years have taken a heavy toll on agricultural production and, in turn, on rural demand. If the performance of the manufacturing sector has been rather unimpressive, the year-on-year growth of exports will have been negative. Suffice it to say, the economy is virtually surfing on high growth of the service sector and the fall in oil price.

Even while assuming a GDP growth figure of 7.3 percent to be accurate, when translated into employment generation, a very dismal picture emerges. In the prevailing circumstances, it is only through massive investments in irrigation, power, and rural and urban infrastructure that large-scale job creation becomes possible.

The silhouette of a construction site. [Shutterstock]

This is where economic partnership with China can play a very useful role in India's development. China's rich developmental experience, its investible surplus of capital and its deep expertise in infrastructure development and manufacturing industry are of great relevance.

REBALANCING WORLD POLITICS

The Modi government began brilliantly by injecting new dynamism in India's diplomacy towards China. Indeed, China was not a strange country for Modi. As the chief minister of Gujarat, he had visited China more than once and from all accounts, he was visibly impressed by what he saw. He was reportedly enthusiastic about Chinese companies setting up business in Gujarat.

However, looking back over the 22-month period of the Modi government, to cut a long story short, the high expectations about India-China economic relations – trade and investment, in particular – getting a makeover have not been fulfilled. There was much hype about India welcoming large-scale Chinese investments in setting up industrial parks, modernization of railways, highways, ports, power generation, distribution and transmission, automobiles, manufacturing, food processing and textile industries and so on. But such animated talk is no longer heard.

In fact, Sino-Indian economic ties are languishing. The paradox is two-fold here. One, Chinese investment still holds a major attraction for India to develop its infrastructure and build a manufacturing sector leading to large-scale job creation, and the West cannot substitute for China here. Two, China itself has been manifestly eager to advance economic relations with India, which, incidentally, stands in sharp contrast with the reluctance of U.S. businesses to invest in India. China's trade and investment in the South Asian region is on a pronounced upward curve, too. However, Sino-Indian trade has shrunk, and there is no big Chinese investment plan on the anvil – except, perhaps, in the IT industry. So, where is the problem?

In a nutshell, it appears that old phobias regarding any deep engagement with China have resurfaced in India. Whereas trade and economic ties would have been a stabilizing factor in the overall Sino-Indian relationship, in practice it remains a road not taken.

The Indian thinking with regard to relations with China misses the 'big picture.' Simply put, economics is lagging behind politics (and geopolitics), notwithstanding the claims by Modi during the election campaign in 2014 that economic diplomacy would be the primary driver of India's foreign policies in a government under his leadership.

The heart of the matter is that the 'cooperation-cum-competition' syndrome vis-a-vis China is far too deeply embedded in the Indian mindset. There is an acute sense of rivalry felt by a large segment of informed Indian opinion. They are unable or are reluctant to absorb the import of the internationalization of the RMB. The point is, China has re-emerged, historically speaking, as a semi-autonomous core of the world economy. China is today, arguably, the principal driver of East-West and North-South rebalancing that is taking place in world politics.

With its economic growth trajectory, in spite of the recent slowing down, China has become the core of South-South trade and investment linkage, replacing the U.S. and Japan from their traditional pivotal status. This makes China a crucial global actor in the decades to come. Suffice it to say, in the ongoing, gradual reordering of world politics, which challenges the authority of traditional rule makers (whose ability to set the global agenda and shape the global environment is waning), India has a lot of convergence with China by way of common interests and shared concerns.

The erosion of Euro-Atlantic authority, the growing irrelevance of the G7, the inability of the North Atlantic Treaty Organization (NATO)in setting policy agenda serving the West's preferences or choices, the failure of the United States to prevent even its closest partners and allies from joining the Asian Infrastructure Investment Bank (AIIB) – don't these signposts point in the same direction?

The Indian thinking or mindset towards China is somehow fixated on a scenario of China inexorably dominating as the apex of a new global authority. Whereas, the unmistakeable trend of development in the political and economic order is towards a diffusion of power. It is, therefore, in India's interests to work with China so as to nudge the global rebalancing in the direction of greater equality and political voice.

A final point concerns the India-U.S. relationship to the extent it would impact India's normalization process with China. A significant segment of opinion in India has failed to grasp that the U.S. and China are deeply interdependent. They would prefer to believe that the two countries are locked in a rivalry that has every potential to become confrontational.

Economic partnership with China can play a very useful role in India's development. China's rich developmental experience, its investible surplus of capital and its deep expertise in infrastructure development and manufacturing industry are of great relevance.

On the contrary, China is a main creditor of the U.S., while America is China's principal market for exports. Put differently, India needs to factor in that China's re-emergence is part of a historic transition. What the U.S. can hope to achieve realistically will be to manage the competition with China from a position of strength, while avoiding confrontation and taking care not to give the impression of making covert attempts to contain China.

The challenge facing Indian diplomacy will be to engage closely with the U.S., while independently reaching out to China. India's problem with China ultimately narrows down to the border dispute, which will take time to resolve. But, in the meantime, the two countries are manifestly anxious to keep peace and tranquillity on the border. At any rate, the U.S. cannot be expected to take a stance supportive of India in the border dispute; nor is India expecting or in need of any such American role.

Thus, taking a holistic view, it makes eminent sense to pursue the "Modi path" of giving primacy to geo-economics in India's relations with China. India has the requisite intellectual resources to comprehend the profundity of China's rise for contemporary history and politics of Asia and the world. And Modi has the personal awareness that a mutually beneficial India-China relationship is possible – and is highly desirable for India's developmental needs.

The Modi government has run through 25 months of its 60-month mandate. It is important to make up for lost time, as all is not lost. A purposeful reorientation of India's economic diplomacy vis-a-vis China is an urgent necessity.

October 26, 2015: **An IndiGo Airlines aircraft prepares to land as a man paddles his cycle rickshaw in Ahmedabad, India. [REUTERS/Amit Dave]**

The author is a career diplomat belonging to the Indian Foreign Service, retired as ambassador to Turkey. His previous assignments included the former Soviet Union (twice), South Korea, Sri Lanka, Germany, Pakistan and Uzbekistan. He served the Pakistan-Iran-Afghanistan Division in the foreign ministry at various levels, including as its head. Since retirement, he has been writing for Indian and foreign publications on India's foreign policy and regional and international politics.

Road to a Great Power in Transportation

– China's Traffic Infrastructure Leaps Forward

FROM 'INTRODUCING TECHNOLOGY' AND 'MADE IN CHINA' TO 'DESIGNED IN CHINA', CHINA'S TRANSPORT INDUSTRY HAS TURNED FROM A 'STRAGGLER' TO A 'FORERUNNER' IN THE WORLD.

By **Zhao Xinhui**

November 2, 2015: **Dragged by a tractor, China's home-made large passenger aircraft, the C919, rolls off the COMAC final assembly line in Pudong District, Shanghai. It is the first commercial jumbo jet that China independently developed in conformity with international airworthiness standards. [IC]**

Since the founding of the People's Republic of China in 1949, the nation's traffic infrastructure has witnessed a great leap forward. Given the need for transport as a foundation and propeller for economic and social development, the Chinese government attached great importance to the development of transportation. Since then, China's transport industry, which was rather backward, underwent restructuring for rapid development.

BOOSTING ECONOMIC AND SOCIAL DEVELOPMENT

As a basic industry, transportation is necessary for economic and harmonious development of society. It is an important prerequisite that supports economic growth and determines economic vitality.

Transport supports China's fast economic growth. In the early years of the People's Republic of China, under-developed transport was a bottleneck that seriously hindered economic and social development. Over decades of construction and development, the quality and turnover of China's passenger and cargo traffic have greatly improved, thus boosting economic efficiency and hastening economic and social development.

Transport accelerates China's industrial

Civil aviation: The number of civil airports has increased from 70 in 1978 to 207 today. By 2014, China had opened 3,142 regular flight routes, about 19 times as many as that in 1978. The length of its multiple flight routes has reached 7.0311 million kilometres, about 127 times more than that of 1978. China has an aviation transport network that links all major international cities and offers efficient and convenient high-end traffic services.

restructuring and upgrade. In the course of China's industrialization and modernization, transport has played a leading role in territorial development, regional spatial adjustment and industrial restructuring. The construction of logistics channels enables technology and products to be transported efficiently amongst different regions. Transport can accelerate economic growth. In China's industrial distribution map, industrial clusters were mostly around developed transport arteries. Subsequently, industrial agglomeration may enhance regional advantages and thereby nudge different regions to adjust their respective industrial structures, achieve mutual complementation between their advantageous resources, and distribute their industrial resources more rationally.

Transport supports China's implementation of its major strategies. Transport integration has been given top priority in the implementation of the nation's strategic plans ranging from the 'Western Development,' 'Revitalizing Northeastern China,' and 'Rise of Central China' to the 'Belt and Road Initiative,' 'Integrated Development of Beijing, Tianjin and Hebei,' and 'Yangtze River Economic Belt.' Through giving full play to the leading role of transport infrastructure, China aims to form regional, grid-like traffic networks with multiple hubs. Based on economic belts, routes, corridors and bridges, those regions can complement each other's advantages, connect each other's productive factors, and achieve common development.

Transport improves social equality, inclusiveness and sharing. Essentially, transport is supposed to serve people. Therefore, it should be people-centered, with its ultimate purpose grounded in people's convenience, interests and benefits, so that all enjoy the dividends of China's reform. Transport is an important foundation for optimizing urbanization. Particularly, transport conditions are among key factors that can determine economic and social development of impoverished areas. In recent years, a number of highways, bridges, and ferries have been constructed in rural areas, greatly improving the transport conditions of many poverty-stricken areas and enabling more people to enjoy the benefits of transport development.

Inland water transport: China has made remarkable advances in inland waterway infrastructure construction, with foreign trade and specialized wharfs along the nation's two latitudinal artery waterways (namely, the Yangtze and Xijiang rivers), one longitudinal waterway (namely, the Beijing-Hangzhou Grand Canal) and two waterway networks (namely, the Yangtze River Delta and the Pearl River Delta) as well as in its major inland river ports. By 2015, inland waterways were 126,000 kilometres in length, of which 51.8 percent are state-class waterways, ranking first in the world.

IMBALANCES AND CHALLENGES

Over decades, China's transport industry has changed from weak to strong, and formed a comprehensive, interconnected traffic network integrating various means of transport. It has accomplished a quantum leap in terms of transport mileage, volume, technology, equipment, and service efficiency and quality. However, there are still challenges and problems to be overcome in the field of transport infrastructure.

China's transport industry is still affected by an imbalanced internal structure. Presently, each type of transport tends to develop by itself, lacking integration and coordination, especially the bottleneck of the so-called 'last 100 metres' of passenger transport and the 'last kilometre' of cargo transport. Railway transport has yet to achieve seamless connection with highways and harbors. The different means of transport lack further integration. Moreover, China lags behind in the construction of railway arteries, inland waterways, and harbor transport systems. Transport infrastructure is imbalanced between different regions in China. Former revolutionary base areas, areas inhabited by ethnic minorities, remote and border areas and poverty-stricken areas are still underdeveloped in transport infrastructure.

The development of transport is increasingly constrained by external factors. Apart from growing pressure from factors like energy, land, and environment, transport infrastructure construction is facing greater difficulties, higher costs, and rising shortage of maintenance funds. Against a backdrop of the pressure of an accelerating economic downturn, it would be hard to provide funds for the

The Port of Shanghai has ranked first around the world in terms of container throughput for several successive years. The port is expected to become an international shipping center in the next five years, and international transit freight consolidation services will make up more than half of the port's total services by 2020. [Shutterstock]

Harbor: China has fully opened its coastal port construction market. The number of 10,000-tonnage deep-water berths increased from 133 in 1978 to 2,211 in 2005. Moreover, the country's harbor handling capacity has also improved. By 2014, the number of its productive berths had increased to 31,705. In addition, the number of specialized berths for coal, oil, iron ore and container shipping added up to 1,114 in 2014, thus meeting the demands of large vessels.

Hangzhou is expected to become a world-class center of the Yangtze River Delta city cluster in the next five years, with its public transport network comprised of urban highways, subways, intercity rails, high-speed railways, and civil aviation further improved. [CFP]

Highway:
Through adopting the policy to develop toll ways and making plan beforehand, China has not only rapidly extended the length of its highways, but also enhanced their technological grades. The national highway network comprising 'five longitudinal highway arteries and seven latitudinal ones' has been completed 13 years ahead of schedule; and, the length of expressways went from zero in 1988 to 123,000 kilometres in 2015. Remarkable achievements have been made in urban highway construction. By 2014, 99.98 and 99.82 percent of the townships and villages respectively had built paved roads, which greatly support poverty reduction and social progress in rural areas.

Table 1: International Rankings of China's Transport Industry

Index	2014	Rank	Percentage of global total
Highways	4.57 million km (2015)	2	
Expressways	123,000 km (2015)	1	
Navigable inland waterways	126,000 km (2015)	1	
Coastal deep-water berths	2,211 (2015)	1	
Railways under operation	120,000 km (2015)	2	
High-speed railways	190,000 km (2015)	1	More than 60 percent
Civil airports	207 (2015)	15	
Urban rail under operation	3,300 km (2015)	1	
Pipeline transport	106,000 km (2015)	-	
Deadweight tonnage	258 million tons	-	
Shipping capacity	145 million DWT	4	8 percent
Highway passenger volume	19.082 billion	1	
Highway passenger turnover	1.20841 trillion persons/km	1	
Highway cargo volume	33.328 billion tons	1	
Highway cargo turnover	6.101662 trillion tons/km	1	
Harbor cargo throughput	12.452 billion tons	1	Of the world's top 10 harbors, eight in China
Harbor container throughput	202 million TEU	1	Of the world's 10 largest container harbors, seven in China
Waterway cargo volume	5.983 billion tons	1	
Waterway cargo turnover	9.277456 trillion tons/km	1	
Railway passenger turnover	1.160475 trillion persons/km	1	
Railway cargo turnover	2.753019 trillion tons/km	1	
Air passenger turnover	633.42 billion persons/km	2	9.8 percent
Air cargo turnover	18.78 billion tons/km	2	9.2 percent

Transport infrastructure Transport equipment Transport services

Source: *The Statistical Report on the Development of the Transport Industry 2014*

construction in the near future.

There are considerable demands for improving transport quality and efficiency. The demands for transport services with high added-value are growing, especially high-end, convenient, comfortable and customized travel services, thus raising the bar for quality and efficiency of transport services.

New industrial trends are accelerating the transformation of the transport industry. New trends such as the development of internet-based transportation are changing traditional transaction modes, organizations and operations of transport services; and, injecting vitality into the transport industry while giving rise to new challenges.

In the new phase of development, China's transport industry must confront new challenges and solve new problems by focusing on industrial restructuring and continuing reforms.

