Trendlines in China's Infrastructure Development in Tibet

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As part of its nation-building process aimed at "ending the century of humiliation", the People's Republic of China (PRC) established sovereignty over Tibet. While the Tibet Autonomous Region (TAR) was established in September 1965 with an area of 1.23 million sq miles as against 2.5 million sq miles of Greater Tibet, large parts were merged with Qinghai, Gansu and Sichuan Provinces of China. The Chinese government comprehends the importance of the region since control of the TAR is crucial vis-à-vis enhancing its security on the western frontier.

As decades passed by since the founding of the PRC in 1949, coastal China did indeed race ahead as far as development was concerned, thereby leaving western China stagnated, with Deng Xiaoping, declaring to the people of western China, "Let them (coastal China) get rich first, you can get rich later." Once the economy of coastal China had acquired a self-sustaining momentum, policy-makers under President Hu Jintao subsequently appear to have turned their attention to western China.[1] The Hu Jintao Administration has significantly tightened its policy over Tibet in an apparent attempt to ensure the proverbial Chinese Communist Party's (CCP's) "long reign and perennial stability" in the restive region with an increasing number of hardline cadres being appointed to run the TAR.[2] The tough stance adopted by the party and state apparatus towards the ethnic minorities was approved at the January 8, 2010, Politburo meeting exclusively devoted to the Tibetan issue. President Hu Jintao, who was Party secretary of Tibet from 1988 to 1992, heralded two goals for the TAR in the coming

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decade during the course of deliberations at the meeting:[3]

- Seeking a breakthrough-style [economic] development; and
- Maintaining long-term stability.

In the Politburo meeting, President Hu promised that the central government would help Tibet by boosting investment, transferring technology, and sending in more qualified officials as well as "experts and talents." Significantly, the region's Gross Domestic Product (GDP) is set to grow by 12 per cent this year, while fixed-assets investments are projected to grow by a whopping 18 per cent. Under President Hu's dictum of "going down the road of development with Chinese characteristics and Tibetan flavor" (*zhongguo tese, xizang tedian*), additional input has been focussed on areas including infrastructure, tourism, mining and manufacturing.[4] In the wake of ethnic violence in both Tibet and Xinjiang in 2008, more soldiers and officers of the paramilitary People's Armed Police (PAP) have been stationed in the two regions[5], thereby signalling the intent of the PRC's policy towards these capricious regions.

It was noted in the 2008 *Chinese White Paper on National Defence* where the PRC categorically focussed on logistics reform, including, upgradation and deepening of logistical support as key objectives.[6] The issues of Taiwan, East Turkistan and Tibet should be read in correlation to the larger concept of Chinese national integration. China reiterated that its concepts of warfare and capability upgradation go well beyond meeting challenges in the form of Taiwan, Tibet and East Turkistan—thus, explicitly implying that China's military capabilities shall continue to grow unabated even as the Taiwan issue thaws and that the Chinese national security strategy is set to be focussed to look beyond Taiwan.

As the PRC prepares itself to becoming capable of winning in the era of high-technology warfare, greater focus is now being attributed towards logistics development. It was not until 2002 when Hu Jintao, then vice president of the PRC, issued an order to transform PLA logistics that rapid

renovation actually began. Nevertheless, the enhanced status of the logistics apparatus was underlined by the then Central Military Commission (CMC) Chairman and Party General Secretary, Jiang Zemin, in 1991 when he included logistics support as one of his five major requirements for army building while pointing out, "there would be no high combat effectiveness without a strong logistics supply."[7] The General Logistics Department (GLD) and the PLA gradually began linking civilian and military logistics to provide what Jiang called "precision logistics."

Emphasising Logistics Development

The PLA is likely to retain a sprawling logistics apparatus, but with expanding pockets of excellence in the form of emergency support units and other rapid reaction logistics forces to provide support for future mobile wars. There is an increasing likelihood that the PLA would utilise rapidly expanding civilian transport and infrastructure capabilities to augment its own limited resources, especially in the areas of complicated terrain.[8]

As logistics modernisation assumes high priority in the PLA's quest to build a 21st century fighting force, the prevailing understanding is that the logistics system needs to be overhauled so as to adhere to the general principles of the war-fighting doctrine involving limited high-technology wars which crucially emphasise mobility, rapid response, intensive consumption of war materials and offshore operations.[9] Without the logistical capabilities to meet such demands, the PLA would be unable to undertake military operations at and above the campaign level.[10] Logistics planners in China are conscious that existing logistics capabilities are woefully inadequate to be able to support these demanding missions whilst they underscore several key areas in which capabilities need to be significantly expanded:[11]

