



CROSSING THE LINE

CHINA'S RAILWAY TO LHASA, TIBET

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EXECUTIVE SUMMARY

The railway currently under construction in Tibet between Gormo (Qinghai Province) and Lhasa (Tibet Autonomous Region [TAR]) has been prioritized by the Chinese government in its drive to develop and integrate the western areas within its control.¹ Once operational in 2007, the Qinghai-Tibet Railway, as it is referred to by the Chinese, will link Central Tibet with China's extensive railway network for the first time. Passing through some of the most forbidding high altitude terrain in the world, the project is not only of critical significance to Beijing's plans for accelerated economic development in the area but is also of tremendous strategic and political significance to the Chinese government.

HISTORY

Throughout the twentieth century, successive regimes governing China employed railways to colonize the vast territories under their control, like East Turkestan (Xinjiang) and Inner Mongolia. The high-capacity transportation systems brought to these areas an influx of settlers and bolstered the architecture of political and military control.

Sun Yat-sen raised the idea to connect Lhasa to the Chinese rail system in the early 1900s, but the Republic of China had no governing authority over the region at the time. When Tibet was occupied by the People's Republic of China (PRC), however, Communist Party authorities initially wanted a railway to supply the People's Liberation Army and Chinese settlers. Tracks were eventually laid from Xining to Gormo in Eastern Tibet by 1979 and the PRC, like its imperial and republican predecessors, made railway construction a key element of territorial integration. The railway's penetration into Central Tibet from Gormo would mark the completion of a 1,998 km (1,235 mi) rail corridor stretching back to Qinghai's provincial capital of Xining – a route envisaged by Chinese planners decades ago.

TIBET'S POLITICAL ECONOMY

The Gormo-Lhasa railway is a key infrastructure project in China's Tenth Five-Year Plan (2001-2005) for economic development. It is also a high-profile element of the Great Western Development campaign, initiated by former Chinese President Jiang Zemin in 1999 to accelerate existing economic reforms. The campaign is closely tied with the government's political objectives. Official statements have emphasized the need to develop "the west" in order to "promote unity" and ensure "stability." The application of these principles, which pervade Party strategy in Tibet, is inimical to cultural and religious diversity and the exercise of political freedoms.

Ever since Tibet's administrative structures were swept aside under Chinese occupation, Beijing's doctrinaire approach has deprived the Tibetan people of independent economic policy-making power. Marginalized and excluded from the development of economic policies for their own land and economy, Tibetans neither initiated nor directed the planning of the railway.

POPULATION INFLUX

Tibetans are particularly concerned about the increased influx of Chinese migrants that will likely result from the railway's arrival. Improved inter-regional access to the Tibetan Plateau in combination with other government-sponsored incentives will facilitate the expansion of existing settler communities and prompt the establishment of new ones. Population movements will be encouraged by the shorter travel times, lower transportation costs, and enhanced connections to an increasingly Chinese cultural and economic network. These movements represent a significant threat to the livelihoods and culture of the Tibetan people as well as to their prospect for achieving genuine political autonomy.

USE OF SATELLITE IMAGERY

China's development policies have already caused a fundamental transformation of Gormo and Lhasa. Satellite image analysis of these areas, some of the first of its kind outside of the PRC, reveals significant urban expansion and environmental change over three decades, reflecting substantial Chinese migration to these areas. In Gormo, the population influx accelerated when the railway from Xining was opened for civilian use in 1984.

ENVIRONMENTAL IMPACTS

Economic development and the continuing influx of migrants have already resulted in deforestation, grassland degradation, soil erosion and biodiversity loss in many parts of Tibet. There is significant concern about the likely impact of the railway's construction and the activities it will foster on this high-altitude environment, which is a watershed area for ten of the earth's great river systems, running through much of Asia. Senior Chinese engineers and officials from China's Ministry of Railways (MOR) have said that the construction of the railway will have a detrimental impact on Tibet's fragile ecology. Even though the Yangtze floods in 1998, linked to deforestation in Tibet, alerted senior leaders in Beijing to the importance of the Tibetan environment to all of China's, environmental protection still falls behind the strategic and economic imperatives of Party priorities.

FURTHER MILITARIZATION OF THE TIBETAN PLATEAU

The railway will also facilitate greater militarization of the Tibetan Plateau. The *Qinghai Daily* has described the railway as "the political [front] line" in "consolidating the south-western border of the motherland." Creation of supply lines to China and branch lines off the main trunk would enable an expansion of military bases throughout the region and quicker mobilization of personnel. Along the Indian border region, feeder lines or access roads could be used to service army bases and airfields hundreds of kilometers from the main route. The railway will also enable the transport of nuclear missiles that China already maintains on the northern reaches of the Tibetan Plateau. It is likely that advances in China's solid-propellant missile technology would allow it to deploy recently developed rail-car missile launchers similar to Ukrainian built SS-24s. If deployed, they could be moved up and down the Xining-Lhasa line and concealed in tunnels throughout the mountainous terrain, away from populated eastern areas.

FINANCIAL VIABILITY

The challenges facing construction of the Gormo-Lhasa rail link are formidable. The railway will pass through remote high-altitude areas of low temperature, atmospheric pressure and high-intensity earthquakes – all factors leading to high failure rates of combustion engines and other machinery as well as dangers to human health. Frost heaving and soil thaw collapse will affect the stability of the rail bed, and some Chinese experts have admitted that construction methods on the long permafrost sections where the tracks are to be laid will be largely experimental.