FROM 'STRAGGLER' TO 'FORERUNNER'

China has formed a comprehensive transport network. Currently, it ranks the world's No.1 in the lengths of expressways and high-speed railways, highway passenger and cargo turnover, harbor handling capacity, waterway freight volume and turnover, railway transportation, and urban rail mileage. The nation also ranks second globally in the lengths of highways and railways and overall aviation turnover.

China has become a veritable great power in terms of transportation and plays an increasingly important role in world transport development by undertaking transport projects in several countries.

From 'introducing technology' and 'made in China,' to 'designed in China', China's transport industry has turned from a 'straggler' to a 'forerunner' in the world. The nation has achieved miraculous progress and accumulated world-leading technologies in fields like expressway, high-speed railway and deep-water harbor construction.

Over decades, China's transport technologies have been spread across the world. Those cooperative projects such as the China-Pakistan Economic Corridor, the Algeria East-West Expressway, the Jamaica North-South Expressway, the Second Penang Bridge in Malaysia, the Colombo Port City in Sri Lanka, the New Container Terminal at Namibia's Walvis Bay, the Nigeria High-speed Railway Project, and the Jakarta-Bandung High-speed Railway in Indonesia laid a solid foundation for China's transport industry to go abroad. At present, China has been encouraging its high-speed railway, expressway, and harbor construction enterprises to participate in overseas infrastructure construction projects and international production capacity cooperation, thus sustaining itself as the world's leader in technology in these sectors.

So far, China's proposal on building the Silk Road Economic Belt and the 21st Century Maritime Silk Road (namely, the 'Belt and Road Initiative') has created a new framework for international economic cooperation.

Transportation is an im-

Railway:
China has comprehensively promoted railway reform and development with the purpose of rapidly upgrading transport capacity, technology and equipment. The length of its railways under operation increased from 52,000 kilometres in 1978 to 120,000 kilometres in 2015. By 2014, the length of its dual-track railways had reached 57,000 kilometres – about 7.5 times more than that of 1978. Moreover, the length of the high-speed railways has increased from zero to 19,000 kilometres, ranking first in the world.

Table 1: Statistics of China's Transport Infrastructure in 1949, 1978 and 2015

Index	1949	1978	2015
Highways in operation (10,000 km)	8	89	457
Network density (km/100 km²)	0.8	9.27	47.6
Expressways in operation (10,000 km)	0	0	12.3
Inland waterways (10,000 km)	7.36	13.6	12.6
Productive berths	-	-	31,705 (2014)
Coastal deep-water berths	0	0	2,211
Railways in operation (10,000 km)	2.2	5.2	12
Dual-track railways (10,000 km)	-	0.763	5.7 (2014)
Electric railways (10,000 km)	-	0.103	6.5 (2014)
High-speed railways in operation (10,000 km)	0	0	1.9
Civil airports	36	70	207
Regular flight routes	5	162	3,142 (2014)
Multiple flight routes (10,000 km)	-	5.53	703.11 (2014)
Urban rail transit (km)	-	-	3,300
Pipeline length (10,000 km)			10.6

Highways | Harbors and water transport | Railways | Civil aviation | Inner-city transport | Pipeline transport

Source: *The Statistical Report on the Development of the Transport Industry 2015*, etc.

> Against the backdrop of fast-growing national economy since the 1990s, especially after the 1998 Asian financial crisis, China's transport infrastructure has had a decade of rapid development by breaking bottlenecks and adopting strategic plans and guidelines aimed at achieving 'upgrades' and 'leaps forward.'

portant foundation for inter-regional exchange and communication. The nine major projects planned by the Chinese Ministry of Transport (MOT) to link China and its neighbors including Mongolia, Russia, and Pakistan will form a network of Silk Road routes that is connected to domestic traffic arteries and radiates globally, as well as a tangible framework for economic cooperation along the Belt and Road. The majority of countries along the Belt and Road are mostly underdeveloped economically and socially and need to develop their infrastructure on a large scale. China's advanced and reliable technology and equipment in the field of transport infrastructure construction can meet their demands. The Belt and Road Initiative provides a good opportunity and platform for China's transport infrastructure enterprises to expand their businesses to other countries and regions in Asia, Central and East Europe, East and North Africa; and, enhance their brand recognition and influence worldwide. These could propel China's transport industry to new heights on the world stage.

The author is associate research fellow at China Academy of Transportation Sciences, MOT. She graduated from Chang'an University, where she majored in Transportation Planning and Administration. She has long been dedicated to the research of transport strategies, plans and policies, and won first prize on science and technology five times and second prize one time from the China Highway and Transportation Society. The books she authored or co-authored include China's Transportation Revolution: Road to Development by Leaps and Bounds *and* Developing Modern Transportation: New Strategies on Highway and Waterway Development in the New Era.

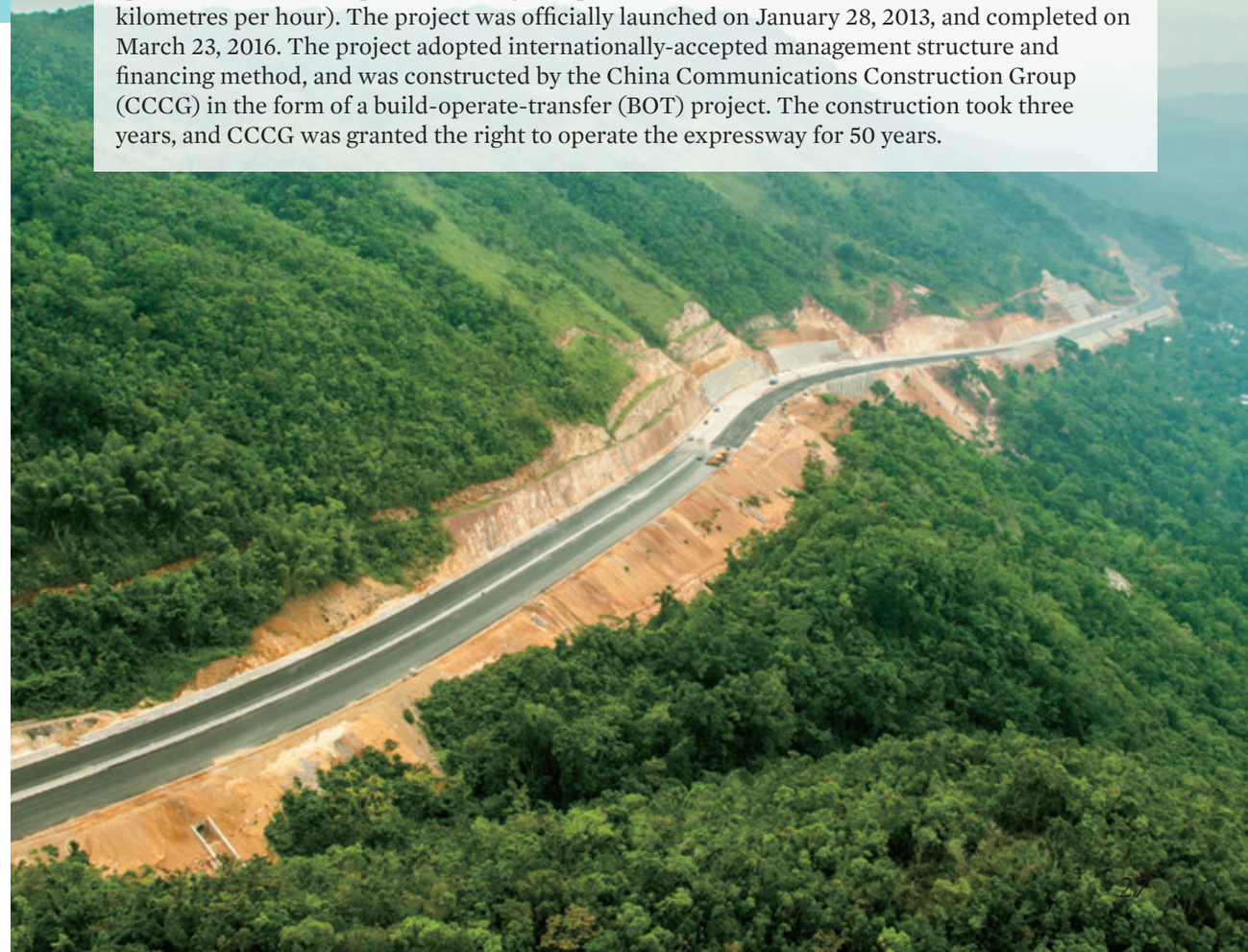
China's Key Transport Infrastructure Projects Abroad

COLOMBO PORT CITY, SRI LANKA

The Colombo Port City project, located in offshore area to the south of the South Container Terminal in Colombo, capital of Sri Lanka, is connected to Colombo's Central Business District (CBD). It plans to reclaim 267 hectares of land from the sea. With direct investments totaling US$ 1.4 billion, the project is expected to stimulate further investment of US$ 13 billion and create 83,000 jobs. As planned, the floor areas of its buildings will exceed 5.3 million square metres. It will take three years to finish land reclamation, five to eight years to complete the preliminary stage, and 20 to 25 years to complete the entire project. The China Harbour Engineering Co., Ltd. (CHEC) is responsible for the project's preliminary land development, and joins hands with the government of Sri Lanka to act as land transferors. Moreover, the company will participate in consequent land development in various forms. Launched in January 2014, the project is still under construction.

JAMAICA NORTH-SOUTH EXPRESSWAY

A part of Jamaica's "Highway 2000" plan, the Jamaica North-South Expressway is China's first infrastructure investment project abroad, as well as the ever-largest infrastructure project in Jamaica. The expressway extends 68 kilometres and is a four-lane highway, with a designed speed of 80 kilometres per hour (designed speed for some mountainous sections limited to 60 kilometres per hour). The project was officially launched on January 28, 2013, and completed on March 23, 2016. The project adopted internationally-accepted management structure and financing method, and was constructed by the China Communications Construction Group (CCCG) in the form of a build-operate-transfer (BOT) project. The construction took three years, and CCCG was granted the right to operate the expressway for 50 years.



SECOND PENANG BRIDGE, MALAYSIA

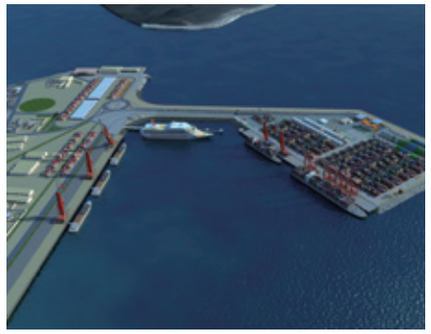
With a total length of 24 kilometres, the Second Penang Bridge in Malaysia is the longest in Southeast Asia. Another landmark connectivity project under the cooperation between China and ASEAN after the Suramadu Bridge, it is Malaysia's largest civil engineering project in the past 20 years and the longest sea-crossing bridge constructed by a Chinese enterprise abroad. Designed and constructed by CHEC, the project began construction on November 8, 2008, and was completed on September 15, 2013. The four-lane cable-stayed bridge, with a designed speed limit of 100 kilometres per hour, has lanes specially designed for motorcycles on both sides. Its main navigation span is 225 metres and at a height of 30 metres.

HAMBANTOTA PORT PROJECT (PHASE I), SRI LANKA

Contracted by CHEC, the phase I of the Hambantota Port project in Sri Lanka commenced on January 15, 2008, and was completed on December 31, 2011. The project involved two 100,000-ton multipurpose berths, a 100,000-ton oil terminal, a 105-metre service quay, a 490,000-square-metre harbor basin, a 1,200-metre-long approach channel with a 210-metre-wide bottom, a 1,300-metre breakwater, and a 40-hectare yard area, as well as auxiliary buildings and harbor equipment purchase and installation. In 2016, the project won the 13th China Zhan Tianyou Award of Civil Engineering.

NEW CONTAINER TERMINAL AT THE PORT OF WALVIS BAY, NAMIBIA

As the EPC contractor of the project, CHEC is responsible for its design, equipment purchase and construction. With a contract value of US$ 300 million, the project commenced in May 2014 and is scheduled to be completed in May 2017. The project involves a 600-metre container berth, as well as auxiliary facilities including the yard area, roads and railroads. As the most important logistics hub in Namibia, the Port of Walvis Bay handles 90 percent of the country's sea cargo traffic.



MOMBASA-NAIROBI RAILWAY, KENYA

The construction of the Mombasa-Nairobi Railway, with an overall length of 472 kilometres, began on December 12, 2014, and is planned to be completed in 60 months. The first new railway constructed in Kenya over the past 100 years, it will serve as the throat of the railway network in East Africa. The project, contracted to the China Road and Bridge Corporation, is designed and constructed according to China's first-class national railway standards. This was the first time for Africa to introduce China's full industry chain ranging from financing, technology, standards, equipment manufacturing, and management.

TRACK LAYING FOR THE AMPANG LRT EXTENSION PROJECT IN KUALA LUMPUR, MALAYSIA

As a major sub-contractor of the Ampang light rail transit (LRT) extension project, CHEC is mainly responsible for the design, equipment purchase, construction, and debugging of a 36.15-kilometre bi-directional ballastless main track line, a 1.59-kilometre track linking the main line and the rail depot, a 6.51-kilometre track in the rail depot, and a 45.3-kilometre third rail, as well as emergency walkways, railroad signs, 64 railroad switches and 13 elevated stations along the LRT line. Started on July 31, 2012, the project is scheduled to be completed in 44 months.

Compiled by Sun Huifeng from China Harbour Engineering Co., Ltd.

Budget 2016-17
Infrastructure for Rural India

By **Dr Rajendra Dayal**

December 16, 2015: A farmer channels water to irrigate his wheat field on the outskirts of Ahmedabad, India. [REUTERS/Amit Dave]

TheUnion Budget for 2016-17 presented by the Finance Minister, Arun Jaitley, has rural India as its principal theme. Prime Minster Narendra Modi describes it as a pro-village, pro-poor and pro-farmer budget that will change the lives of the common people. The budget appears to be very sensible, economically pragmatic and politically astute.

It is economically pragmatic as it recognizes that agriculture has become the Achilles' Heel of India's growth story – the weakest link, which, if not addressed, will hinder a reversal of the industrial slowdown and not allow the Indian economy to progress with the speed and effect that Modi wants. It is politically astute because with its promise of doubling farmers' income in six years, it is aimed at creating a "feel-good" sense among the farmers and the rural poor – an attempt to woo rural India, which was always a constituency of the Congress Party.

THE BUDGET

The politics of the budget seems to serve well the ends of economic development through inclusive, equitable, and growth-promoting rural development. The budget's focus is understandably, therefore, on rural demand, rural output and rural welfare. To achieve these outcomes, adequate infrastructure in the rural sector is a pre-requisite. The previous UPA government had introduced a time-bound Bharat Nirman program for creation of rural infrastructure. The areas of action included: rural roads, irrigation, rural water supply, rural housing, telecommunication connectivity, and rural electrification. This budget recognizes the close link between infrastructure, economic growth and poverty alleviation, and builds upon a 'modified' conceptual framework of Bharat Nirman towards creating infrastructure for rural development.