- *Strategic and tactical mobility:* The PLA's transportation capabilities are limited, heavily reliant on ground assets, and primarily tactical in reach. Some logistics planners argue that at the campaign level, each war zone (equivalent to a Military Region) should have the logistics capacity to support an amphibious landing of one infantry division.[12]
- *Emergency support forces.*
- *Battlefield repair and support.*
- *Advanced stockpiling of war materials.*
- *Logistics mobilisation and reserve forces*: Logistics planners urge that each war zone should have two or three logistical reserve support brigades.[13]

In line with these endeavours, the biggest logistics centre in the TAR (southwest China) was completed in June 2009. Located next to a railway station at an altitude of 4,500 metres in the Nagqu Township of Nagqu County in northern Tibet, the logistics centre is expected to handle 2.23 million tonnes of cargo by 2015 and 3.1 million tonnes by 2020. Since the centre is situated about 300 km northeast of the regional capital, Lhasa, this project is expected to further exploit the potential of the Qinghai-Tibet railway line and boost the region's economic development. Construction of the logistics centre stood at a cost of almost Yuan 1.5 billion (US $220 million).[14]

The Politics of Economic Consolidation

As part of the policy of integrating the TAR with the mainland, Beijing appears to be laying special emphasis on the economic development and opening up of the TAR to the outside world. In the past decade, Tibet has been the largest per capita recipient of subsidy and funding from the central government. On the TAR's 20th anniversary, the government spent Yuan 500 million on 43 projects; on the TAR's 30th anniversary, it spent Yuan 4.6 billion on 62 projects; and on the TAR's 40th anniversary, it spent Yuan 6.42 billion on 24 projects. TAR Chairman Jampa Phuntsok stated that over Yuan 16.6 billion (US $2 billion) was invested in building infrastructure in 2004, with most of the funds coming in from the central government under the "Western Development Programme."[15] The year 2005 marked the 40th anniversary of the founding of the TAR wherein as many as 24 development projects were undertaken. It was also decided that over Yuan 6 billion will be invested in renovation and construction of infrastructure. The Eighth and Ninth Five-Year Plans in China laid out several projects in Tibet for agriculture, water conservation, hydroelectricity, airfields and highways. The Chinese government has incessantly justified these measures as part of the Western Development Policy entailing economic, political and social objectives. As Beijing was increasingly concerned by the growing economic gap between its east and west, ultimately leading to social unrest and riots in different areas during the 1990s, the "Go West" campaign, was launched to make the west an "incubator for skilled manpower" and a "hot spot for foreign investments."[16]

The PRC has been carrying out extensive infrastructure development in the TAR and areas close to its southern borders to include development of road, rail and air networks, fuel, oil and lubricants (FOL), pipelines, telecommunications and industrial base, besides giving a boost to the economy of the TAR. Such

extensive development of logistics infrastructure in the TAR indicates the impetus being made available to the PLA's logistics capability, which, in turn, will enhance its operational capability in the TAR.[17] This dual objective was further underscored when it was reported, "The infrastructure development is well beyond the genuine needs of Tibet."[18]

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According to Tim Oaks, a social geography professor at the University of Colorado who has spent many years doing research in western China, "It does not make sense to transfer industrial capacity to the western regions, as was mistakenly attempted during the Third Front campaign of the 1960s and 1970s… One should not assume that the 'Go West' campaign will shift the balance of regional inequality in China that much."[19] Oaks further stresses:[20]

> As long as the campaign focuses on infrastructure, energy, and the intensification of natural resource extraction in the western regions, the eastern regions will continue to get more of the benefits… The western regions would benefit more if the campaign focused more on direct poverty relief and improvement in access to good education and health care.