From the standpoint of financial viability, the relatively small population along the route does not support a revenue-generating market base large enough to offset the railway's projected 26.2 billion yuan (US \$3.2 billion) cost. But the support of this ambitious project by senior leaders including Jiang Zemin and former Premier Zhu Rongji ensures that even senior officials appear unwilling to risk the political consequences of raising concerns about its engineering feasibility or financial viability.

SUMMARY OF CONCLUSIONS

- The decision to build and operate the Gormo-Lhasa railway is based primarily on longstanding political and military considerations, rather than economic ones.
- The limited size of Tibet's population and existing economic conditions, do not justify the projected US \$3.2 billion construction cost in terms of financial viability or social accountability. The expenditure exceeds the combined outlays Beijing has allocated for education and health care in the Tibet Autonomous Region since 1952.
- Coupled with numerous government incentives, railway-induced economic growth and increased access to the Tibetan Plateau will facilitate a substantial in-flow of migrants from China, resulting in marked demographic change, environmental damage, and increased pressure on Tibet's distinct identity.
- Despite the prospect of increased economic growth in Tibet and greater opportunities for some Tibetans, the generation of wealth is likely to be concentrated in urban areas and resource extraction centers whose main beneficiaries will be non-Tibetans.
- Lack of meaningful consultation with the Tibetan populace regarding the railway's construction, an atmosphere of fear surrounding dissenting opinions, the predominance of military usage of transportation arteries, and the need to supply a growing Chinese settler population all underscore the railway's incompatibility with the interests of the Tibetan people.
- The International Campaign for Tibet (ICT) believes that the construction of this railway is premature. Under the government's current policy framework, the project's negative impacts are likely to substantially outweigh the benefits conferred upon the overall Tibetan population.

SUMMARY OF RECOMMENDATIONS

FOR THE GOVERNMENT OF THE PEOPLE'S REPUBLIC OF CHINA (PRC):

The following recommendations should be adopted to ensure that any benefits of the Gormo-Lhasa railway to the Tibetan people are not outweighed by the substantial costs it will likely impose on them.

1. Significant measures should be taken to stem the influx of non-Tibetans into Tibet including the establishment of border entry restrictions, tightening of employment and residency regulations, rollback of financial incentives, and reform of commercial and property right laws.
2. Economic regulations must be changed to provide long-term structural net benefit to the Tibetan people, with a view to establishing their self-sufficiency. Reforms should include changes to subsidization, taxation, finance and other policies. Fiscal policy should ensure greater funding for Tibetan education and training programs, and revenues generated from rail-enabled natural resource extraction should be largely allocated for the public good in those Tibetan areas from which they are taken.
3. Significant human rights improvements and increased transparency in governance should be made to guarantee freedom of speech and full participation of Tibetans in political, economic and social decision-making at the community and individual level. The Chinese government should publicly disclose all aspects related to the railway, encourage the submission of recommendations, and empower the Tibetan people to suspend or otherwise regulate the railway's construction and operation.
4. Environmental impacts from not only the railway's construction but also from railway-induced population growth and economic activity such as natural resource extraction must be fully assessed.
5. The railway should not become a vehicle for the further conventional or nuclear militarization of the Tibetan Plateau, which could result in the further suppression and intimidation of the Tibetan people and heightened tensions with neighboring countries.

FOR ALL OTHER GOVERNMENTS

Until the Government of the People's Republic of China effectively implements measures outlined in the recommendations above:

Governments should avoid and discourage any involvement in the construction or operation of the Gormo-Lhasa railway by prohibiting relevant technical exchanges with China, denial of relevant export licenses, and by establishing guidelines to shape their support for economic activities in Tibet.

FOR THE UNITED STATES GOVERNMENT

In addition to the general recommendations for other governments, the United States government should comply with the principles of responsible development of the Tibetan Policy Act of 2002 as contained in Section 616 of P. Law 107-228, affecting, the Trade and Development Agency, Export-Import Bank, and U.S. participation in international financial institutions.

FOR INTERNATIONAL FINANCIAL INSTITUTIONS AND DEVELOPMENT AGENCIES

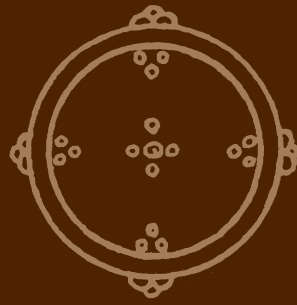
No financial support or technical assistance should be provided that would be used in the construction or operations of the railway or closely-related commercial activities.

FOR CORPORATE ENTITIES

No partnership or joint venture should be entered into with any commercial or governmental entity in China related to the railway, and no financial services companies should underwrite corporate or governmental bonds without reliable assurances that proceeds will not be used for the railway's construction or operation.

NOTES

- 1 "Tibet" in this report refers to all Tibetan areas currently under the jurisdiction of the People's Republic of China. The reference also conforms with the traditional definition of Tibet, as provided by the Tibet Information Network: "Tibet was traditionally comprised of three main areas: Amdo (north-eastern Tibet), Kham (eastern Tibet) and U-Tsang (central and western Tibet). The Tibet Autonomous Region (Ch: Xizang Xizhiqu) was set up by the Chinese government in 1965 and covers the area of Tibet west of the Yangtse River, including part of Kham, although it is often referred to as 'Central Tibet' in English. The rest of Amdo and Kham have been incorporated into Chinese provinces, and where Tibetan communities were said to have 'compact inhabitancy' in these provinces they were designated Tibetan autonomous prefectures and counties. As a result, most of Qinghai and parts of Gansu, Sichuan, and Yunnan provinces are acknowledged by the Chinese authorities to be "Tibetan."