Rural development requires infrastructure support of various kinds. Agriculture needs assured irrigation, development of rain-fed areas and watershed management, electrification, road connectivity, warehousing, storage, agriculture servicing facilities, agro-processing, and marketing infrastructure such as mandis. In addition to the above, infrastructure is required for school and skill development, healthcare facilities, sanitation services, and supply of piped drinking water. This budget takes a few steps towards creating and enhancing the infrastructure support for rural development. Agriculture and farmers' welfare gets an allocation of Rs. 35,984 crore, an increase of 127 percent over the previous year's allocation. The Ministry of Rural Development gets an allocation of Rs. 87,765 crore compared to Rs. 73,269.66 crore it received in 2015-16.

IRRIGATION AND LAND RESOURCES

Out of the 141 million hectares of net cultivated area, only 46 percent is under irrigation. The budget for 2016-17 proposes to bring 28.5 lakh hectares of additional crop area under irrigation. For this purpose, the budget has allocated Rs.17,000 crore, under the Pradhan Mantri Krishi Sinchai Yogna (PMKSY). The budget also provides support for fast-track implementation of 89 incomplete irrigation projects under the Accelerated Irrigation Benefit Programme (AIBM). When completed, these would bring irrigation benefits to 80.6 lakh hectares of land. By the end of March next year, 23 such projects would be completed.

Simultaneously, for sustainable management of ground water resources, the budget has made a provision of Rs.6,000 crore, to be financed multilaterally. In addition, at least 500,000 farm ponds and dug wells in rain-fed areas would be taken up by making productive use of allocations under the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA). Moreover, the budget has announced that a dedicated long-term Irrigation Fund would be created in the National Bank for Agriculture and Rural Development (NABARD) with an initial corpus of about Rs. 20,000 crore. Towards this corpus, budgetary support and market borrowings for 2016-17 would be Rs. 12,517crore.

Drought-prone and

distressed areas would be brought under the Deendayal Antyodaya Mission. Cluster Facilitation Teams will be set up under MGNREGA to ensure water conservation and natural resource management in each drought-prone block. Such areas would also be taken up on a priority basis under PMKSY.

MARKETING INFRASTRUCTURE

Farmers need market for good income. In July 2015, the Union Cabinet had approved a scheme for setting up a National Agriculture Market (NAM). This is to be put in place through the Agri-Tech Infrastructure Fund (ATIF) for which a budget of Rs.200 crore has been earmarked. Under this scheme, 585 regulated markets will get connected on the e-market platform. The Unified Agricultural Marketing e-Platform came into effect on April 14, this year.

In order to give a boost to agro-processing industry, the budget allows 100 percent FDI in marketing of food products produced and manufactured in India.

RURAL ROADS

Rural roads contribute significantly to rural development by linking farms to market and creating opportunities to access goods and services located in every village or small town. For road and highway development, the budget has allocated Rs. 97,000 crore, out of which Rs. 19,000 crore are meant for rural roads under the Pradhan Mantri Gram Sadak Yogna. In the past, the rural roads scheme had suffered because of underfunding. The allocations in 2012-13 and 2013-14 were only Rs. 8,885 crore and Rs. 9,805 crore, respectively. In addition to Central allocation, state governments too would spend around Rs. 8,000 crore. The target is to connect all eligible 65,000 habitations by constructing 2.23 lakh kilometers of roads.

RURAL ELECTRIFICATION

Village electrification not only lights homes but also facilitates economic activities. It is needed for irrigation, agro-processing, agro-servicing and for many economic activities in the non-farm sector. Nearly 50 percent of the income of rural households emanate from the non-farm sector. This underlines the importance of electrification. The village electrification project was started earnestly during Bharat Nirman (2005-09). As on April 1, 2015, a total of 18,542 villages were yet to be electrified. On August 15, 2015, the PM announced that all remaining villages would be electrified within the next 1,000 days. The budget has allocated Rs. 8,500 crore under Deendayal Upadhyaya Gram Jyoti Yojna and the Integrated Power Development Schemes for this purpose. The goal is 100 percent electrification by May 2018.

INFRASTRUCTURAL INTERLINKS

Infrastructure building is also being undertaken through: 1. MGNREGA; 2. National Rurban Mission; and, 3. Strengthening of the panchayat raj system. MGNREGA is not only a rural employment guarantee scheme, but it is, simultaneously, a scheme for building rural infrastructure and productive assets through public works related to water conservation and water harvesting; drought proofing irrigation canals including micro and minor irrigation works; restoring traditional water bodies including through desilting of tanks; land development; flood control and protection works including drainage in water logged areas; and, rural connectivity to provide all-weather access. The budget provides an enhanced outlay of Rs. 38,500 crore, after two years of neglect by the Modi government.

The newly-conceived National Rurban Mission (NRuM) also focuses on building infrastructure. NRuM aims at developing village clusters which have potential for growth, have economic drivers and possess locational and comparative advantages. To enable such clusters to emerge as growth centres, economic, social and physical infrastructural facilities have to be built up. Over the next five years, 300 such clusters will be developed. Resources for the Mission would be mobilised by convergence of existing schemes, and the gap in resource mobilisation is to be met by the Mission's critical gap fund.

The most momentous budget provision that would have a long-term effect on creation and maintenance of rural infrastructure is the allocation of Rs. 2.87 lakh crore as grants-in-aid to the panchayats and municipalities based on the recommendation of the 14th Finance Commission. This is a quantum jump of 228 percent compared to the last five years. It will give a boost to the creation of critical rural infrastructure based on gram panchayat and district development plans.

NOT BOLD ENOUGH

The budget provisioning for rural infrastructure, however, does not seem to be bold enough and falters on resource mobilisation.

According to agriculture expert Ashok Gulati, first of all, irrigation outlays are really not up to the challenge of increasing productivity and drought-proofing of India's agriculture. He believes that outlays/investments in irrigation of the order Rs. 5,000 to 10,000 crore will not release farmers from distress. If the government is serious about providing income security to farmers and about its promise of doubling farmers', income by 2022, then an investment in irrigation of the order of Rs.40,000 to 50,000 crore every year for five years is needed.

Secondly, the total allocation for Agriculture, Cooperation and Farmers' Welfare (ACFW) of Rs.35,984 crore is misleading because the budget estimate for 2016-17 includes Rs.15,000 crore for 'interest subsidy for short-term credit to farmers.' This head earlier appeared as part of the demand for grants of the Finance Ministry. If we deduct this amount then the real allocation is only Rs. 20,984 crore. When this is compared with the revised estimates for 2015-16, which is Rs.15,809.54 crore, then the increase is just around 33 percent and not 128 percent.

Thirdly, the allocation for MGNREGA also needs to be taken with a pinch of salt, and for two reasons. One, this allocation is only marginally higher than the revised estimate of 2015-16 – a year in which MGNREGA's performance was down; and, two, the program had accumulated very large arrears as many workers had not been paid. As the arrears have to be disbursed to workers out of this amount, in real terms it means a fall in the allocation to MGNREGA.

Fourthly, the difficulties in setting up an e-market platform for agriculture are immense. All the states need to amend their respective Agricultural Produce Marketing Committee (APMC) Act. This also involves evolving a system with a single licence valid across the state, single-point levy of market fee and provision of electronic auctioning system for price discovery. At present, only 12 states have amended the APMC Act, and speedy action is needed from the other states to fully operationalize this. Moreover, there is a shortage of market yards or mandis. There are about 7,000 APMC-regulated mandis today. If market yard has to be provided within a radius of five kilometres from a village, India needs 42,000 such mandis.

The point, therefore, is that the promise-laden budget has not really managed the resources needed to fulfil its promises to the farmers and rural poor. But, in the context of its formulation, the budget is economically pragmatic and politically correct even if it is not really a game-changer or a vehicle for transforming India.

August 03, 2015: **A villager walks on a railway track that was damaged after heavy monsoon rains near Patdi Village in Gujarat, India. [REUTERS/Amit Dave]**

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"Electric Engine" of China's Economy

By staff reporter **Qiao Zhenqi**

THE POWER INDUSTRY HAS PROVIDED DYNAMIC SUPPORT FOR THE NATION'S RAPID ECONOMIC DEVELOPMENT.

Nestling 52 kilometers southwest of Yadong County in southwestern China's Tibet Autonomous Region is the Nathu La Pass.

Nathu La, meaning the "snowiest place" in Tibetan, is a mountain pass sitting 4,545 meters above sea level. Despite frequent bad weather, it remains the safest and most convenient route for Indian pilgrims to reach the holy mountain of Kangrinboqe and Lake Manasarovar.

Since China opened the new route via the Nathu La Pass in mid-2015, Indian pilgrims have been able to arrive in Tibet more conveniently and witness the tremendous changes that the autonomous region has undergone. Currently, there are three "celestial tracks" running through the plateaus of Tibet: highroad, railway, and power grid.

Tibet's power grid network consists of the Central Tibet Power Grid, the Qamdo Power Grid, and the Nagri Power Grid, of which the Central Tibet and Qamdo power grids are connected to Qinghai and Sichuan provinces, respectively. They link Tibet's power grid network to the national power grid. By the end of 2015, Tibet's installed power generation capacity had exceeded 2 million kilowatts (kW), and its power consumption totaled 500 million kilowatt hours (kWh), increasing by 260 times and 180 times compared to the period when the autonomous region was just established.

Obviously, the explosive growth of its electricity supply has facilitated Tibetan people to enjoy modern life. The development of Tibet's power industry just mirrors the enormous growth of the nation's power industry.

THE LARGEST POWER GRID IN THE WORLD

Since the implementation of reform and opening-up policy in the late 1970s, China's economy has entered an era of fast growth. In the 21st century, especially, along with rapid industrialization, urbanization, marketization, and internationalization of China, the country's power industry has also grown at a speed faster than the average growth rate of the previous 20 years. China now ranks first around the world in terms of installed power generation capacity, power consumption, and power grid scale.

The rapid development of China's power industry is evidenced by the following figures:

By the end of 2002, the country's installed power generation capacity was only 357 million kilowatts, and the figure soared to 1.51 billion kilowatts by the end of 2015, ranking first in the world. It is estimated that the figure will further grow to 1.61 billion kilowatts by the end of this year. From 2011 to 2014, China topped the world in electricity production. The proportion of 300,000kW or above-leveled thermal power generation units in the total thermal power generation units increased from 41.5 percent in 2003 to 77.2 percent in 2014. Moreover, China has seen an increasingly rapid development in hydropower, nuclear power, and renewable energy. In 2014, its installed hydropower capacity already exceeded 300 million kilowatts, with annual generation electricity of more than one trillion kWh, ranking first in the world; its installed nuclear power capacity reached 20.08 million kilowatts, and those under construction accounted for 40 percent of the world total. In 2015, installed capacity of wind power connected to the grid hit 130 million kilowatts, ranking first in the world. The figure was only 399,000 kilowatts in 2002.

China has also made remarkable achievements in power grid construction. Along with coordinated development of ultra-high voltage transmission lines, trans-regional grids, provincial grid frameworks, and urban-rural grid networks, China's grid structure has been substantially improved. In 2002, China had only 787,000 kilometers of power transmission lines with voltage above 35 kilovolts and power switch capacity totaling 1.24 billion kilovolt-amperes, which had increased to 1.63 million kilometers and 5.2 billion kilovolt-amperes by 2014, respectively. From 2002 to 2014, China's per capita electricity consumption rose by 3.1 times. Electricity has been available for nearly 40 million Chinese residents who were previously inaccessible to electricity power.

HOW TO ACHIEVE NEW DEVELOPMENT

Despite the rapid development of China's power industry, the nation's per capita electricity consumption remains comparatively low. In 2014, on average, the Chinese consumed 4,078 kWh, equal to the level of the United States in the 1960s or that of South Korea in the 1990s. It is estimated that China's per capita electricity consumption will reach 5,691 kWh in 2020. Even so, the figure is only 64 percent of the 2010 average of member states of the Organization for Economic Cooperation and Development (OECD). Some predict that with the steady development of China's economy, the country's per capita electricity consumption will maintain fast growth.

Moreover, China's attempts to transform its growth mode and protect the environment as well as the rapid expansion of the IT industry in the internet+ era will stimulate new development of its power industry.

First, the ratio of coal used for power generation to total coal consumption will continue expanding. Currently, about half of the coal consumed in China is used to generate electricity, which is much lower than that of developed countries. For instance, the figure is 93 percent in the United States, 85 percent in Canada, 84 percent in Germany, and 75 percent in Britain, with the world average being 78 percent. Developed countries

Workers of a Chinese ultra-high voltage engineering team install power towers. [by Zheng Zuzhi]

used coal to generate power through concentrated combustion, thus reducing pollution arising thereof. There is still enormous space for China to develop coal-based power. Meanwhile, this also brings challenges to enhance efficiency and cleanness.

Second, it is a growing trend to generate electricity with clean energy. According to the China Electricity Council, by 2020, the country's installed hydropower capacity will reach 360 million kilowatts, that of wind and solar power 280 million kilowatts, that of nuclear power 58 million kilowatts, and that of natural gas-generated electricity 100 million kilowatts. The proportion of electricity generated with non-fossil fuels is increasing year by year, whose installed capacity ratio will increase to 39 percent and 49 percent in 2020 and 2030, respectively. Meanwhile, their ratio in total electricity production will respectively reach 29 percent and 37 percent.

Finally, ultra-high-voltage transmission lines will be more efficient in allocating power resources. In China, power resources are mostly distributed in the northern and northwestern areas, but southeastem China is the largest consumer of electricity. The country's wind power and solar power resources, in particular, are concentrated in underdeveloped northern and western regions that have less demand for power. Thus, power resources in those regions need to be transformed into electricity for transmission to other parts of the country. The technology of ultra-high-voltage transmission is the solution to optimize the allocation of energy resources, by transferring extra power from western and northern China to the eastern and central regions.

GREAT POTENTIAL OF INDIA'S POWER INDUSTRY

Two severe blackouts hit India on July 30 and 31, 2012, affecting more than 600 million residents in 20 states of eastern, northern, and northeastern India, including New Delhi. The 2012 blackout was not only the severest in the history of India, but also of the world. Although electricity supply was soon restored thanks to the effort of India's power administrator and enterprises, there is still the possibility of such blackouts.