The Chinese government's deliberate attempts of supporting an influx of the Han population which is settling in these areas, is thereby changing the demographics of the region altogether in favour of the Han Chinese population. A rising tide of the Han Chinese migrants is flooding into Tibet with estimates that by 2015, nearly 20 million Han Chinese would have moved into the TAR, subsequently shifting the cultural boundaries between the Tibetan people and the Han Chinese.[21]

Logistics Build-up in Tibet

The Chinese government has begun placing priority on infrastructure because they comprehend that the overall health and growth of the economy is increasingly dependent on their logistics capabilities."[22] The completion of the Gormo (Chinese: Golmud)-Lhasa rail link is central to China's Great Western

Development Policy aimed at promoting the cause of Chinese nationalism and 'great power status' by virtue of greater economic development of the country's underdeveloped western areas that are primarily populated by ethnic minorities. Much in accordance with the likes of Deng Xiaoping, Hu Jintao too, has advocated a policy of generating economic prosperity to eradicate separatism in Tibet and Xinjiang. Hailing the infrastructural development in the TAR as a national security strategy, Hu stated, "Rapid economic development is the fundamental condition for realising the interests of all ethnic groups in Tibet and also the basic guarantee for greater ethnic unity and continued stability there." In fact, Hu Jintao has long advocated a policy of generating economic prosperity so as to eradicate separatism in this part of China.[23]

Rail Communications

By virtue of becoming fully operational on July 1, 2006, the 1,142-km Qinghai-Tibet Railway (QTR) line from Golmud in the Qinghai Province to Lhasa in Tibet, became Tibet's maiden railway line connecting and integrating the Tibetan Plateau with the rest of China at the cost of a staggering $4.2 billion. The QTR is the latest manifestation which demonstrates China's resolve to consolidate its hold on Tibet along with other channels of logistics infrastructure build-up given that it would ramp up induction timings while increasing build-up and logistics sustenance capability in the TAR up to the major townships. Mainly a high and desolate plateau, Qinghai lies in the Tibetan highlands at an average elevation of 9,800 ft (3,000 metres). Incidentally, the launch of the QTR coincided with the 85th anniversary of the founding of the CCP as well as the 10th anniversary of Hong Kong's handover from British rule to China.

Hailed as an "engineering marvel," the Chinese already deduce the railroad as an example of China's greatness in the new century and proof of its claim to be a "technological superpower."[24] It needs to be mentioned, however, that the completion of the railroad would not have been possible without the US General Electric's diesel engines, which have the capacity to maintain an average speed of 100 km per hour, even at altitudes of 4,000 metres, where the thin air can have a halving effect; and Canada's Bombardier which fulfilled a US $280 million contract to build carriages with the capacity to withstand the journey through Tibet's frozen mountains, some with deluxe sleeping compartments equipped with showers, glass-walled sides for panoramic views, entertainment centres and gourmet dining areas, and toilets with sewage and waste-treatment systems.[25]

The highest point of the QTR comes in at the 5,072-metres (16,640 ft) high Tanggula Pass in the Kunlun mountain range. In addition, China has also unveiled plans to extend the Chinese National Rail Network to the border with India. The railway line would likely reach the Tibetan town of Dromo near Nathu La and Sikkim. Further, up to $1.2 billion is expected to be invested in building new rail lines in the Tibetan region in the coming decade, including a line extending west from Lhasa to Shigatse and another heading east from Lhasa along the Yarlung Tsangpo River (Brahmaputra) to Nyingchi (Kongpo). The line to Dromo / Yatung will be an extension of the Lhasa-Shigatse line. Significantly, the double gauging of the railway line from Lanzhou to Golmud will extend to the Lanzhou Military Region (MR), thus, enhancing the Chinese operational logistic capacity crucially.[26] Besides, the Korla-Lanzhou-Chengdu railway line is also likely to be converted into a double track. The eastern link from Chengdu to Lhasa via Ngiti, Pangta and Markhan Dzong is slated to be completed by 2015. China has built settlements every 60 km of this 1,118-km-long railway line and it is widely speculated that the QTR will facilitate an increase in the movement of products up to 45 times its current level and cut down transport costs for goods by 75 per cent.[27]

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Roads and Highway Networks

The rapid build-up of China's national road and rail transport system has greatly enhanced the PLA's land-based transport capabilities. Many key civilian highway and railway projects, especially trunk rail lines and inter-provincial highways linking the interior and coastal regions, have been constructed to military specifications and can be turned over to the PLA in the event of war. During the Eighth Five-Year Plan, for example, more than 50 national highways were built or renovated to military standards, including three roads leading into Tibet.[28]

China has developed 41,000 km of road network in Tibet, including five major highways and a number of subsidiary roads. It is learnt that the PRC had planned to build additional roads in the TAR, which will link 92 percent of the TAR's towns and 70 percent of its administrative villages, expected to cost Yuan 20 billion in the coming years, mainly on construction of 103 highway projects. Presently, 80 percent of Tibet's townships and nearly 20 percent of villages are accessible by

highways.[29] The Western, Central and Eastern Highways have leveraged greater connectivity between western and mainland China.