CHAPTER
1

THE GORMO-LHASA RAILWAY

The Gormo-Lhasa (Qinghai-Tibet) railway has been prioritized as a key infrastructure project in China's ambitious multi-billion dollar drive to develop the western regions, including Tibet. This "Great Western Development" (*xibu da kaifa*) campaign, initiated by President Jiang Zemin in 1999, represents an acceleration of policies formulated by over 50 years of Communist Party rule (see chapter 2). If successful, the railway from Gormo (Golmud) to Lhasa will mark the completion of a 1,998 km (1,235 mi) rail corridor from Xining envisaged by Chinese planners decades ago.¹

Work on the 846 km (526 mi) section between Xining and Gormo (Qinghai province) was completed in 1984 and recently upgraded to handle increased traffic flows. The State Council gave its final approval to lay tracks from Gormo to Lhasa in February 2001, and work began in early July of the same year. The rail link is scheduled for completion in 2007, at an official projected cost of US \$3.2 billion. According to a Ministry of Railways (MOR) engineer, it will be developed into a "fast, high capacity, and all weather transportation corridor."²

From Gormo to Lhasa, the single-track railway will generally follow the route commonly known as the Qinghai-Tibet Highway in a northeast-southwest alignment for a total length of 1,118 km (695 mi) (see map, page 60). It will stop at eight planned major stations and 20 other junctions.³ The first 32 km (19 mi), starting from Gormo in the Tsaidam Basin, will be an upgrade of an existing line going to Nanshankou. From there, a new line to Lhasa will be built. 594 km (369 mi) will wind through the Kunlun Mountain and Dangla (Ch: Tanggula) Mountain passes in Yushu and Tsonub (Ch: Haixi) Tibetan autonomous prefectures in Qinghai. Once inside the TAR, a 548 km (341 mi) section will continue southward, passing by the towns of Amdo, Nagchu, Damshung, and Yangpachen before reaching the terminus just outside of Lhasa.⁴

PRELUDE

The first serious proposal to build a railway to Lhasa dates back to a blueprint unveiled by Chinese Nationalist Party founder Dr. Sun Yat-sen. Between 1912-1914 Sun unveiled an ambitious plan to weld together the former Qing empire, calling for the construction of 100,000 miles of railroads to network the country from three main trunk lines.⁵ Under the southern line, Tibet was to be connected to China from Chengdu in Sichuan Province. When the national program was revised in 1918, the concept of a "Plateau System" emerged, designating Lhasa as the center of a Tibet-wide network, connecting to Lanzhou, Chengdu, Ipin, and Iden.

Despite this grand vision, an unraveling of events forced a postponement of its execution. Growing Japanese agitations in Manchuria, followed by the outbreak of the Sino-Japanese war and then the civil war siphoned funds away from a westward focus and shifted rail-building efforts to eastern areas as part of a defensive policy. By the time the Communists declared victory in 1949 more than 22,000 km (13,000 mi) of railroads had been built but almost all were in the north and northeast of China.⁶

Upon establishing the People's Republic of China (PRC), Mao's new government soon revived Sun's unfinished project. The following routes were built in the west during the First (1953-57) and Second (1958-62) Five-Year Plans, approaching the Tibetan frontier from the east:

- Tianshui (Gansu) - Lanzhou (Gansu): 1952
- Baotou (Inner Mongolia) - Lanzhou: 1958
- Lanzhou - Xining (Qinghai): 1959
- Chengdu (Sichuan) - Chongqing (Chongqing): 1952

These new lines led to a tremendous spatial reduction of the region and country at a time when railway transportation was vital for the expansion of China's political and economic frontiers.⁷ Of the four, the Lanzhou-Xining line emerged as the first railway to reach the Tibetan Plateau, entering the landmass at one of its lowest elevations.⁸ It laid the foundation for the more difficult extension to Gormo in Amdo.⁹

Work on the extension began in 1958 in conjunction



The end of the line of the railway south of Gormo in the late 1980s. This segment of the line, from Xining to Gormo, was built with large numbers of prisoners, well documented in the book *Red in Tooth and Claw: Twenty-Six Years in Communist Chinese Prisons* by Pu Ning. (Photo: ICT)

with the Great Leap Forward, only to be suspended two years later. Once construction was finished in 1979, after a 17-year building hiatus, the 846 km (526 mi) line was reserved for exclusive military use until 1984. Its entry into Eastern Tibet brought the entire Plateau within easier reach of the mainland, contracting the travel time from most points in China and providing unprecedented access for economic and political outposts. The changes wrought since then have been enormous.

THE FINAL DECISION

From the beginning, construction on the Gormo line was part of a broader plan to reach Lhasa. When preparations to resume work on the Gormo phase were underway in the late 1970s, the Railway Construction Preparation Office was set up to oversee efforts for the central Tibet segment.¹⁰ However, plans were dropped after Deng Xiaoping assumed power and Communist Party Secretary Hu Yaobang visited Tibet, whereupon he called for a six-point reform to restore Tibetan cultural, economic, and political rights.¹¹ Pressing with equal gravity, the technical and financial difficulties of reaching the area proved insurmountable. So, the idea was forced into dormancy until the 1990s.