India has a population close to that of China. To have per capita power consumption catching up with that of China, there will be huge room for India's power sector to grow. Despite the fact that 80 percent of India's population has access to electricity, blackouts often occurred. Statistics show that at peak time, India has an electricity shortage of about 20 million kWh. The situation will get worse along with the development of industries which need high energy consumption. The World Bank has forecast that India's GDP would maintain an annual growth above 7 percent between 2015 and 2020. To satisfy the needs of its economic growth, India's power industry needs to annually increase by at least 10 percent. However, the Business Monitor International (BMI) forecasts that the country's power sector can only achieve an annual growth of six percent in the medium and long run. According to the *Global Competitiveness Report 2014-2015* released by the World Economic Forum (WEF), India ranks 103th among 144 economies in power supply.

As neighboring countries, China and India are born to be partners. In June 2014, Tebian Electric Apparatus Stock Co., Ltd. (TBEA), a leading Chinese power transformer manufacturer and exporter, unveiled an industrial park in India, aiming at serving India's national grid. Moreover, other Chinese power equipment enterprises including Henan Pinggao Electric Co., Ltd. and Dongfang Electronics Co., Ltd. entered India, to help the country upgrade its power industry.

According to reports by some Indian media organizations, Indian authorities welcome the entry of Chinese power equipment companies in the Indian market to help realization of thermal power generation targets of the 12th Five-year Plan. As India's power market is becoming more and more open, there will be bright prospects for China-India cooperation in the power sector.

What India Can Learn from China's High-Speed Rail

By **Houguang Xu**

CHINA TOPS THE WORLD IN THE LENGTH OF HIGH-SPEED RAILWAYS AND ACCOUNTS FOR 60 PERCENT OF THE GLOBAL TOTAL.

Every Spring Festival holiday, China gears up for the world's biggest migration of people known as "*Chunyun*" (literally, "Spring Festival Travel Rush"). During this year's Spring Festival, about 330 million travelled by train between their hometowns and workplaces. Half of them took high-speed trains (HSTs).

VERY POPULAR MODE OF TRANSPORT

By the end of 2015, the total length of railways had reached 121,000 kilometers in China, of which 19,000 kilometers are high-speed rails. China tops the world in the length of high-speed railways and accounts for 60 percent of the global total. Of those high-speed railways, some 10,000 kilometers are operated at an average speed of 300 kilometers per hour, while the rest at 200 to 250

The Beijing-Tianjin Intercity Railway, which began operation on August 1, 2008, is known as China's first high-speed rail line operated at a speed of 350 kilometers per hour. [CFP]

kilometers per hour.

Despite the fact that high-speed rail is only 16 percent of the total length of China's railways, they transport nearly half of the country's train passengers. One reason is that HSTs have become popular because of competition.

HSTs are preferred primarily because they are time-saving and convenient. For instance, it takes as little as three hours and 34 minutes to cover 1,023 kilometers from Beijing to Nanjing, capital of eastern China's Jiangsu Province. Many business travelers opt for HSTs as they can go in the morning, do their business in the afternoon, and return the same day.

Doubtless, HSTs face competition from low-speed railway, aviation, and expressway. Usually, cars are preferred for trips within 100 kilometers because they make door-to-door transport easy. Flights are generally favored for trips beyond 1,200 kilometers. However, HST emerges as the favorite for trips between 100 and 1,200 kilometers because it offers comparatively higher speed than cars, and more convenience, comfort and safety.

ADVANTAGES OF HST

On January 21, 2016, the Jakarta-Bandung HST project, to be executed by a Chinese company in Indonesia, broke ground. The Chinese side promised to help Indonesia complete the project in three years.

In 2015, Chinese and Japanese companies competed in the bid for the railway project, and the Indonesian government eventually chose the Chinese company as its partner. The contract was signed in Jakarta on October 16.

Japan was the first country to build HSTs. As early as 1964, the Tokaido Shinkansen, the world's first HST operated with the maximum speed of 200 kilometers per hour and an average speed of 128.9 kilometers. After decades of development, Japan's Shinkansen enjoys a high reputation globally. Why did Indonesia choose China to partner the building of its first HST?

Some of the reasons are:

First, compared to Japan's Shinkansen, China's high-speed rail boasts opener standards, which meets the technical standards of the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC), and the International Union of Railways (UIC) and are compatible with some European companies. Choosing China's HST standards means its future market is open.

Second, China has richer experience in HST construction, and it guarantees project completion as scheduled. Though Japan led the development of HST, it has so far put into operation high-speed rail length of only 2,834.7 kilometers. The total length of high-speed railways in China has reached 19,000 kilometers, and another 10,000 kilometers are under construction. Therefore, China has richer experience and demonstrates higher efficiency in HSTs. The Jakarta-Bandung HST may take the Chinese only three years for completion, but the same may take the Japanese five years.

Finally, China provides attractive financing plans based on the business-to-business mode, instead of using government budgets. China and Indonesia established a joint venture for the railway project, in which the Indonesian side holds 60 percent and the Chinese 40. When completed, the HST will be under joint ownership. Moreover, China has pledged help for training Indonesian professionals in HST management and operation.

The Jakarta-Bandung HST is merely an example of Chinese high-speed rails going abroad. China has reached "intention to cooperate" on HST construction with countries such as the United States and Thailand. China will help the U.S. build a HST between Los Angeles and Las Vegas with a designed speed of 250 kilometers per hour. In Thailand, it will construct a high-speed railway linking Nong Khai, Bangkok and Map Ta Phut, with a designed speed of 180 kilometers per hour, which can go up to 250 kilometers if required.

Currently, China is negotiating with some other countries including Russia,

Malaysia, Singapore, Turkey, and Brazil for high-speed railway projects.

CLOSED-DOOR DEVELOPMENT TO GLOBAL COOPERATION

It was a long haul for China's HST from closed-door development to global cooperation.

In 1978, when Deng Xiaoping visited Japan, someone suggested that China should develop HSTs. Throughout the 1980s, officials from the Ministry of Railway, as well as scholars and experts from the Chinese Academy of Sciences and the Chinese Academy of Engineering, called for constructing HSTs on many occasions. In 1990, China launched a plan to build a high-speed railroad between Beijing and Shanghai. Upgraded in 1994, the Guangzhou-Shenzhen line began to operate at 160 kilometers per hour, with a pilot section that allowed trains to run as fast as 250 kilometers per hour. All of these accumulated as experience for development of HSTs.

In 1999, China began to construct the line from Qinhuangdao to Shenyang for a speed of 200 kilometers per hour, which was put into operation in 2003. Although it ran at 160 kilometers per hour in its early days, its construction provided valuable experience for development of HSTs.

In 2004, China's HST market began opening to the world, and since then development has been on the fast track. Through international public bidding, China cooperated with global industrial giants such as Bombardier, Kawasaki and Siemens to introduce advanced HST technology. Several years later, HSTs with speeds of 200 to 250 kilometers per hour began sweeping across the country. On August 1, 2008, the Beijing-Tianjin HST was the world's first to clock 250 kilometers an hour, and thus China came to lead the world in HSTs.

China's high-speed rail boasts standards which meet technical standards of the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC), and the International Union of Railways (UIC) and are compatible with some European companies.

An important factor behind this success is that it chose to cooperate with several leaders in the field of HST, instead of any single multinational. In this way, China gained more experience and key technologies.

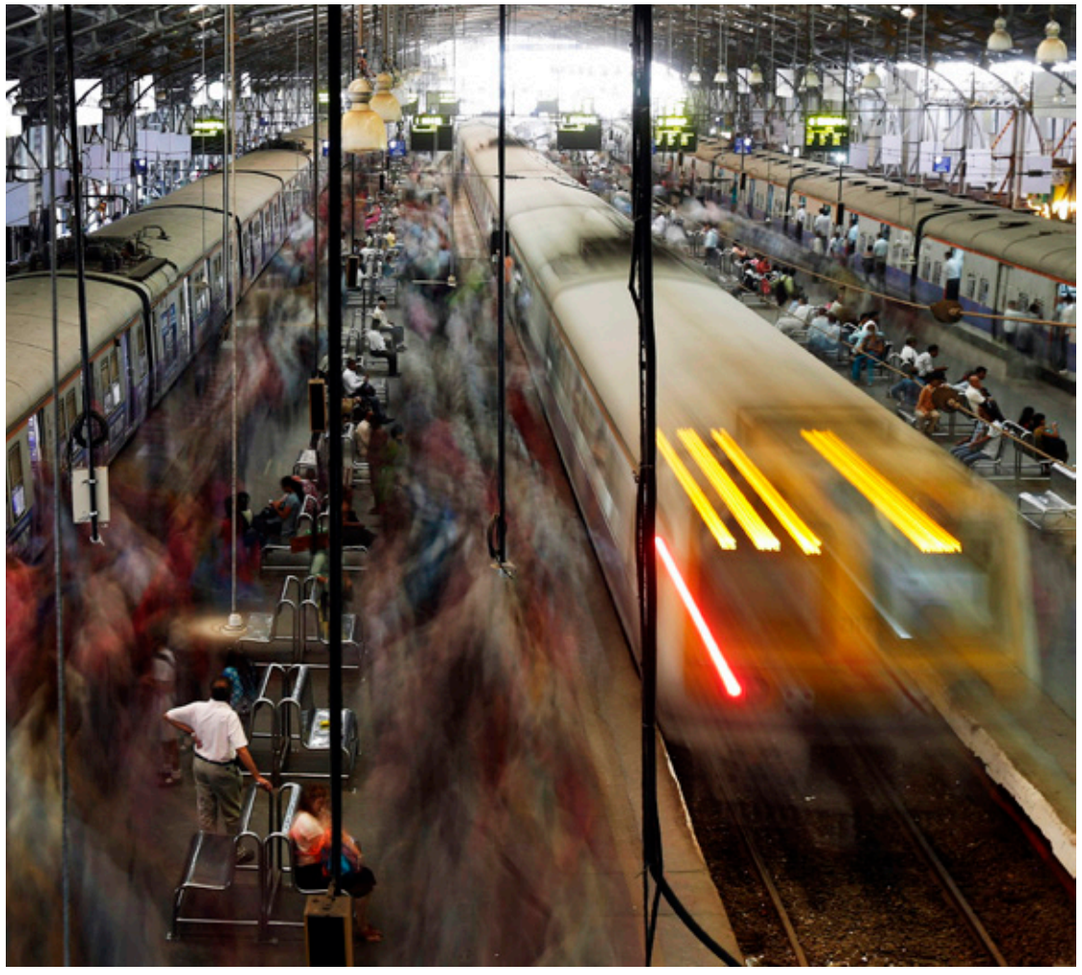
Another factor is that China has constantly expanded its rail network. In the process, Chinese enterprises acquired rich experience of cooperation with their foreign counterparts, and emerged as world leaders in the industry.

GREAT POTENTIAL OF HST IN INDIA

China and India share many commonalities. Both countries are populous, and railways play an irreplaceable role in their respective transportation systems. So, it is imperative for both countries to develop high-speed rail.

First, India has a big population like China. In view of its huge demand for passenger transportation, it is impractical to solve transport problems through developing civil aviation as the U.S. did. Railways have an unparalleled advantage in this regard.

Second, the problem of energy shortage will only increase, thereby hindering a nation's development alongside the world economy's expansion. Railways are comparatively effective in saving energy. A research by Japan's Ministry of International Trade and Industry shows that the ratio of per capita energy consumption of travel by railway, airplane and car is 1:4:6. European Union (EU) statistics indicate that railways contribute only 1.6 percent of carbon dioxide emissions in the transport industry, but bear 10 percent of total traffic volumes. Compared to highways and airplanes, railways are more effective in energy conservation.



India will increase investment in its overloaded railway network to 8.5 trillion rupees (US$137 billion) in the five years since 2015. [REUTERS]

I attended, several times, the International Railway Equipment Exhibition, an annual event held in New Delhi every October, through which I got to know many friends who care about India's railway development and learned much about the country's railway industry. I feel delighted over the progress made by India's railway industry.

India has planned a massive HST network known as the Diamond Quadrilateral. Many enterprises from countries including China and Japan would like to be involved in the plan. A Chinese company has participated in the feasibility research for the HST project linking New Delhi and Mumbai. I believe that India will definitely complete the world's most advanced HST network in the near future, and Indians will enjoy the comfort and convenience of traveling by high-speed trains.

The author is a senior researcher in the field of railway transportation. His publications include High-Speed Rail in Color.

Delhi Metro
Past and Present

By **Sandeep Budki**

DMRC HAS COLLABORATED WITH DIFFERENT CHINESE FIRMS DURING THE MAKING OF DELHI METRO.

Delhi, the national capital of India, has seen many cold winters. But the winter of 2015 was different. This time, the city, known for its rich heritage, not only saw a late arrival of winter but it also saw pollution levels rising to dangerous levels. The situation prompted the Supreme Court of India to exhort the state and Central governments to come up with a concrete plan to curb pollution levels.

Soon, the state government came out with a very controversial "even-odd scheme" for road rationing. A hullabaloo ensued, but Delhiites had a very reliable transport service at their disposal – the Delhi Metro, which has seen double-digit growth in its ridership ever since its inception.

Like the city, Delhi Metro also has a history.

FOUNDATION

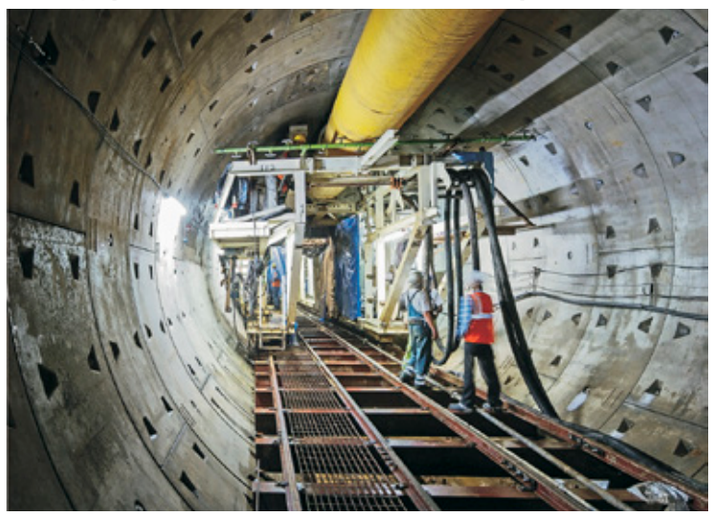
The foundation of Delhi Metro can be traced back to the 'Study of traffic and travel characteristics of Delhi' in 1969-70. It led to the commissioning of different committees to dwell on issues of which technology should be used, what kind of routes formulated and, above all, under who's jurisdiction would it fall.