Qinghai-Tibet Highway (Central Highway): Running from Xining in Qinghai to Lhasa in Tibet, this highway is the most crucial and is often referred to as the 'lifeline' of the TAR. The 2,122-km highway carries more than 80 percent of cargo and 90 percent of passengers into or out of Tibet. It is paved with asphalt and crosses the Kunlun and Tanggula mountain ranges. The entire stretch of the road is black-topped two-way, with proper highway markings wherein vehicles can travel at an average speed of 35-40 km per hour and can cover a distance of approximately 200-250 km in a single day.[30]

Lhasa-Kashgar/Aksai Chin/Xinjiang Highway (Western Highway): This connects Xinjiang to Tibet, by linking Kashgar and Lhasa (3,105 km). From Quilanaldi, the road branches off to Khunjerab Pass and subsequently becomes the Karakoram Highway right upto Gilgit. In addition, there is a large number of lateral roads leading to the passes on the Indian borders.[31]

Sichuan-Tibet Highway (Eastern Highway): This highway between Chengdu (Sichuan) and Linzhi (Ngiti) is 1,715 km long (2,413 km up to Lhasa). There has been a crucial upgradation of the 400 km stretch from Lhasa to Ngiti (opposite central Arunachal Pradesh)—black-topped and asphalt-surfaced, it is primarily aimed at improving lateral mobility between central and eastern TAR. The Chinese government had earmarked Yuan 5.3 billion for improving the 573-km stretch of the Sichuan-Tibet Highway along with six regional highways and the 3,000 km road leading to local counties and villages, among other highway projects.[32]

Yunnan-Tibet Highway: This 716-km-long highway branches off from the Eastern Highway and is four to five metres wide, prone to frequent landslides and disruptions during the winter and monsoon seasons. This highway holds special significance in military terminology for India owing to the build-up of the PLA opposite India's eastern theatre given China's logistics capacity-building and accelerated facilitation of men and material in the critical sectors of the northern and eastern borders.[33]

A major infrastructure development project in the TAR, including two highway bridges over the Lhasa and Yarlung Tsangpo Rivers, and a 2.4-km-long tunnel (total road length of 13.28 km) costing Yuan 650 million, is underway, which will reduce the travelling distance between Lhasa to Gongga international airport from 98 to 53 km. With the opening of border trade via Nathu La, additional border trade venues and plans for border trade at Bumla, Demchok and the old Stilvel route, the TAR appears well poised for 'fast-track' holistic development. Move of the

logistics resources from townships to the place of application and sustenance of forces during road closure periods (need to dump additional safety stocks for the road closure period) will continue to be a criticality for the PLA.[34]

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Upgradation of Airfields

There are five airfields inside Tibet and as many as 15 surrounding it. The main airfields are at Gongga, Donshoon, Hoping, Bangda, Nagchuka and Shiquanhe. The Gonga and Bangda airfields are being upgraded to cater to 1.1 million and 1.0 million transients respectively i.e., 2.1 million transients per year. In fact, Bangda is known to have the highest elevation in the world. Further, ten new airports are planned to be constructed in the next five years. Construction of Nyingtri Airport (Linzhi) located in southeastern TAR was one of the key projects completed in the Tenth Five-Year Plan and was made operational in July 2006. It is situated near Nyingtri in the Nyingchi Prefecture, which shares borders with India and Myanmar and is strategically significant to India. Another airfield in central TAR at Bayixincun is also being pursued.[35] China is also opening another airport at Nyingchi, apart from modernising Lhasa's Gongga Airport. There are 15 airfields in and around Tibet out of which only three are open for civilian activity. Owing to the critical high altitude of its airports in Tibet, the PLA Air Force (PLAAF) encounters problems in terms of fuel, oxygen as well as the length of the runways. The airlift capability, as well as the load that can be carried by these aircraft is limited and they must decide between fuel and armaments. Further, Su-27s have recently been deployed in the Chengdu MR and they might also be deployed in Tibet in the future.[36]