The push towards Lhasa was finally announced on October

7, 1994. It followed the Third National Forum For Work on Tibet, which exhorted officials to dismantle Tibet's isolation from China and help create "an inseparable organic link" between the two economies.¹² Route surveys and feasibility studies were undertaken in the Ninth Five-Year Plan (1996-2000), and the Gormo-Lhasa route was identified as the best among the four options examined.¹³ Backing a State Planning Commission recommendation, China's State Council settled the question in February 2001, giving approval to begin work and disburse funds in the Tenth Five-Year Plan (2001-2005). Sun Yat-sen's long awaited Plateau System had suddenly moved closer to realization.

According to the Vice Minister of Railways, Sun Yongfu, the new rail link from Gormo to Lhasa will have "far-reaching impact in political, economic and military terms."¹⁴ Addressing this impact and other issues in context, beginning with a look the economic rationale, this report will examine the immense challenges that the railway will bring and afford a critical look at development policies in Tibet.

"AN UNPRECEDENTED PROJECT IN THE HISTORY OF MANKIND"

— THE ECONOMIC COST OF THE RAILWAY

CHINA'S RAILWAYS IN THE TENTH FIVE-YEAR PLAN (2001-2005)

Construction of the Gormo-Lhasa railway was undertaken in the context of a larger plan of railway development. While railway networks and utilization rates around the world are contracting, those in China are undergoing a period of significant expansion. Approximately 7,000 km (4350 mi) of new lines are scheduled for construction during the Tenth Five-Year Plan (2001-2005).¹⁵ It will bring the national railway route length to 75,000 km (46,605 mi) by 2005, up from 68,000 km (42,255 mi) at the end of 2000. Additionally, 3,000 km (1,864 mi) of existing lines will be double-tracked and 6,000 km (3,728 mi) will be electrified. The total financial outlay for these projects will be 270 billion yuan (US \$33 billion).¹⁶ Approximately 100 billion yuan (US \$12.5 billion) of this will be spent in the "western regions," including Tibet.¹⁷

The rationale for this explosive growth is rooted partly in economics. Much of China's rail network in the east is in heavy use, with many lines operating at or in excess of capacity. More importantly, railways are considered the "chief means of transportation and communication," which "must be maintained and modernized."¹⁸ Without expanding infrastructure, considerable demand will remain unfulfilled, hindering economic growth in Chinese populated areas and industrial centers.¹⁹

THE GORMO-LHASA RAILWAY

By contrast, the Gormo-Lhasa railway is a poor investment.²⁰ Demand in the short and medium run will hardly justify the enormous capital outlay required. Even over the railway's lifetime, capacity utilization may never deliver a positive rate of return. Initial cost estimates for the project were put at 14 billion yuan (US \$1.7 billion) but were revised upwards by officials after construction began to 19.4 billion yuan and then to 26.2 billion yuan (US \$3.2 billion).²¹

At 23 million yuan (US \$2.87 million) per route km, the optimistic projection is still much lower than the 39 million yuan (US \$4.9 million) per route km spent on new rail lines built during the Ninth Five-Year Plan (1996-2000).²² However, given the challenges of overcoming what China's former premier Zhu Rhongji described as "an unprecedented project in the history of mankind," the actual cost may be significantly higher.²³ The Baikal-Amur Mainline (BAM) Railway in Siberia is one of the few comparable lines in the world, running through a frigid climate and areas of difficult topography. Ex post cost estimates during the 1974-84 period for that line, which put significant burden on the Soviet economy, are two to three times that of the Gormo-Lhasa railway.²⁴ Even among developed market economies, faulty projections for major transportation infrastructures have commonly led to cost overruns of 100 % or more.²⁵

Finally, the income foregone that would have been generated from building a railway in a more lucrative eastern region is an opportunity cost borne by other provincial economies. While the allotment for railway infrastructure projects across China is substantial, according to the MOR's Planning and Development Department "the shortage of railway construction funds is still the major factor restraining the railway development."

FINANCIAL COST FACTORS & CONSTRUCTION CHALLENGES

Several factors endemic to the region will affect the progress of work on the railway and contribute to what may be an under-reported projection of fixed and operating costs. The route will pass through remote areas of high intensity earthquakes, low temperature and atmospheric pressure. Approximately 780 km (485 mi) of the line will be laid at an elevation of 4,500-5,000 m (14,765-16,405 ft), with the highest point reaching 5,072 m (16,641 ft) at the Dangla (Ch: Tanggula) Mountain pass. At elevations in excess of 4,000 m (13,124 ft), the low oxygen content causes high failure rates of combustion engines and machinery, high/low tension electric equipment, and can have serious effects on human health.²⁶

Track design comes up against several constraints created by the Plateau topography. Even though much of the



Beyond Gormo, the rail line will climb over the 16,641 ft (5,072 m) Tanggula pass and will require an estimated 286 new bridges. (Photo: ICT)

alignment will generally follow the Gormo-Lhasa road (Qinghai-Tibet Highway), 286 new bridges and 30 km (20 mi) of tunnels will be needed.²⁷ Unlike roadways, both the slope and the turn radius of the track must be kept under far stricter limitations because of differences in load and hauling mechanics.