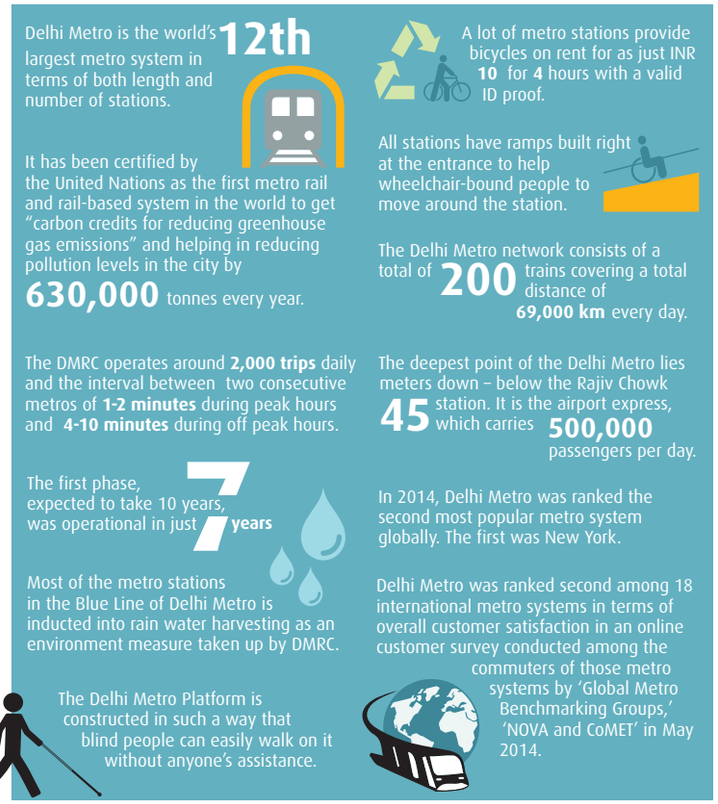
In 1984, the Delhi Development Authority and the Urban Arts Commission came up with a plan for developing a multi-modal transport system, which would consist of constructing three underground mass rapid transit corridors as well supplementing the city's existing suburban railway and road transport networks.

And finally after 11 years, Delhi Metro Rail Corporation (DMRC), a state-owned company with equal equity participation from the Government of India and the Government of Delhi, was incorporated in May 1995 to create a metro system for Delhi and its satellite cities of Faridabad, Gurgaon, Noida and Ghaziabad. Mr. E. Sreedharan, who is popularly known as the "Metro Man," was entrusted with the responsibility to make Delhi Metro a success story in the capacity of managing director.

The construction work on Delhi Metro started in 1998, and the development was divided into four phases spread over around 20 years. Phase I which targeted 65 km was completed in 2006 while Phase II that covered 125 km was completed in 2011. Phase III is expected to be completed by 2016, and Phase IV is scheduled to be completed by 2021. Phase V, though in the pipeline, is in the discussion stage.

Work in progress in the tunnel of the Delhi Metro's Heritage Line.





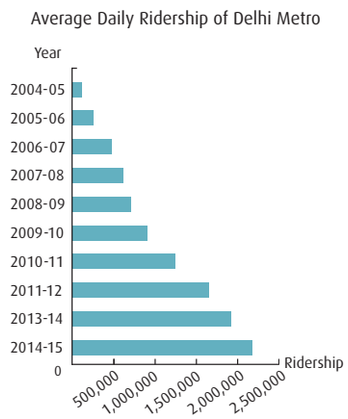
CHALLENGES AND SOLUTIONS

The first challenge of DMRC was to avoid political interference which is usually seen in a large scale project. The Government of India addressed this at the company formation level itself. It gave DMRC complete autonomy in all major matters, with financial powers vested in the managing director. But, in 2000, a dispute erupted. Mr. Sreedharan wanted to use coaches of standard gauge – used by metros globally – for Delhi Metro, while the Railway Ministry wanted to use broad gauge, like the rest of the rail network in India. The issue went to a group of ministers, which favoured the Railway Ministry. Finally, after long deliberations, the Metro Man agreed to the government's demand and went ahead with the use of the broad gauge.

The second hurdle was preventing land acquisition challenges from disrupting the project. The Delhi Metro Railway (Operations and Maintenance) Act of 2002 came handy in taking care of this potential challenge. It superseded local municipal laws and barred lower courts from issuing stay orders. On its part, DMRC formed a legal

Table 1:

Average Daily Ridership of Delhi Metro



team to handle land acquisition cases, and timely temporary accommodations were built for relocated people. But again, a couple of case took a long time to get sorted out.

Inconvenience to the general public as a result of

By 2021, Delhi Metro will become the third largest network in the world after Shanghai and Beijing.

construction was always expected. And, to take care of it, an action plan was formulated along with local civic agencies and police departments way ahead before the actual construction started. Thankfully, this never cropped up as an obstacle again.

But the mother of all challenges for DMRC was to get best-in-class technology, and for that international cooperation was required. DMRC employees were trained with the Hong Kong Metro Rail Transit Corporation. A global bidding program was adopted for the consultancy that resulted in project participation by multinational engineering firms from Japan, Australia, France, Germany, Korea, Portugal, Spain, and Sweden. Coach manufacturing technology was also transferred from a South Korean firm to Bharat Earth Movers Limited for manufacturing the metro cars for DMRC.

Signalling was another challenge that DMRC had to take care of because multiple lines were involved. To address it, Delhi Metro uses a centralised automatic train control system consisting of automatic train operation, automatic train protection and automatic train signalling modules. The technology and the equipment for the same have been provided by Motorola, Siemens Transportation Systems, and Bombardier Transportation.

The scene at Rajiv Chowk, an important hub of Delhi Metro.

COLLABORATION WITH CHINA

DMRC has collaborated with different Chinese firms during the making of Delhi Metro. The first cooperation was in 2010 with CSR Zhuzhou Electric Locomotive, a subsidiary of major Chinese train manufacturer CSR Corporation, to supply 15 metro cars to the Delhi Metro. For those who don't know CSR, it is the world's largest manufacturer of electric locomotives and is China's leading bullet-train maker. Again in 2013, CSR supplied 21 cars to Delhi's metro rail system.

Again in the same year, DMRC partnered with Shanghai Urban Construction Group (SUCG) for tunnelling. The engineers of SUCG were entrusted with the task of lowering a massive 300-tonne tunnel boring machine (TBM) into a crater that was once a park near the city's main mosque – Jama Masjid in old Delhi. Later on, the engineers helped in building Delhi Metro's 9.37 km Central Secretariat-Kashmiri Gate corridor, which is also called the Heritage Line because of its proximity to many monuments, construction of New Delhi Elevated Subway (viaduct) for the second phase of DMRC's project, and, in 2009, in the construction of the tunnel section for the Delhi Metro Airport Express. To undertake the construction work, SUCG had formed a joint venture (JV) with Indian conglomerate L&T that has been awarded different projects by DMRC.

FUNDING

In Phase I, about 60 percent of the project cost was financed by the Government of Japan by way of a soft loan from the Japan Bank for International Cooperation (JBIC), now called the Japan International Cooperation Agency (JICA).

Acording to a spokesperson of DMRC, "The Central Government and the State Government jointly financed 28 percent of the project cost through equity contributions in addition to providing a subordinate loan to cover the cost of land acquisition which roughly worked out to 5 percent of the project cost. The balance of 7 percent funds were internally generated through property development."

In the second phase of Metro construction, the JICA loan contributed 54.47 percent of the funding. While the equity from the Governments of India and Delhi increased to 16.39 percent each. For the construction of the Airport Express link, 39 percent was

The Blue Line of the Delhi Metro system. Most of the metro stations in the Blue Line are inducted into rain water harvesting as an environment measure taken up by DMRC.

contributed by the Governments of India and Delhi and 46 percent by the concessionaire as this was the first ever project of the Delhi Metro on the public-private partnership model.

The total estimated expenditure for Phase III expansion is INR 41,079 crores. JICA is going to provide 48.57 percent of the total fund required while the Government of India and the Government of Delhi will pay 10.04 percent each.

WAY FORWARD

A study by Central Road Research Institute (CERI) says that the metro helped keep around 4 lakh cars off roads in 2014. The numbers may increase exponentially if the anti-pollution measure like 'odd-even scheme' is implemented in the city fully. Also with rising population, the ridership will only increase in future.

To meet the demands, Delhi Metro in 2016 plans to add around 114 km to its existing network that will include 18 new interchange stations. Also, by 2021 when DMRC completes Phase IV, the total length of Delhi Metro network would go up to 434 kilometres exceeding London's 140-year-old Tube which has a length of 402 kilometres. With this, Delhi Metro will become the third largest metro network in the world after Shanghai (538 km) and Beijing (465 km).

Delhi Metro is also expected to strongly pitch for a fare revision owing to a significant rise in its operational costs. Currently, Mr. Mangu Singh had said that a fare hike is "long overdue."

By 2021, when Phase IV is completed, **the Delhi Metro network** will exceed the 140-year-old London's Tube, which has a length of **402 km,** ranking **No.3** in the world.

538 km | Shanghai
465 km | Beijing
434 km | Delhi

The author is a Delhi-based journalist and Managing Editor of The Mobile Indian, *a personal technology news portal.*

Inadequate Reform Is AIIB's Biggest Challenge

– Interview of David Daokui Li, Director of the Center for China in the World Economy at Tsinghua University

By staff reporter **Wen Zhihong**

January 17, 2016: **Jin Liqun, president of AIIB, attends a press conference after the formal inauguration of the bank. [Xinhua]**

The idea of establishing the Asian Infrastructure Investment Bank (AIIB) came up in Mumbai, India.

At the end of 2012, Zheng Xinli, vice chairman of the China Center for International Economic Exchanges (CCIEE), met Jin Liqun, then chairman of the Supervisory Board of China Investment Corporation, at the Asia Financial Cooperation Conference in Mumbai. Talking about underdeveloped infrastructure in Southeast Asia, they both proposed to set up an investment bank for this purpose.

Later, the CCIEE submitted a report on the setting-up of AIIB, which was revised several times, to the Chinese authorities. After the report was ratified, preparations moved into the fast lane. In October 2013, when visiting Indonesia, President Xi Jinping proposed establishment of AIIB for collaborating with multilateral development banks in Asia and beyond to promote the region's economic development.

On December 25, 2015, AIIB was officially established, with 57 countries as founding members. The figure was two times more than expected. India is among the first group of the 21 Prospective Founding Members of AIIB. Despite Washington's opposition, some U.S. allies including Britain decided to join AIIB, followed by many other developed countries. This came as a shock, as Akshay Mathur, head of research and geo-economics fellow at Gateway House: Indian Council on Global Relations, said, "AIIB, dismissed just months ago by Western countries as another flamboyant plan by China, is now clearly accepted as a tangible game changer in the multilateral financial architecture."

After the 2008 global financial crisis, infrastructure has been deemed as a driver for the world economy's substantive recovery. Many multilateral institutions recognized the infrastructure underdevelopment and inadequacy in the Asian region. A report jointly released by the Asian Development Bank (ADB) and the ADB Institute in August 2009 shows that the Asian region including China will need infrastructure investments totaling US$ 8 trillion between 2010 and 2020. India, whose foreign exchange reserves added up to US$ 361 billion in 2015, will suffer an infrastructure deficit of US$ 1 trillion. In this context, foreign investments will be the main source of the funds that India needs for developing domestic infrastructure and regional connectivity.

Given that the current development institutions have neither adequate funds nor expertise in infrastructure construction, China has acted as a global governance reformer in its most competitive economic field by initiating AIIB.

In recent years, debates over whether developing countries deserve a greater say in the global financial system have heated up. At the 2012 Asia Financial Cooperation Conference in Mumbai, more than 500 political and business leaders reached a consensus that Asia should have a bigger voice in the formulation of major international mechanisms and rules. Perhaps this is the major reason why India finally chose to join AIIB, despite the fact that it hesitated for a while. David Daokui Li, a prominent Chinese economist, points out that the current U.S.-led global economic system is facing three basic problems: First, it doesn't respond to the appeal of emerging economies represented by China. Second, the U.S. is unwilling to give up its veto power in the International Monetary Fund (IMF) and the World Bank. Finally, the U.S. has yet to take responsibilities matching its status as the world's largest currency printer. In view of the ongoing Trans-Pacific Partnership (TPP) and Transatlantic Trade and Investment Partnership (TTIP) negotiations and other issues involving the U.S., Chinese international relations expert Pang Zhongying used the word "gravedigger" to describe the U.S.'s role in global governance, remarking that the U.S. is abandoning the international organizations and rules that it ever initiated, founded and protected while seeking to "reinvent the wheel."

Against such a backdrop, although China reiterated on many occasions that AIIB is merely a "supplement" to existing international financial institutions, no one doubts that China has begun

playing the role as a reformer of global governance. India, the world's second largest developing country, as well as some EU countries, expressed support for the reform of global governance by joining AIIB. Hari Bansh Jha, professor of economics and executive director of Centre for Economic and Technical Studies in Nepal, remarks, "Only time will tell how the New Development Bank (NDB) and AIIB emerge as alternative sources of funding in the international financial market. But it has almost become certain that the era of the West's control over the international financial resources has started eroding."

Joining AIIB doesn't mean that India has shed its doubts on potential risks. According to Indian media, India's biggest concern is AIIB's relationship with China-initiated Belt and Road Initiative, especially with the China-Pakistan Economic Corridor. As a matter of fact, AIIB has adhered to the rule of "not stepping into any disputed territories and waters." Responding to worries about China as the biggest shareholder of AIIB, Jin Liqun, president of the bank, has said many times that as a multilateral financial organization with 57 founding members, AIIB will always operate according to the corporate governance framework agreed upon by all of its members and in conformity with the best international standards. Of course, the "best international standards" include development experiences of developing countries, especially China, over the past more than three decades.

Recently, *China-India Dialogue* sat down with Professor David Daokui Li, an eminent Chinese economist and director of the Center for China in the World Economy at Tsinghua University, to discuss questions such as how AIIB affects regional order and the relationship between AIIB and India. Li received his Ph.D. in economics from Harvard University in 1992 and ever served as a member of the Monetary Policy Committee of the People's Bank of China, thus gaining deep insight into China's economic development modes, changes of international systems, and development strategies of major powers. In his opinion, a major aim of AIIB is to reform the global financial system, but it has no intention to play the role of a revolutionist for replacing the existing international monetary system. Rather, it seeks to supplement the space left uncovered by the World Bank and the IMF, and reform key international rules in the investment field.

What influence will India exert on AIIB? Some economists assert that there is a deep pool of tacit expertise on the nuts and bolts of development banking that India could deploy in AIIB. What does "tacit expertise" mean?

Li: As the world's second largest developing country and emerging economy, India is among the group of "market economies that are not in transformation." There are two categories of emerging economies: One used to be planned economies, such as China, Vietnam, some eastern European countries, and former Soviet republics; The other category, of which India is a representative, has never gone through the planned economy period. The two categories differ in their development systems. To invest in infrastructure projects in those countries, one requires a better understanding of their differences. Thus, it is meaningful for AIIB to have India as one of its members.