Significantly, the establishment of the TAR International Airlines is presently under consideration in Tibet. Currently, the China Southwest Airline has 10 domestic air routes in Tibet, including those from Lhasa to Beijing, Chengdu, Shanghai, Guangzhou, Chongqing, Xi'an and Xining, as well as one international air route from Lhasa to Kathmandu. Such developments would progressively increase the air induction capability into the TAR. China has purchased an additional 18 IL-78 aircraft for developing the existing air-to-air refuelling

capability, so that the aircraft can take off with added load and use less fuel and subsequently can be refuelled in the air to achieve greater endurance which shall be crucial as far as the radius of action as well as payload of all the aircraft is concerned.[37]

Construction of the new airfields/upgradation of advanced landing grounds (ALGs) and helipads in and around the TAR (coupled with acquisition of new transport aircraft) is likely to enhance China's strategic airlift capability. The Chinese will be able to induct/concentrate formations in comparatively shorter time-frames and consequently, shorter warning periods. The functional international standard airfields in the TAR (Gongga, Pangta and Nyngchi) would give the Chinese a considerable strategic airlift and logistics advantage. Further, the airfields on the periphery of the TAR can be activated to give additional logistic and operational support. The construction/upgradation of airfields/ ALGs closer to the borders enhances the PLAAF aircraft's striking range and provides the PLAAF the ability to strike/engage targets in India on a broad front and in depth.[38]

Foremost among infrastructure schemes mooted for the 12th Five-Year Plan period of 2011 to 2015 is what the official Chinese Press bills "the world's highest airport." Construction of the Yuan 1.8 billion ($263.5 million) airport in Tibet's Nagqu Prefecture, which has an elevation of 4,436 metres (14,639 ft), will begin late this year. According to local media, the Nagqu Airport would, together with ultra modern facilities such as the Qinghai-Tibet Railway, "perfect a three-dimensional transport network that will envelop all Tibet."[39]

Fibre Optic Communication (FOC)

All PLAAF units and sub-units in the TAR have been connected by satellite communication and as many as 58 very small aperture terminal (VSAT) satellite stations are reported to have been installed in the TAR. China is also reported to have laid a fibre optic network in all the 55 counties, which includes Ali, and the border area of Chamdo; additionally, 1,100 km of optical fibre cable (OFC) have been laid, connecting Lhasa with Nyingchi and Qamdo Counties in east TAR. The plans to connect all the cities and counties of the TAR by 2005 appear to have been successful. Another major development has been the inter-connecting of Chengdu and Lanzhou MRs with one another, and both these MRs to Beijing, through secure communications, thus, ensuring secure and real-time communication, also emphasised during training. FOC is steadily being extended towards military installations along the borders. All military supply depots (MSDs)

are connected to Lhasa by radio and OFC.[40] In what could be interpreted as a prudent move by the PLA, the upgrading of the communication networks in terms of fibre optic cables and satellite communication indicates real-time connectivity achieved by the PLA owing to a quantum jump in communication technology. Their upgradation shall enable conducting operations effectively as well as sustaining increased force levels in the future. Additionally, enhanced communication security is likely to continue to tilt the balance in cyber warfare in favour of the PLA.[41]

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Potential Ramifications

Although estimates vary, it is speculated that the QTR gives China the capability to mobilise up to 12 divisions (with approximately 12,000-15,000 troops constituting a division) in a month's time-frame. The infrastructure and logistics build-up shall double up as base support for the PLA, enabling it to transfer telecommunications and other command and control facilities which are needed to deploy missiles from launches at a chosen place. Unswerving rail links from Lanzhou to Kashi and to Lhasa shall aid easy switching of reserves and logistics resources between the Chengdu and Lanzhou MRs bordering India.[42] Presently, the travel time for troops from Golmud to Lhasa is approximately 72 hours (including night halts and restrictions). The QTR line has reduced this to 16 hours, implying a complete turnaround time of about three days from Golmud to Lhasa. In fact, Chinese troops were being transported on this rail network to Lhasa in December 2007, signifying its use for military purposes. The *Xinhua* news agency cited unnamed sources in the PLA stating that the railway would become "a main option" for transporting soldiers.[43] The QTR will also permit easier movement of larger and more capable ballistic missiles into the TAR. Approximately 2.18 percent of the 1,118-km-long railway is made up of tunnels. However, once the construction of these tunnels was completed, they were kept unused for several months, which induced speculation that some of the tunnels were probably being used as missile bases. The completion of the railway may, therefore, be followed by