Cold weather engineering presents the most serious challenge. Frost heaving and soil thaw collapse will affect the stability of the rail bed and have been identified as the "key to success or failure" in the building of the railway.²⁸ While other railroads have been laid on frozen earth, these are generally located in high latitude zones above 51°N where soil is more stable. On the Tibetan Plateau, stability of the soil layers above the permafrost is more susceptible to seasonal thawing from higher ambient temperature and solar radiation that could be compounded by global climate change.²⁹ Of chief concern will be a 550 km (342 mi) section north of Amdo that lies on a continuous permafrost zone and several hundred kilometers to the south that lie in sporadic patches of permafrost.³⁰

The phenomenon makes it difficult to construct and maintain the tracks, bridges, and other structures such as station foundations, signal poles and fencing.³¹ Despite decades of research by Chinese scientists, an MOR engineer stated in 2001 that "there were no reliable construction methods on long permafrost sections" and that "the analysis on the specific requirements of engineering, equipment, management and environmental protection indicates that there are still many problems to be tackled."³² Even with reported assistance from Russia, drawn from its Siberian rail building experience, the plan-as-you-go approach means that actual costs will not be known until construction is well under way.³³

Operating costs under the inhospitable conditions are also bound to be significant, regardless of traffic flow. Routine

maintenance of tracks, switches, tunnels, bridges and other structures will be difficult due to freezing, seasonal soil dynamics, and localized hazards created by landslides, thunder strike damage, and earthquakes, which pose threat of catastrophic damage over part of the route.³⁴ Although rail-beds have no particular susceptibility to seismic activity, any critical infrastructure failure would cause traffic stoppage and possible loss of life. Responding to any such emergency could be hampered over much of the route due to the remote and inaccessible nature of the areas the railway passes through.

LIMITED DEMAND



One of the dozens of tunnels that will form an estimated 30 kilometers (20 mi) of the railway's tunnels. The significant number of bridges and tunnels is one reason that international experts are skeptical of the railway's official US \$3.2 billion price tag, which comes to US \$2.87 million per route kilometer. (Photo: ICT)

From a demand perspective, grounds for disputing the railway's economic rationale are strong. A modal shift away from road use is likely to occur (unlike in most of China where the opposite is occurring), but fundamental determinants of travel remain unchanged. Notably, Tibet's population and GDP are low even by more realistic unofficial estimates. The combined population of the counties along the route, including Gormo and Lhasa, is only 547,756.³⁵ Such small numbers do not support a revenue generating market base large enough to offset the railway's cost burden. This also translates into a low derived demand, reflected by current transportation levels. In the TAR and in Qinghai province, the total number of passengers for railway, highway, and waterway travel amounted to only 0.25% of China's total in 2001. Their share of freight traffic was not much higher, at 0.36%.³⁶

Even among those who do travel, the demand for inter-regional trips is likely to be limited. The 2000 census indicated that only 61,481 Tibetans lived outside of the TAR and four adjacent provinces (see Box 1, page 23). Chinese

A military convoy arrives in central Tibet from Gormo in the mid-1990s. The military was the primary user of roads during the 1950s, 1960s and 1970s and is believed to still move more freight from Gormo to Lhasa than any other single user or industry. (Photo: ICT)



population statistics are generally regarded with skepticism (see Box 2, page 30), but the highly skewed one-way migration of people reflects a clear Tibetan preference for residing in Tibet. Unlike the floating population of Chinese job seekers, Tibetans are far less likely to venture beyond the social, cultural and physical landscapes that have nurtured their communities. More prevalent is the exodus of Tibetan refugees who transit through Nepal to India in a steady stream every year.³⁷

At issue then, is who will use the railway and for what purpose. The MOR has indicated that some 5 million tons of goods will be transported into the TAR by railway, over 21 times the current level.³⁸ While that a priori scenario is grounded in speculation, the projection underscores a broader Chinese plan of economic, political, and cultural assimilation, a longstanding Communist Party aim.

NOTES

- 1 Gormo is the Tibetan place name for what is called Golmud by the Mongols. The pinyin equivalent is sometimes spelled Ge'ermu. In this report, place names in Chinese (pinyin) will generally be designated by "Ch" (e.g., Gormo [Ch: Ge'ermu]) or they will be italicized where no Tibetan equivalent exists. In referring to Gormo in the report, it is the city of Gormo that is generally meant, rather than Gormo Shi, which refers to a large municipal area kin to county-level designations in Qinghai Province.
- 2 Wang, Linshu, *Chinese Railways*. 9 no. 2 (2001): 4.
- 3 The eight major stations between Gormo and Lhasa are *Nanshankou*, *Wudaoliang*, *Tuotuohe*, Amdo, Nagchu, Damshung, Yangpachen, and Se-Chu. They were identified on the Qinghai government's website "Gormo-Lhasa section of the Qinghai-Tibet Railway begins research and design," www.qh.gov.cn, 22 February 2001.
- 4 Here, Amdo refers to the town and not the historic Tibetan region incorporated into Qinghai Province and parts of Gansu Province. See footnote 9 for a discussion of the Amdo region.
- 5 See Chang Kia-ngau, *China's Struggle for Railroad Development*, (New York: The John Day Company, 1943).
- 6 However, less than 75% of the system was operative, creating significant divisions. See Yen Cung-p'ing, *Chung-kuo chin-tai ching-chi-shih t'ung-chi tzu-liao hsuan-chi*, 172-179, as cited in Leung Chi-Keung, *China: Railway Patterns and National Goals*, Research Paper No. 195 (Chicago: University of Chicago, 1980), 72.
- 7 Chi-Keung Leung, *China: Railway Patterns and National Goals*, 118.
- 8 Xining's elevation is approximately 2,300 meters. The Tibetan Plateau refers to the geographic term rather than the current or historic