In spite of being a country without a powerful government, India has tacit expertise on how to properly deal with the relations between politics and economy, and how to raise funds for infrastructure projects and push them forward. India's situation is more complicated than that of China. To develop infrastructure projects in India, a foreign investor needs not only to reach an agreement with the government, but also to establish good relations with local legislatures, environment authorities, culture preservation commissions, and even religious organizations.

From the perspective of macroeconomics, countries like India usually suffer overall instability, high inflation, government deficits, and great pressure on currency depreciation. Moreover, India's central bank is independent of its central government, so its monetary policies don't conform to its government policies. This just creates another uncertainty.

AIIB will accumulate experience of investing in India. In addition, the great number of specialists in India will provide personnel support for AIIB.

How will India benefit from AIIB?

Li: AIIB is important for India. For a long time, infrastructure shortage has been a bottleneck hindering India's development. Its infrastructure is much worse than that of China. Further, India's national savings rate is much lower than that of China, so its fund-raising capacity for infrastructure projects is comparatively weaker. Presently, most transnational development institutions including the World Bank are wary of investing in India. Lacking knowledge about developing countries, those institutions typically evaluate the investment environments of target countries according to Western modes.

Since India has become the second largest shareholder of AIIB, it is easier for the bank to understand the South Asian country. India, on the other hand, expects to get more funds from AIIB to invest in its infrastructure. From this perspective, India needs AIIB more than China.

Early this year, D. J. Pandian, former chief secretary of Gujarat, was appointed chief investment officer of AIIB. How do you see his role? What challenges will he face?

Li: His Indian background is important. As a former government official, he knows well the country's development mode, bottlenecks, and how to break those bottlenecks. The major challenge he may face is how to "translate" India's infrastructure needs into investment projects which are acceptable for investors.

For instance, traditional banks usually loan funds for a term of 15 years. However, the tenure of an Indian official in a particular post is only four years, so he or she cannot assure investors what will happen in 15 years. In this case, AIIB needs to redesign its loan and investment terms. This is a challenge. Typically, local officials and bank officials are ranged against each other. It is a creative solution to appoint a former local official as a senior executive of the bank. There are also challenges relating to control of project process, handling over-estimates, and how to pay off loans. All of these require breakthroughs in the current contracting methods of international development organizations.

It is reported that AIIB will loan funds totaling US$ 1.2 billion in 2016, and India expects to get half of the amount at a lending rate of no more than 10 percent. What do you think of such an expectation? What lending rate will AIIB adopt?

Li: I understand India's expectation because it needs infrastructure investments very much. But frankly, AIIB is a newcomer, and it will take at least a few years for the bank to achieve profitability. To this end, its investment projects need full support from local governments and communities. It isn't easy for India to do so. Over the years, the World Bank and the ADB found it difficult to invest in India. It is impossible to change the situation in the short run.

All borrowers want low loan rates. The final lending rate depends on whether AIIB is willing to lose money. As a non-profit organization, AIIB will adopt a low lending rate in the event that the project it is financing and its operation costs are under control. Currently, the financing cost isn't high because the interest rates on the U.S. dollar and other major reserve currencies remain low. There are some uncertainties in the future. Perhaps, AIIB will adopt flexible lending rates ranging from 5 to 10 percent.

What is your view on the link between AIIB and the internationalization of RMB? It is reported that AIIB will settle

October 24, 2014: **Chinese Finance Minister Lou Jiwei gives a speech during the signing ceremony of the Asian Infrastructure Investment Bank at the Great Hall of the People in Beijing. [IC]**

deals in the U.S. dollar, but raise capital and make loans in RMB. The loan terms of AIIB may be very long. In this case, how would it offset risks from exchange rate fluctuations?

Li: China hopes to provide more public products and services to the world through AIIB, instead of seeking its own interests such as RMB internationalization.

Despite the fact that the international monetary market remains complicated, it is believed that it will go toward diversification in the future. Under such a complex, changing environment featuring the decline of the U.S. dollar and the rise of RMB, AIIB is supposed to adopt a diversification strategy when formulating loan interest rates. For instance, it can settle loans in the U.S. dollar while linking the interest rate and repayment amount with the IMF basket of currencies.

What are the risks of AIIB's cooperation with the private sector for raising funds, and which seems likely?

Li: Infrastructure projects are unsuitable for any single source of private capital because they usually are high risks and time-consuming. I believe AIIB will gradually promote efficient cooperation with private capital, so as to give full play to their advantages and make investments together. Meanwhile, the bank needs to break current systems if it intends to offer high-quality loan portfolios and provide an early withdrawal mechanism for private capital. There are also many things worth doing to improve investment contracting.

An article published by Gateway House: Indian Council on Global Relations says that developing countries are disappointed at the U.S.-dominated World Bank and IMF. Will emerging economies benefit from AIIB? What changes will AIIB bring to the development of emerging economies?

Li: People's expectation for AIIB is that emerging economies will benefit. Headquartered in Beijing, the bank is mainly composed of investors and professionals from developing countries. Its staff and decision-makers also primarily come from such emerging economies as China and India. Therefore, AIIB has a deep understanding of the needs of emerging economies, so it may formulate and adopt loan methods, investment terms, and project execution methods different from previous development institutions.

The most remarkable change that AIIB will bring to emerging economies is that projects formerly unacceptable to the World Bank and the ADB will become feasible through AIIB's flexible loan approaches.

Statistics released by the Reserve Bank of India show that the bad debt rate of India's infrastructure sector is much higher than that in other fields. Other widely-mentioned risks include long capital turnover periods, low loan interest rates, potential waste and corruption, and political unrest. How can AIIB avoid these risks when investing in developing countries?

Li: AIIB is facing two major risks. One is inadequate reform, resulting in AIIB merely repeating practices of the World Bank and the ADB. This risk is tangible because innovation isn't an easy task. The other is money loss in some investment projects. For example, it cannot recover loans in the event that relevant investment contracts are forced to be terminated due to political turmoil. In other scenarios, some projects, although feasible commercially, cannot be executed due to protests from environmental protection groups and local non-governmental organizations.

To avoid such risks, AIIB needs to conduct surveys repeatedly and become familiar with the conditions of the countries where it intends to invest.

How does the U.S. see India's participation in AIIB?

Li: The U.S. made a strategic mistake when AIIB was still in the process of being established. It misread the founding of AIIB as China's unilateral action and which, for that reason, couldn't succeed. The U.S. began to regret after countries like India and Britain joined AIIB. Although disappointed by India joining the AIIB, the U.S. found that it could in no way stop it. In fact, India's participation in AIIB magnified the U.S.'s strategic mistake on the issue of AIIB. It is still not too late to correct the mistake. The U.S. still has the chance to be part of AIIB and a significant investment partner.

AIIB Relocating India and China in the Neighbourhood

By **Mahendra P Lama**

AIIB MAY DETACH ITSELF FROM NON-ECONOMIC ISSUES, POLITICAL INFLUENCE AND OTHER INVISIBLE CONTROL.

The 100-billion-dollar China-led multilateral lender, Asian Infrastructure Investment Bank (AIIB) set up in December 2015 with 57 member countries, is the second major Asian initiative (after the Asian Development Bank in 1966) that would primarily invest in energy, transportation, urban construction and logistics besides education and healthcare.

Though India has adopted a wait and watch approach to China's Belt and Road Initiative, there were four critical incentives for India to join AIIB as the second largest shareholder with 7.5 percent as against China's 26.06 percent, Russia's 5.93 percent and Germany's 4.15 per cent of voting shares. India's keenness and seriousness are reflected in its commitment of US$ 8 billion to the AIIB reservoir, its inclusion in the Board of Directors and its appointment as a Vice President (Chief Investment Officer).

Firstly, 'daunting infrastructure' has been the core issue in India's reforms-led development process. Both the 'cascading trade-investment-income' effect and 'constraining-jeopardizing development' impact of infrastructure are widely accepted. It is estimated that India requires at least US$ 1 trillion (US$ 750 billion of this as debt financing) for a critical minimum infrastructure – as against today's ranking of 87th out of 144 countries – that could transform the economy into a high-growth regime of 9 percent as announced by Prime Minister Narendra Modi. Demonstration effect as to how the 'flying geese' countries in East Asia, Japan and China have catapulted themselves to a position of global competition has had a

telling impact on Indian development planners in the last two decades. The AIIB partially meets India's humongous hunger for finance.

Though India launched 'India Infrastructure Finance' way back in 2006, only in the budget for 2016-17, has Finance Minister Arun Jaitley declared infrastructure and investment as the fifth support pillar to 'Transform India,' and made a 'decisive departure' by allocating an unprecedented Rs. 2,21,246 crore (US$ 33 billion) for two types of critical infrastructure, namely, roads and railways. He announced 10,000 kilometres of national highways in 2016-17. Another venture is the US$100billion Delhi-Mumbai Industrial Corridor project.

Secondly, India's robust economy can develop sustainable resilience only if it gets further integrated with the neighbouring regions including South Asian partners, ASEAN and East Asian countries. In fact, these theatres of growth in Asia themselves are hungry for US$ 8 trillion worth of infrastructure projects for 2010-20 that would generate income of US$ 13 trillion as stated in ADB-ADBI's study *Infrastructure for Seamless Asia* (Tokyo, 2009, p.4). Perhaps, it's going to be the 'new source of global growth' (G20 Meeting in Brisbane, 2014).

The objective of India's Act East policy can be realized only with some reliable physical, virtual and soft-facilitating connectivity. Besides the World Bank and the Asian Development Bank (ADB), engagement of various other agencies like sovereign wealth funds, and Japan's JICA and Germany's KfW handing over of projects to known private actors like GMR (and others from abroad) show that India is ready to engage multiple partners for playing a crucial role in ADB's Pan-Asian Infrastructure Forum (PAIF). Along with the recently-launched New Development Bank (NDB) of BRICS, AIIB now provides a significant degree of flexibility to India whose total external debt was over US$ 480 billion by the end of 2015.

India unambiguously admits China to be a pivot in global financing. "Today, China has de facto become one of the lenders of last resort to governments experiencing financial troubles. It has also become one of the bigger providers of development assistance both bilaterally and plurilaterally. China, in its own heterodox and multiple ways, is assuming the roles of both an International Monetary Fund (IMF) and a World Bank as a result of its reserves." (*Economic Survey*, Government of India, 2014-15, Vol. I, p. 18).

Thirdly, the 'Chinese encirclement' with its ongoing infrastructure projects around India in the region, like China-Pakistan Economic Corridor, Greater Mekong Sub-region, CAREC and ASEAN, has made India rethink its neighbourhood policy. Despite a crucially pivotal role, India has not been able to provide meaningful and effective leadership to the eight-member SAARC process. A free trade agreement has been signed (SAFTA, 2006); SAARC Development Fund is in place (SDF, 2008), a series of conventions and agreements have been concluded; several regional institutions have been long established; and, core areas of cooperation have been identified under the Integrated Programme of Action since SAARC was established in 1985. However, intra-regional trade remains very low at five percent of South Asia's global trade, and not a single regional project of consequence has been carried out; which shows that the SAARC model itself has failed. More critically, three regional connectivity related reports – the Transport Infrastructure and Transit Facilities in the SAARC Region (Independent Agency, 1993); the Forging Sub-regional Links in Transportation and Logistics in South Asia (World Bank 2001) and the SAARC Regional Multimodal Transport Study (ADB, 2007) – launched with much fanfare remain literally untouched.

There are supply chain barriers, tariff and non-tariff barriers and, of course, huge politico-strategic apprehensions in South Asia. However, in its interconnections with Southeast and Central Asia, the most conspicuous stumbling block is physical – air, water and land – connectivity. Myanmar may be a few hundred kilometres from India's northeastern province of Manipur, yet it takes almost a day via Bangkok to reach Yangon, and that, too, with cumbersome visa processes. AIIB could trigger a variety of production networks, make sub-regionalism based interactions proliferate and inter-regional integration promising.

With six of SAARC's eight members as signatories to AIIB and China's Belt and Road Initiative scheme that literally garlands South Asia with connectivity projects, India has a narrow but far-reaching choice: Between its conventional 'change' based on bottom-up approach in the region or transformation-led market-expanding and demand-inducing approach. India understands that if it does not participate to the fullest extent, it will be far behind China's effective entry, penetrative practices and durable presence in the geographies, societies and economies of this region.

This could inject new types of vulnerabilities in India's neighbourhood. India's Minister of State for External Affairs V. K. Singh was referring to this when he said that "the growing competition to set global standards and to determine the direction of trade and investment links through such arrangements can have significant implications for the region, especially in terms of establishing frameworks

November 27, 2014: Afghanistan's President Ashraf Ghani, Bangladesh's Prime Minister Sheikh Hasina, Bhutan's Prime Minister Tshering Tobgay, India's Prime Minister Narendra Modi, Nepal's Prime Minister Sushil Koirala, Maldives' President Abdulla Yameen, Pakistan's Prime Minister Nawaz Sharif and Sri Lanka's President Mahinda Rajapaksa (L-R) attend closing session of 18th SAARC summit in Kathmandu. [REUTERS/ Niranjan Shrestha]

where security interests align closely with economic ones." (Raisina Dialogue in New Delhi, March 3, 2016)

It could change entire matrices of India's bilateral relations with neighbouring countries and could trigger a 'new regionalism' exclusively based on connectivity and communication, and related openness of geographies and people. This could even render a regional organization like SAARC ineffective. Indian economy's identity and exclusivity could be jeopardized and sub-merged in the conundrum of hugely connected geographies and emerging socio-economic complexities. This will happen when neighbouring countries permit penetrations to China to reach India's own crucial peripheries and borderlands. India "cannot be impervious to the reality that others may see connectivity as an exercise in hard-wiring that influences choices. This should be discouraged, because particularly in the absence of agreed security architecture in Asia, it could give rise to unnecessary competitiveness. Connectivity should diffuse national rivalries, not add to regional tensions." (Foreign Secretary S. Jaishankar in Raisina Dialogue, New Delhi, March 2, 2016)

And finally, India's partnership in AIIB provides it an unparalleled opportunity to jointly renegotiate the global financial order and create grounds for steadily reducing 'diplomatic skirmishes' and 'governance deadlock' with China in multilateral institutions including in ADB. Moreover, India could deploy what Suman Berry, a noted economist, calls its 'deep pool of tacit expertise on the nuts and bolts of development banking' in AIIB. India's national sensitivities are also taken care of where 'if anything falls into areas where more than one country has claims, it should not be done without both countries agreeing,' a senior Indian official said. (Ananth Krishnan, *India Today*, Beijing, January 16, 2016).