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deployment of such missiles into the TAR, so as to be able to cover longer range targets in South Asia as well as the Indian Ocean Region (IOR). It may also facilitate China's second-strike capability by avoiding the reach of US missiles. Some of the tunnels on the railway line can also be developed as possible secure storage sites for rail mobile ballistic missiles. This, in turn, will minimise the vulnerability of the lines of communication. The QTR has contributed vitally towards reducing the military expenditure in terms of movement of men and materials to/from the frontiers.[44] There is a concerted effort to improve the rapid deployment capability of the integrated forces, particularly the ability to quickly manoeuvre heavy equipment. The PLA would be able to transport approximately 10 light mechanised divisions and some heavy mechanised divisions through the railroad to Tibet from the Lanzhou and Chengdu MRs within 30 days.[45]

The average load capacity of one Chinese train car is normally 60 tonnes, with about 20 cars in each cargo train. This ideally should imply that each train could transport 1,200 tonnes—amounting to 10-11 trains travelling both ways, proving enough for each given day. In time of war, the actual number of trains running on the railroad could double to roughly 20 trains both ways each day. Assuming that the total weight of the equipment and combat material needed for one rapid reaction division of the Chinese Army is around 15,000 tonnes, the QTR could transport a whole rapid reaction division on one average day. In other words, within every one-and-a-half to two days, China could move one rapid reaction division from the Chengdu MR or one rapid reaction division from the Lanzhou MR to Tibet.[46] China's air transport capability, including additional airborne troops, rapid reaction troops and armed police could be directly delivered to Lhasa from the air. Since airdrop operations would take place in the Tibet region, there would be no need for ground-based air defence firepower. The railway would allow the 61st Plateau Rapid Reaction Motorised Division of the 21 Group Army under the Lanzhou MR and the 149th Rapid Reaction Motorised

Division of the Chengdu MR to promptly enter Tibet.[47] Srikanth Kondapalli has underscored the Chinese intent vis-à-vis Tibet by stating that there are 30 regiments of the PLA stationed at Golmud which can use the railway line and reach Lhasa, Shigatse and other feeder lines. The Chengdu to Lhasa line can bring in five more divisions of the PLA to the border.[48] According to the Tibetan Government-in-Exile in Dharamshala, the estimated number of troops in Tibet stands at about 500,000 alone in the form of the People's Armed Police, the Chinese Frontier Guards and the Garrison Duty Forces.

The Chengdu MR houses two Group Armies, two tank brigades and one artillery division. No airborne divisions are present in Chengdu or Lanzhou. The 13 Group Army and 14 Group Army, present in Chengdu, are called "monkey troops" in China. They are trained to rapidly climb mountains much in similarity to the Ladakh Scouts in the Indian Army and are very amenable to the weather conditions. In fact, the 13 Group Army is a rapid reaction force (RRF)—potentially a significant concern for India. Both the General Headquarters Department and the Chengdu MR expend great efforts to make sure the forces in Tibet are adequately supplied, primarily by road, but sometimes also by aircraft.[49]

To conclude, it is manifestly apparent that the Chinese appear to be pursuing a well-orchestrated and crafted strategy of positioning themselves in a situation of advantage in Tibet with the larger aim of radically augmenting China's rapid military deployment capabilities in the border areas with India. This holds special significance in the given backdrop of a sustained double digit growth in its defence budget and pursuance of a substantial military modernisation programme being undertaken by the PLA. India should take cognisance of the strategic challenges that shall be put forth as per the measures undertaken above. As Sun Tzu had famously stated, "To subdue the enemy without fighting is the acme of skill"—thus, implying that in the given state of affairs, China's infrastructure build-up and advanced capabilities amount to be translated as 'power' in the wider sense.

Notes

1. B Raman, "Seeing China from Chengdu," *South Asia Analysis Group*, Paper No. 2381, September 2007.
2. Willy Lam, "Hu's 'New Deal' with Tibet: Chinese Characteristics and Tibetan Traits?" *China Brief* (The Jamestown Foundation), Vol. 10, No. 2, January 21, 2010.
3. A *Xinhua* News Agency report cited in the *People's Daily*, January 10, 2010.
4. As reported in *Tibet Daily*, January 9, 2010.