- political space. Historically, Xining had been under Tibetan and Mongol administration, but the Chinese gradually consolidated their control of the region during Ming and Qing Dynasties. Today, it bears only the slightest trace of Tibetan character. Steven Marshall and Susette Ternent Cooke, *Tibet Outside the TAR* (The Alliance for Research in Tibet, 1997), 1610-1616.
- 9 Amdo is one of the historic Tibetan regions constituting the northern half of Qinghai Province, extending to a small part of southwestern Gansu and the Ngawa Prefecture of Sichuan. Qinghai was established in 1928 and was first governed by the Hui Muslim warlords, the Ma, but Chinese inhabitants were largely confined to the areas east of Lake Kokonor until the province was firmly secured by Communist military forces in 1953.
 - 10 International Campaign for Tibet (ICT), "China Announces Construction of Railway to Tibet," *Tibetan Environment & Development News*, no. 16, (December 1994).
 - 11 Wang Yao, "Hu Yaobang's Visit to Tibet, May 21-23: An Important Development in the Chinese Government's Tibet Policy," in *Resistance & Reform in Tibet*, ed. Robert Barnett and S. Akiner (Bloomington: University of Indiana Press, 1994).
 - 12 Ragdi (one of 15 Vice-Chairs of the Standing Committee of the National People's Congress), quoted in Tibet Daily, 6 September 1994, cited in Tibet Information Network and Human Rights Watch, *Cutting Off the Serpent's Head: Tightening Control in Tibet, 1994-1995* (New York, London, etc.: Human Rights Watch/TIN, 1996), 21.
 - 13 The other three routes studied by the Ministry of Railways' Number One and Number Two Survey and Design Institute were the Lanzhou-Nagchu route, the Chengdu-Nagchu-Lhasa route, and the Dali-Nyintru (Ch: Linzhi)-Lhasa route. See DIIR, Central Tibetan Administration, *China's Railway Project: Where Will it Take Tibet?* (Dharamsala, India: DIIR, August 2001), 8-10.
 - 14 Willy Wo-Lap Lam, "China's Big Projects Raise Hackles," CNN Online, 14 March 2001.
 - 15 Figures for the national routes were drawn from Development & Planning Dept., MOR, "Tenth Five-Year Plan of Railway Development (Excerpts)," *Chinese Railways* 9, no. 2 (2001): 40.
 - 16 *Ibid.*, 44.
 - 17 *People's Daily*, "Railways leading to Roof of the World to be Built," 24 October 2000.
 - 18 Statement by former Premier Li Peng in Yang Zheng, "Will All Iron Roads Lead to Beijing?" *The World Paper online*, October 1997.
 - 19 Zhongyong Cao, "Past, Present and Future Development of China's Railways," *Japan Railway & Transport Review* (April 1997): 18.
 - 20 Comparing competing infrastructure investment options is beyond the scope of this report and is unlikely to be precisely made. However, standard economic valuation through discounting project related costs and estimable negative effects would probably assign the Lhasa railway among the lowest of rankings.
 - 21 See *Reuters*, "China says Tibet Railway on Track Despite Climate," 9 November 2001; TIN, "Route Proposed for Qinghai-Tibet Railway," News Update, 24 December 1998.
 - 22 This estimate from the Ninth Five-Year Plan (1996-2000) in which 330 billion yuan were allocated for 8,100 route-km of new lines is cited from a United Nations Economic and Social Commission for Asia and the Pacific report, *Review of Transport in the ESCAP Region 1996-2001* (n.d.), retrieved from http://www.unescap.org/tctd/pubs/files/review2001_railinvest.pdf.
 - 23 *People's Daily*, 30 June 2001. Zhu Rongji was replaced by Wen Jiabao as the premier of the State Council in March 2003 as part of a larger leadership changeover undertaken by the 10th session of the National People's Congress.
 - 24 While the Soviet Union had no established currency exchange rate at the time, the best estimates put the building cost at US \$10-20 billion in 1980 dollars. The figure was provided by Professor Christopher Ward of Ouachita Baptist University. In 2001 dollars, using the CPI for inflation adjustment, the cost per route km, based on a 3,400 km length, ranges from \$6.76 to \$10.29 million per route km.
 - 25 Fixed cost overruns for a number of large European transportation infrastructures such as the French-British Channel were examined in Nils Bruzelius et al, "Big Decisions, Big Risks. Improving Accountability in Mega Projects," *Transport Policy* 9 (2002): 143-154.
 - 26 Shenfu Cai, "Engineering Environment and Construction Targets of Qinghai-Tibet Railway," *Chinese Railways* 9, no. 2 (2001): 54.
 - 27 According to China's Ministry of Railways. "Tibet Railway to Fast-track Political and Economic Goals," *Knight Ridder*, 23 July 2001.
 - 28 Cheng Guodong, "Interaction between Qinghai-Tibet Railway Engineering and Permafrost and Environmental Effects," *Beijing Zhongguo Kexueyuan Yuankan* [Beijing Academy of Sciences Newsletter], 1 January 2002.
 - 29 Li Ningyuan and Ralph Haas, "Design and Construction for Asphalt Pavements in Permafrost Areas: Case Study of Qinghai-Tibet Highway" (paper presented at the *Proceedings of the 8th International Conference on Cold Regions Engineering*, August 1996), 866-77. According to an April 3, 2003 *People's Daily* article, climate change experts conclude that temperature increases on the Tibetan Plateau will cause changes in frozen soil distribution over the next 50 years, and "generate more profound seasonal thawing." MOR engineer Shenfu Cai also noted the phenomenon as a factor to be considered in building the railway in supra note 26, 55.
 - 30 Shenfu, Cai, "Engineering Environment and Construction Targets of Qinghai-Tibet Railway," 55.
 - 31 Jia Jianhua, Ran Li, and Wang Jiyin, "Choice and Construction Technology of Foundation Types for Railway Buildings in Permafrost Regions, Qinghai-Xizang Plateau" (paper presented at the *Geocryological Problems of Construction in Eastern Russia and Northern China, International Symposium*, Chita, Russia, 1998), 183.
 - 32 Supra note 26, 55.
 - 33 The *People's Daily* quotes Chen Chunyang of the MOR as saying that "Russian technology and know-how may help China solve these problems." The article also stated that "Russia's railway authorities expressed willingness to provide personnel and technical assistance to China." *People's Daily*, "Railway on Roof of the World Uses Russian Know-how," 25 April 2002.
 - 34 The average earthquake intensity along half the route is in excess of 7 on the Richter scale while an additional 383 km lies along an area of intensity 8 and a further 216 km lies along an area of intensity 9. Supra note 26, 56. Hu Daogong, a project leader for a route survey team said that seismic activity "could cut the line at any time. Only God knows." Mark O'Neill, "Geologist Warns of Tibet Rail Quake Risk," *South China Morning Post*, 12 April 2002.
 - 35 Tabulated from population statistics contained in the *Qinghai Statistical Yearbook 2001* (Beijing: China Statistics Press, 2001) and Tibet Statistical Yearbook 2001 (Beijing: China Statistics Press, 2001).
 - 36 There were 1,250,000 passengers in the TAR and 30,050,000 passengers in Qinghai traveling in 2001 using railways, highways, and waterways. The national total was 15,341,220,000. For freight traffic, measured in 10,000 ton units (2,204 pounds=1 metric ton), the national total was 1,401,177, while the TAR and Qinghai totals were 172 and 5,042, respectively. *China Statistical Yearbook 2002* (China Statistics Press: Beijing, 2002).
 - 37 Since 1991 when counting began by the UN Commissioner for Refugees, approximately 2,500 known Tibetan refugees have entered Nepal each year, fleeing Tibet for a life in exile. International Campaign for Tibet, *Dangerous Crossing: conditions impacting the flight of Tibetan refugees in 2001* (Washington, D.C.: ICT), 2002.
 - 38 *People's Daily*, "Construction of Tibetan Railway Well Under Way," 8 November 2001. According to the Tibet Statistical Yearbook 2001, 232,453 tons of goods were transported into the TAR in 2000.