As the U.S. effectively remains outside the vortex of this new bank, AIIB repositions India and China in the global discourse on renegotiated financial architecture and international political economy that could drive towards an 'Asian Century' – an altogether different partnership away from the protracted bilateral disputes of last half a century. The very fact that Sino-Indian bilateral trade figures have reached a new high of over US$ 72 billion could be sustainably complemented by infrastructure-centric investment. This could even inject democracy, instil efficiency and trigger large scale reforms in Bretton Woods institutions like IBRD, IFC and IDA within the World Bank, and the IMF that have a strong North bias as reflected (and deliberated) in reports such as the Pearson Commission (1969), Brandt Commission (1980) and Zedillo Commission on the World Bank (2009).

Unlike these institutions, AIIB may detach itself from non-economic issues, political influence and other invisible control. How AIIB could offset the compartmentalising objectives of the U.S.-led Trans-Pacific Partnership (TPP) and China-led Free Trade Area of Asia-Pacific (FTAAP) and Regional Comprehensive Economic Partnership (RCEP) primarily focusing on Southeast and East Asian countries will be clear within next decade or so.

There could be a series of investments in a range of national, cross-border and regional projects requiring much deeper reforms both at the federal and provincial levels in various member countries. The U.S. apprehends that the new-born AIIB could even lead to dilution of environmental clearance norms and dislocation of socio-economic equity principles. At the same time, India's first plea for financing solar power projects worth US$500 million (15-year loan at a likely interest rate of 2-2.5 percent linked to LIBOR), may be peanuts for a projected 100-gigawatt solar installed capacity in India by 2022 (*Country Statement*, India made by Nirmala Sitharaman, Commerce and Industry Minister, 71st UNESCAP Commission Session, Bangkok, May 28, 2015). Yet it could trigger other similar clean energy projects in South Asia and CLMV countries in Southeast Asia.

India is also preparing to seek loans for the Prime Minister's agricultural irrigation scheme (PMKSY), rural housing program and railway projects. Under its Act East Policy, it would be connecting with ASEAN members through modern infrastructure, including the India-Myanmar-Thailand highway. Similarly, the seaport projects in Bangladesh and Sri Lanka, and land ports and hydel power projects in Nepal and Bhutan would require a huge investment by India. "We are working to invest in the Chahbahar port, join the Ashgabat Agreement and participate in the International North-South Transport Corridor. Combined with other ambitious bilateral initiatives, they could be game changers in Central Asia – a part of the world that historically and culturally has strong affinity with India." (Foreign Secretary S. Jaishankar in Raisina Dialogue, New Delhi, March 2, 2016)

At the cross-border and regional level, one expects AIIB funding for the Bangladesh-China-India-Myanmar (BCIM) Economic Corridor, to which both Modi and President Xi Jinping have committed themselves. "The two sides welcomed the progress made in promoting cooperation under the framework of the BCIM Economic Corridor. Both sides recalled the second meeting of the Joint Study Group of BCIM Economic Corridor, and agreed to continue their respective efforts to implement understandings reached at the meeting" (Joint statement by India and China during Modi's visit to China, Beijing, May 15, 2015). This will 'promote regional connectivity and economic integration.' The Master Plan on ASEAN Connectivity (MPAC) launched in 2010 also expects to borrow big from AIIB.

Though there is visible consternation among established multilateral institutions, ADB President Takehiko Nakao committed 'to share with AIIB its long experience and expertise in the region, including support for regional cooperation and integration, sustainable and inclusive development, and climate change adaptation and mitigation.' Given the complexity and difficulties of mobilizing funds for regional infrastructural projects, it was ADB which suggested launching of Asia Infrastructure Fund (AIF) (*Infrastructure for Seamless Asia*, 2009, p. 10).

U.S. concerns that the AIIB would 'fail to meet environmental standards, procurement requirements and other safeguards adopted by the World Bank and the ADB, including protection intended to prevent the forced removal of vulnerable populations from their lands' have to be tackled forthrightly as such concerns are widespread in all the borrowing countries. This is also reflected in the backlash China faces over such projects in Africa, Myanmar and Sri Lanka. That may well be one solid reason for the multilateral character of AIIB. In this gigantic and sensitive cross-regional initiative, China has grasped the nettle and expanded the membership bringing on board every country that matters in the region. Thus, AIIB is inclusive and, in a way, ensured elimination of political hurdles to cross-border connectivity in the pursuit of its flagship Belt and Road Initiative.

How AIIB could offset the compartmentalising objectives of the U.S.-led Trans-Pacific Partnership (TPP) and China-led Free Trade Area of Asia-Pacific (FTAAP) and Regional Comprehensive Economic Partnership (RCEP) primarily focusing on Southeast and East Asian countries will be clear within next decade or so.

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India Aims for a Boom Rooted in Infrastructure

by **Rakesh Khar**

IF THE GOODS AND SERVICES TAX IS PASSED BY PARLIAMENT AND IMPLEMENTED, IT WILL EASE INTER-STATE MOVEMENT OF GOODS ACROSS INDIA.

Infrastructure is in focus more than ever before with the national budget bringing it centre-stage as the main thrust of development. India needs about US$1 trillion for new roads, ports and airports over the next few years. According to the Government of India (GoI), building of infrastructure, to propel development, would add two percent to GDP growth. The investment challenge is enormous.

The power sector alone requires an investment of US$ 250 billion over the next 4-5 years, providing immense opportunities in generation, distribution, transmission and equipment. The aviation market is expected to grow as the third largest in the world by 2020 – handling 336 million domestic and 85 million international passengers – according to industry estimates. The projected investment is US$ 120 billion.

The construction equipment industry, a key driver of infrastructure, is reviving after four years and is expected to grow to US$ 5 billion during the financial year 2019-20 from its current size of US$ 2.8 billion, according to a report released by the Indian Construction Equipment Manufacturers' Association (ICEMA). Foreign direct investment (FDI) received in the construction development sector from April 2000 to September 2015 stood at US$ 24.16 billion, according to the Union Commerce Ministry's Department of Industrial Policy and Promotion (DIPP).

GoI has earmarked US$ 7.5 billion to develop 100 smart cities across the country. It has announced highway projects worth US$ 93 billion, which includes the flagship National Highways Development Project (NHDP) with a total outlay of US$ 45 billion over next three years. The International Finance Corporation (IFC) plans to invest at least US$ 700 million in existing transport and logistics infrastructure projects in India.

The logistics sector (transportation, storage, distribution and allied sub-sectors) is growing at 1.5 to 2 times that of GDP growth. The advent of the 'Make in India' campaign and rise of e-commerce delivery platforms has given a push to the logistics sector.

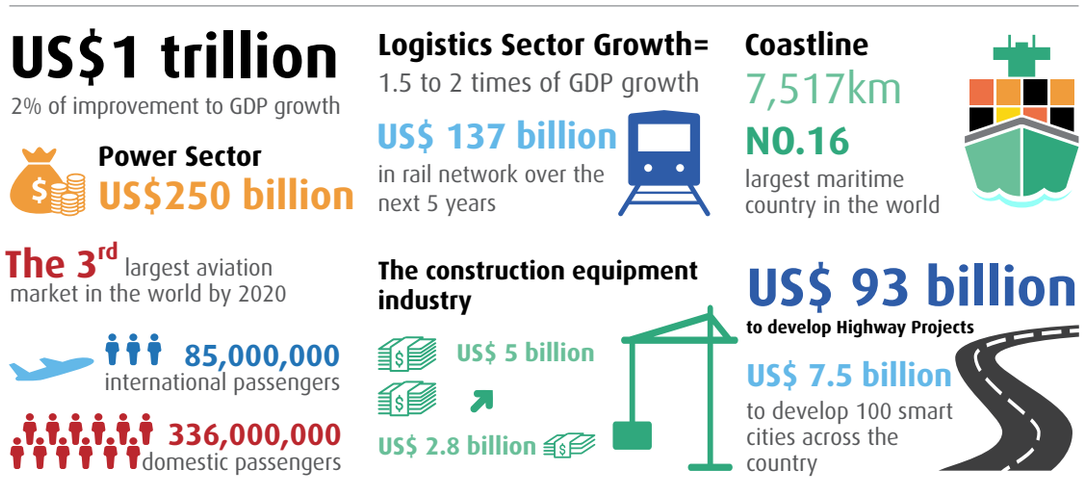
However, the infrastructure sector as a whole is constrained by the underperformance of the railways which, despite being a more economical mode of transport, has lost market-share of freight movement to road transport. To tackle this, GoI plans to invest US$ 137 billion in its rail network over the next five years.

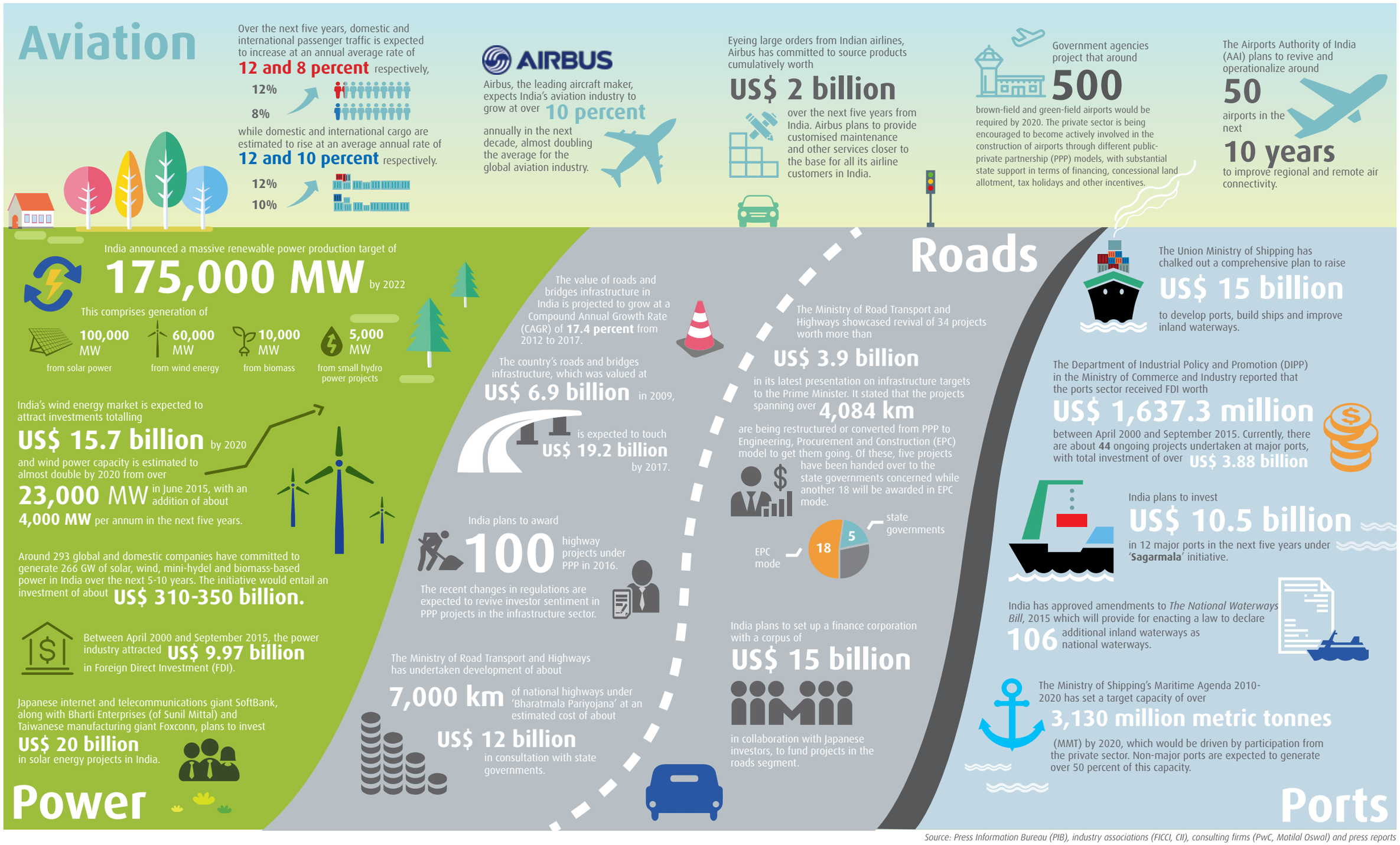
Ports, the import-export lifeline, too have been identified as a focus area. India is the sixteenth largest maritime country in the world, with a coastline of about 7,517 kilometres. GoI has allowed FDI of up to 100 percent under the automatic route for port and harbour construction, and maintenance projects. It has also facilitated a 10-year tax holiday to enterprises that develop, maintain and operate ports, inland waterways and inland ports. Plans are being drawn up to develop 10 coastal economic zones as part of the Sagarmala (string of ports) project. The zones would be turned into manufacturing hubs, supported by port modernisation projects, and could span 300-500 kilometres of the coastline.

But, amidst the positive policy push, the lack of coordination in infrastructure development threatens to cause delays and unreliability in services, which increases cost, reduces competitiveness, and discourages investments, according to a recent study of the logistics sector by Motilal Oswal (a top financial services company). Low penetration of new technology in supply-chain process is resulting in damage to goods. India has the least warehouse capacity with modern facilities, and given the fragmented state of industry (large share with unorganized players), investment in information technology (IT) infrastructure is almost absent at the required scale, the Oswal study pointed out.

The failure to legislate the Goods and Services Tax (GST) is another stumbling block to infrastructure growth. If GST is passed by the Parliament and implemented, it will ease inter-state movement of goods across India. Further, it would amalgamate a large number of Central and state taxes into a single tax; mitigate cascading or double taxation in a major way; and, pave the way for a common national market.

A PwC study on global





Source: Press Information Bureau (PIB), industry associations (FICCI, CII), consulting firms (PwC, Motilal Oswal) and press reports

infrastructure funding said that the rather difficult business environment in the country was a handicap. India has moved a few notches up in the global ease of doing business report, but has a lot of catching up to do to make foreign investors rush in. Among other things, investors complain about unpredictable regulations; bureaucratic delays in approving projects; endless struggle to secure land rights; and, GoI's stalled attempts at reform, the PwC report added.

On the positive side, the government's aggressive approach to building the infrastructure needed for rapid economic growth could mean that hindrances would not be allowed to come in the way of development.

The author works with Network 18 Media as Editor, and Special Projects and General Manager-News Operations. He has worked at senior levels with The Economic Times, *CNN IBN, IBN 7, Zee News, BBC World Service, Sahara TV, and* Deccan Chronicle.

Cities of the Future

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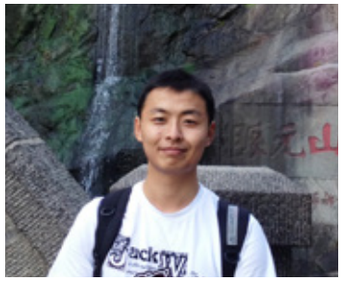

My imagination of future cities began with my understanding of individual buildings. American architect Louis Sullivan held that "form follows function." That means the essential requirement for a single building should be based on its users' primary demands for its functions. The principle also applies to the development of cities. Future cities are supposed to meet the needs of urbanites and make their lives as comfortable and convenient as possible. In the future, therefore, cities will be increasingly refined, instead of becoming larger and larger.