5. For more details on this issue see, "The Xinjiang Crisis: A Test for Beijing's Carrot-and-Stick Strategy," *China Brief* (The Jamestown Foundation), Vol. 9, No. 15, July 23, 2009.
6. For more details see, *China's National Defense in 2008*, Information Office of the State Council of the People's Republic of China, Beijing, January 2009.
7. Quoted by Gen Fu Quanyou in "Future Logistics Modernization," in Michael Pillsbury, (ed), *Chinese Views of Future Warfare*, (Washington D.C.: National Defense University Press, 1997), p. 120.
8. For more details on this particular subject see, Dennis Blasko, Philip Klapakis and John Corbett Jr., "Training Tomorrow's PLA: A Mixed Bag of Tricks," *The China Quarterly*, No. 146, June 1996, pp. 488-524.
9. Tai Ming Cheung, "Reforming the Dragon's Tail: Chinese Military Logistics in the Era of High-Technology Warfare and Market Economics," in James R Lilley and David Shambaugh (eds), *China's Military Faces the Future* (Washington D.C.: American Enterprise Institute for Public Policy Research, 1999), p. 228.
10. Ibid., p. 233.
11. Ibid., pp. 234-35.
12. For more details, see Wang Zhenchu, "Logistics Support Readiness in High-Technology Local War," Military Economic Research, (*Junshi jingji yanjiu*), June 1994, p. 19.
13. Ibid., p. 20.
14. *Xinhua News Agency* report, "Tibet Biggest Logistics Centre to be Completed in 2009," cited in *People's Daily*, December 10, 2008.
15. For more details, see *Railway and China's Development Strategy in Tibet: A Tale of Two Economies*, Study by the Tibetan Centre for Human Rights and Democracy, 2007, p. 8.
16. Rui Xia, "Asphalt Net Covers China's West," *Asia Times Online*, September 15, 2005.
17. SB Asthana, "Infrastructural Development by China in Immediate Neighbourhood of India including Tibetan Autonomous Region: Military Implications for India," Centre for Strategic Studies and Simulation, United Service Institution of India, January 2008, p. 19.
18. Cited in, *The Times of India*, November 27, 2007.
19. Views expressed in an interview to Rui Xia (her unofficial Chinese name), a freelance writer living in China, September 15, 2005.
20. Ibid.
21. Asthana, n. 17, pp. 22-23.
22. For more details, see Sarah Bowling, "Logistics in China are in Early Development, but Changing Quickly," *Logistics Management*, January 18, 2006.
23. Cited in Abanti Bhattacharya, "Strategic Implications of the Qinghai-Tibet Railway," *IDSA Comment*, July 7, 2006.

24. As reported in *BBC News*, "Hu Opens World's Highest Railway," July 1, 2006; also see, Joseph Kahn, "Last Stop, Lhasa: Rail Link Ties Remote Tibet to China,' *The New York Times*, July 2, 2006; also see, "The Railway Across the Roof of the World," September 25, 2005, available at, http://groups.google.co.in/group/soc.culture.indian
25. Lynette Dumble and Susanne Menihane, "The Train to the Roof of the World," *Tibetan Bulletin: The Official Journal of the Tibetan Administration*, Vol. 10, No. 4, July-August 2006, p. 13.
26. Asthana, n. 17, pp. 23-24.
27. Ibid., pp. 24-25.
28. "Comprehensive National Defense Transport System in Place," *Xinhua Hong Kong Service*, August 5, 1996, cited in FBIS-CHI August 7, 1996.
29. Asthana, n. 17, p. 27.
30. Ibid.
31. Ibid., p. 28.
32. Ibid.
33. Ibid., pp. 33-34.
34. Ibid., p. 22, 34.
35. Ibid., p. 29.
36. Views expressed by Srikanth Kondapalli at a seminar organised by the Institute of Peace and Conflict Studies, New Delhi, August 2, 2006.
37. Asthana, n. 17, pp. 29-30.
38. Ibid., p. 35.
39. According to an Associated Foreign Press (AFP) report, January 12, 2010.
40. For more details on these statistics see, China Internet Information Centre at www.china.org.cn/china/tibetfactsandfigures
41. Asthana, n. 17, p. 35.
42. Ibid., p. 22.
43. As cited in a *BBC News* report, "Tibet Train Carries China Troops," December 1, 2007.
44. Asthana, n. 17, p. 26.
45. For more details see, Andrei Chang, "PLA's Rapid Reaction Capability in Tibet," *UPI Asia Online*, Hong Kong, June 27, 2008.
46. Ibid.
47. Ibid.
48. Kondapalli, n. 36.
49. For more details on this subject see, Dennis J Blasko, *The Chinese Army Today: Tradition and Transformation for the 21st Century* (UK: Routledge Publication, 2006), p. 85.