2

DEVELOPMENT AND THE POLITICS OF EXCLUSION IN TIBET

GREAT WESTERN DEVELOPMENT

The Gormo-Lhasa railway, like several other lines under construction, is part of the Great Western Development strategy initiated in the summer of 1999. Officially, the campaign was launched as a means to help develop the poor, “backward” regions of the PRC and to alleviate the economic disparity between eastern China and western areas, consisting of 12 provinces, regions, and municipalities, where over 80 percent of “minorities” live.¹ Billions of yuan were allotted under the Tenth Five-year Plan (2001–2005) for investment in transportation and communication networks, energy production and resource exploitation. They include four flagship projects: (1) the Gormo-Lhasa Railway, (2) the East-West natural gas pipeline, (3) the South-North Water Diversion Project, and (4) the West to East power transmission plan.

While the scale of current development plans in the west is unprecedented, the underlying political motivations are not. Strategically, Western Development reflects a long-standing aim to “guarantee the inviolability of the borders and the political and social stability of those areas.”²

Both the Great Leap Forward (1958–60) and the Third Front construction program (1964–71) were laden with highly politicized ends in mind. Growth-maximizing industrial policies were pursued at the expense of long-term economic and environmental sustainability. Whole enterprises and their workers were transferred from the coastal provinces to the west during the Third Front period in order to shore up western areas, including Eastern Tibet, as a bulkhead against possible military invasion.³ Meanwhile, thousands of settlers were brought to Amdo in tandem with the Great Leap Forward’s failed land reclamation effort, resulting in widespread famine.

Since 1980, most economic initiatives in the TAR have been decided at special Work Forums. These periodic meetings in Beijing have imposed political and economic guidelines for TAR officials to follow and have kept a firm focus on maintaining control over the region. In 1997, Politburo member Li Ruihuan said:

*“Expanding Tibet’s economy is not a mere economic issue, but a major political issue that has a vital bearing on Tibet’s social stability and progress. This work not only helps Tibet, but is also related directly to the struggle against the Dalai Lama’s splittist attempts.”*⁴

These political objectives are still deeply woven into China’s nationalist discourse with the same emphasis on territorial inviolability and control over contested lands. Li Dezhu, head of the State Ethnic Affairs Commission highlighted the role of accelerated development in maintaining the “unification of the motherland” and in helping to “solve the nationality problems.”⁵

“Some people advised me not to go ahead with this project because it is not commercially viable. I said this is a political decision.”

Jiang Zemin (*New York Times*, August 10, 2001)

SUPPRESSING THE TIBETAN VIEWPOINT

Former premier Zhu Rongji is said to have called the railway a “common desire of the Tibetan people,” but this assessment is poorly supported.⁶ From a participatory standpoint, the railway was neither conceived of, nor has it been guided, under the direction of the Tibetans who will host it. Beginning with Sun Yat-sen’s vision 89 years ago, to the State Council’s 2001 decision, and to today’s oversight of the project by the Ministry of Railways, decision making power has been reserved by the PRC government.