Every city will focus on its own functional zoning, and different cities will be connected more closely to one another. Meanwhile, less and less will one megacity integrate its various functions. Due to scarcity of land, cities will not expand limitlessly, but attempt to enhance usage efficiency of land. For instance, future cities may develop three-dimensional farming, so as to satisfy demands of urbanites. The film *Snowpiercer* gives a vivid example: Every carriage of the train is not an individual system and varies in function, but when they are connected together, diverse demands of all passengers can be satisfied.

Along with changes in division of urban functions, residential areas of future cities will change accordingly: These will be built around working zones, so as to reduce commuting time and avoid "bedroom communities"; the boundaries between communities will gradually disappear, and urbanites will share green spaces; pedestrian and vehicle areas would be separate, with vegetation-covered spaces, as well as underground parking lots and driveways which directly connect to external, arterial roads; and, energy needs will be wholly met by locally generated solar power.

Imagined future cities in science fiction as well as near-future urban plans based on current technologies reflect the aspiration for better city life.

Technology Will be the Key

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Today, almost half of the world's population resides in cities, and by 2050 it is projected 75 percent of the total population will live in cities. More the developing countries will economically prosper; more the demand for cities will increase. And according to experts, the time is ripe for designing smarter cities to accommodate ever growing population.

The technological advancement, especially the use of Internet of Things (IoT), in creating "smart" or "future" cities will increase along with digital governance.

Mobility is a critical component of human growth in urban settlements, and technology empowers growth. So both are intertwined. Even, for a government, providing and sustaining a transport network is one of the important functions as it provides a platform for commerce and human interaction. The coming years will see a robust increase in efficient public transport, and simultaneously the demand for pedestrian and bicycle tracks will also increase. Driverless cars and buses, automotive pods and the use of drone technology in transport are few of the features which may start appearing in the coming 10 years.

The 9-5 job will probably be replaced by individual contract jobs. Already, the conceptualization of work is changing – Cisco, Google and other tech companies provide an option to work from home every Friday, and even on weekdays they are not required to work in office. And, the pattern shows that by 2020 companies will need to invest less in physical infrastructure.

The most challenging issues would be: affordable housing, preparing for demographic trends, and most importantly, a city where "life means life not just mere living".

Both India and China have a futuristic policy for developing smart cities, but the latter is ahead in terms of implementation and technology. For instance, if someone visits a Chinese city called Zhenjiang in Jiangsu Province, now they will find many changes which show how Chinese smart cities may look like in future – appointment in a city hospital, nearest parking place, bicycles on rent, 4G wireless internet for riders in bus and many more. India also in 2014 announced the goal of 100 smart cities in coming 10 years.They are making progress, but the Chinese are ahead in implementing.

Trends show that the use of technology in every aspect of city will tremendously increase.

Visions of Another Urban World

Sustainable Lifestyles

Abhinav Chandra Veluri
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With our current pattern of lifestyles, we need the infrastructure of a city to be designed for the city's entire population. But with some well thought-out work schedules, the demand on the infrastructure could potentially be reduced to half. On regular weekdays, about 90 percent of the urban population is active only between 8 am to 10 pm. This means that the city's infrastructure has to provide a place for work, transport, internet bandwidth, communication networks, etc. for almost the entire population for most part of this time. All this is left largely underutilized during the remaining 10 hours of a day.

By modifying the urban lifestyle, through dispersing the times we go to work, go out to watch a movie or to shop for our kid's birthday, we can mitigate the space crunch and pollution levels in our city. As the city's infrastructure now would only have to effectively handle about half of its population, we can save on construction material, labor and land usage. We would also require lesser bandwidth for connectivity. People for whom daylight is critical for work can of course be allotted the day time. The remaining part of the day can be allocated to the others considering their preference, working hours of their family members, type of work and working hours of people in their neighborhood so that public transport could be designed optimally.

An idling car uses 0.8-2.6 litres of fuel an hour. 1. One litre of gasoline (that weighs about 0.75 kg) produces about 2.3 kg of carbon dioxide (CO^2). 2. There are 2.5 million cars on the streets of Shanghai. 3. This means that if we can shave off one hour of idling time from 10 percent of these cars, we could save 200,000 litres of gasoline and reduce CO^2 emissions by over 165 tons a day. This would result in an annual savings of US$ 66 million from fuel alone. One hour not spent on the road is one hour spent involved in value-adding activities like teaching your kids to play tennis, building better healthcare equipment or even going for a refreshing jog around the now-less-polluted city's parks – activities on which it's hard to put a price-tag on.

In an ideal world, we engineer our infrastructure to meet a certain demand. But we are soon reaching a stage where we would be maxing out our cities' capacities.

Safe, Better Future

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Place of residence: Beijing

I don't remember when I developed the habit of checking the traffic status from my home to workplace on the internet every morning before I decide when to set out. This helps me use spare time more efficiently. In future cities, I think, everyone's commuting time will become more controllable because customized services will make for more rational traffic flow, thus eradicating congestions that bother today's urbanites. However, a new problem may emerge: whether urbanites can enjoy both convenient customized services and high-degree of information security?

Future cities will be primarily based on the development of information technology. Apart from intelligent facilities, future cities will also feature public participation in urban management and operation, which may cause diverse information security vulnerabilities. Cities will integrate resources from the government, financial institutions, hospitals, telecom service providers, and enterprises, and cloud computing will be widely used in urban management. Any security problem occurring in the process, such as data loss of cloud platforms and computer system breakdown, will result in immeasurable loss to users and huge negative impacts on the entire urban system.

Therefore, information security of smart cities requires coordination of various systems, instead of a certain kind of technology or service. As the important participants and maintainers of the entire urban system, human beings themselves are the most complicated and unpredictable security risks. So, safeguarding information security in future cities is not only a matter of technological upgrade, but also depends upon aspects such as legislation, public awareness, and technical standards.

In a word, future cities will be people-oriented. The ultimate purpose of any technology is making the environment more suitable for human life, providing as many opportunities as possible for human development, enabling people to communicate with each other more easily, and ensuring that everyone enjoys a safe, comfortable and convenient life. Therefore, customized services are inseparable for a high degree of information safety. I believe that city life will become safer and better in the future.

China's Amazing Cultural Impact

By **Prathibha Prahlad**

CHINA HAS OVERCOME HINDRANCES TO THE CONSUMPTION OF CULTURE AND THE ARTS.

In the last decade, China has emerged as a major cultural power. Its presence is felt in every major or minor festival across the globe. There is no festival in the world where Chinese arts and artistes in performance are not showcased. The barriers of language, culture-specific performances of opera, music or dances, which the West would ordinarily term 'ethnic' and keep out of mainstream performance venues, no longer hold true where China is concerned. It is amazing how, with strategic planning, soft outreach and a huge budget, China has overcome hindrances to the consumption of culture and the arts.

China's traditional culture is an attraction to the West, especially with its rapid rise as a major economic power. China quickly understood that economic rise is not sustainable without expanding cultural footprints; and, without becoming more "acceptable" by increasing its reach on the world stage. China's engagement with several countries, through bilateral and festival cooperation, has drawn widespread attention to Chinese arts and artistes and has led to its rise also as a "super soft power."

Several international festivals are being organised in china's provinces. Most of these started many years ago as regional affairs. With more funds available and a clear directive to intensify cultural engagements with a global community of festival directors, artistes, NGOs and cultural arms of foreign governments – with the single-point agenda of placing China on the world map – these regional festivals have now transformed into international events where artistes from around the world are invited to perform.

My engagement with China and its artistes began in 2012, when I was invited to the China Shanghai International Festival Forum, the flagship event of China's global cultural festivals.

My meeting with directors of these international festivals in different regions led to my dance group – Prasiddha Repertory – being invited twice to perform in Chengdu in Sichuan Province and Zhangjiajie in Hunan Province. While the International Festival of Intangible Cultural Heritage (IFICH) in Chengdu, organised in collaboration with UNESCO, had 112 participating countries, the Zhangjiajie Country Music Festival saw 27 countries, including the U.S., South Africa, Australia, Italy, Russia, and Brazil. The events were staged in the area's world heritage sites. The opening ceremony was in the spectacular Huanglong Ecology Cave where all the participating countries performed. After the inaugural performance, every country had a generous schedule for maximising their exposure to the region for Chinese audiences.

Prasiddha Repertory's performances were organised in picturesque places around the Baofeng Lake, Laomowan, Tianzi Mountain, Tianmen Mountain (where the Hollywood movie *Avatar* was shot), and Xibu Avenue. Apart from the fact that it was an unforgettable experience, our hosts took care of everything – including stay, food preferences, technical needs and comfort of the groups. So much so, that by the time we left, all of us were in love with China. The extent to which the Chinese can strategize to deliver desired outcomes, as the gigantic IFICH demonstrated, is impressive.

Chengdu, with UNESCO collaboration, has developed a 100-acre park dedicated to intangible cultural heritage (ICH). I haven't come across any other place in the world that has such a vast area devoted to multiple museums, theatres, and theme parks, as well as audio-visual shows, sculptures, paintings, musical instruments, printed material, and the like dedicated to the country's cultural heritage. The ICH Park was the venue for the opening ceremony of the festival, which brought together 112 countries and an audience of 25,000.

For me, Chengdu was a surprise package that unfolded the many Chinese delights on offer. I was told that culturally, Chengdu is China's "most intense city." I understood why I saw the entire city wearing a festive look. Every road, lamp post, and sidewalk had been utilised for branding and promotion of the festival. Huge billboards sported an interesting tag line: 'Everyone Be a Cultural Transmitter.' With hundreds of volunteers wearing T-shirts sporting the same message, there seemed to be, literally, a cultural explosion.

To top it, the roads were closed to general traffic for providing security to the artistes from 112 countries. The security which we were accorded was comparable to that of high government functionaries. Police cars with lights flashing escorted us artistes to the venues, making us feel like powerful celebrities.

During the rest of our tour, we were greeted by hundreds of enthusiastic people lined up on either side of the long roads, waving Indian flags and taking pictures as we went about our performances for a week in Gaoxin District, Pixian Town, Dujiangyan Tourist Resort, Jintang City, and Bailu Hill Resort in Pengzhou. All were beautiful, picturesque venues, but I would like to specially mention Dujiangyan. The magnificent stage set against the backdrop of a huge, ancient shrine with the power irrigation channel across the Min River lit up in a fantastic way was stunning. My dance group finished its performance to deafening applause from an audience of 15,000. The climax was the closing dinner, which gave all the performers a glimpse of Chinese opera and a taste of delicious food from all continents.

More recently, in October 2015, I was invited to the China Shanghai International Festival Forum for the purpose of building a network of festivals from countries along the Silk Road.

Ms. Catherine Wang, the culture specialist, and Mr. Liu Wenguo, artistic director of China Shanghai Festival, had invited directors of festivals from 60 Asian and European countries, which were on the ancient 'Silk Road.'

China is a stellar example of what can be achieved through culture and cultural diplomacy – a far cry from the times of the "cultural revolution." It has changed the world's perception of China and Chinese culture.

Artistes of Prasiddhe Repertory in full creative flow.

The author is an Indian classical dancer and culture specialist, is the founder and director of Delhi International Arts Festival.

BOOKS

Chinese and Hindus: A Comparative Study of Cultural Traditions

By **Shang Huipeng**

Social Sciences Academic Press (China), February 2015

As the two most populous countries in the world, China and India share a great deal of similarities. Among various recent comparative studies on China and India, cultural studies stand out, and these show distinct features. This is because while many once splendid ancient civilizations witnessed discontinuities in history and didn't survive into modern times, only China and India possess lasting and uninterrupted traditions and cultural heritage. However, once people get to know more deeply about the two cultures, they will be surprised by their huge differences.

With a deep understanding of these similarities and differences, as well as great respects for the two cultures, Chinese scholar Shang Huipeng wrote the book *Chinese and Hindus: A Comparative Study of Cultural Traditions*. Divided into two, the book's first part elaborates on topics including India's religious traditions, fate of Buddhism in the two countries, and the two cultures' aesthetic traditions. The latter part covers topics as clan groups, marriage, sex, and unity and separation of social groups in the two cultures. After analyzing major differences of the two cultures and the influences these differences have cast on social developments, Shang points out that in a sense, cultural traditions decide a country's development path. "To address the common challenges that people on the planet are facing today, various existing development modes, including those of China and India, have their own limitations. To solve this problem, human beings need a new civilization. China and India, as two time-honored cultures, may provide some inspiration for the emergence of the new civilization," Shang remarks.

Shang Huipeng, author of this book, is a professor with the School of International Studies, Peking University. He is mainly engaged in research on Japan, India's society and culture, and comparative culturology. Among his many publications are *Cultural History of India*, *Caste and Hindu Society*, and *Getting to Know Japanese*.

DIFFERENT ROADS OF EAST AND WEST ON DEVELOPMENT OF SCIENCE AND TECHNOLOGY

Back in the mid-17th century, the scientific and technological development of Chinese and Europeans were still more or less at the same level. However, why China and India, both boasting advanced scientific and technological developments in ancient times, stagnated in modern times? And, why modern science and technology blossomed in the West? Comparative studies on Chinese and Indian cultures help to answer the questions. Below we will analyze the issue from three aspects.

First, in terms of the general cultural and traditional values, both cultures place emphases on other fields rather than exploring nature. Discovering nature had never occupied an important place in the two time-honored cultures, which basically provided no ground for the birth of modern science. While the ethic-centered Chinese had a focus on dealings in the relationship among people, Indians went to another extreme. Supernaturalism-centered Indian culture placed emphasis on going beyond oneself and renouncing the world.

Second, in terms of thinking mode, while the Chinese lack imagination and enthusiasm to pursue abstract principles, Indians are too obsessed with illusions and are zealous about discovering abstract and general principles. The Chinese attach great importance to people's real life. This explains why the Chinese didn't probe scientific development more deeply although they had made many astonishing discoveries and the country had long had a scientific establishment. However, the Indians' way of thinking tends to distance them from the objective world. They tend to refute the knowledge obtained from observations and experiments, which virtually provided no room for the establishment of modern science.

Third, in terms of the perspective of people and society, social formations of both China and India go against cultivation of independent thinking and action. Emergence and development of modern science presuppose the individual's independent thinking. However, in both cultures, social relations are valued over individualism, and groups, rather than individuals, are emphasized. People are discouraged from independent thinking and action. The major social relation which restrained the Chinese people was kinship, which includes clanship. And in India, it was caste. In the West, the rise of the bourgeoisie, Renaissance and various reforms have created a cultural environment which encouraged scientific and technological development, while this kind of environment never obtained in China or India.

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