Slogans, such as this one outside Gormo (2001) exhorting workers to “carry on the spirit of the road-building pioneers,” set the tone for discussion about the railway. Unlike the debate around the Three Gorges dam, virtually no public debate or dissenting opinion about the railway are tolerated. (Photo: ICT)

In terms of popular opinion, many Tibetans have privately expressed concern and opposition.

One Tibetan writer from Amdo, now in exile, said:

*“No single Tibetan I can think of believes the railway to Lhasa is a good thing. In the interests of the nation and the Tibetan people it isn’t good in the long-term. But we know we are in the hands of the Chinese and they can do what they want.”*⁷

It would be extremely risky for Tibetans to object to the railway or its impacts in their area, given the high priority of the project. Dissenters, according to a former official, would be accused of being ‘splittists,’ a serious charge generally reserved for Tibetans and other ‘minority nationalities.’⁸ Even some Party officials and Chinese scholars are said to have been reluctant to express any public criticism of the project because of its strong backing by Jiang Zemin and Zhu Rongji.⁹

Lack of consultation and substantial curtailment of opposition are not restricted to the railway. This extends to any issue that Chinese authorities perceive as impacting national unity, including economic programs under the rubric of Western Development. In 2000, an investigation by the World Bank’s independent Inspection Panel exposed an acute stifling of dissent over a population resettlement

project in Qinghai’s Dulan County sponsored by the Bank.¹⁰ The Panel found that people in the move-in area were “clearly afraid to talk about the project and asked that their identity be kept secret.” It said their visit to Qinghai had “yielded some disturbing and dramatic examples of what can only be described as a climate of fear, through which some individuals nevertheless managed, at great perceived risk, to express their opposition to the project.”¹¹

THE ILLUSION OF AUTONOMY

The TAR is widely regarded as having less autonomy over its own economic planning than non-autonomous provinces. The Tibet Work Forums together with other mechanisms of PRC government oversight have emasculated independent economic policy making by Tibetan officials. The First and Second Tibet Work Forums advocated moderation and Tibetan empowerment.¹² However, the 1994 Third Tibet Work Forum in Beijing signaled an end to special concessions made for Tibetan language and culture in the race to develop the Tibetan economy along Chinese lines. Priority was instead placed on linking economic programs to growth and assimilation into the Chinese framework.¹³

Government intransigence towards issues of critical concern to the Tibetan people underscores the overall lack of any genuine autonomy in Tibetan areas, despite nominal protection accorded by China’s Constitution and other laws.¹⁴ Subnational territories of several other countries have shared power arrangements with their central governments over migration, transportation, and development, especially on minority or indigenous lands, but the autonomous status in the TAR and other Tibetan areas appears to have played virtually no role in the rail-building decision making process.¹⁵

Current Chinese autonomy laws afford few protections regarding “local” governance.¹⁶ Although the legal framework provides autonomous areas with certain jurisdictional powers, they are subject to pre-emption by the PRC government.¹⁷ Under article 19 of the Law on Regional Autonomy (LRA) and article 116 of the Constitution, laws passed at the county or prefecture levels must be approved by the standing committees in their respective provinces or regions, while laws originating from the five autonomous regions, including the TAR, must be approved by the Standing Committee of the National People’s Congress.

To reinforce the supremacy of PRC government actions, article 7 of the LRA emphasizes that “organs of national autonomous areas should place the overall interests of the state in the first place and actively fulfill all tasks handed down by higher-level state organs.” Because the Gormo-Lhasa railway, as with all major economic projects in Tibet, has become intimately connected with China’s nationalist political psyche, successful recourse through law is virtually impossible under the existing structure.

ROOTS OF EXCLUSION

The lack of genuine autonomy within the Chinese framework evolved from the fundamental unwillingness by China’s leadership to accommodate the historical sovereignties of Inner Asian states to the modern trappings of statehood. When the Qing Dynasty (1644-1911) collapsed, China redefined itself along the lines of a nation-state but retained imperial claims to the empire’s protectorates. This Westphalian transformation with its fixed borders, unitary cultural identity, and hierarchical governing structure enveloped the “frontier” areas. Tibet was swept into the gravitational pull, culminating in a still disputed annexation of its central region by 1951.¹⁸

Since then, political power in Tibet has been dissipated through several means. Fragmentation of the historic provinces of Kham, Amdo, and U-Tsang was the most significant.¹⁹ Once these areas were incorporated into larger Chinese provincial jurisdictions they were deprived of common political or economic association. Although autonomous designations were conferred on the counties and prefectures arising out of these territories, with the exception of the TAR, none of the four provincial capitals governing these areas is Tibetan, creating a “disassociation of the region and its non-Tibetan oversight.”²⁰

China’s aggressive state-building nationalism has also been supported by determined efforts to assimilate Tibet’s economic system into the Chinese model. It began during the 1950s when China built roads to allow troop and supply movements and constructed garrisons and depots to house personnel. Further restructuring occurred by redirecting exchange away from South Asia. Although trade between China and Tibet had been carried on for centuries, Tibet had also exported large quantities of pastoral products like wool, livestock, leather, and musk to India and beyond.²¹ This southern trade relationship grew stronger when Tibet declared its independence in 1911. For example, during the 1930s an estimated 1,500 tons of wool were exported to India from Central Tibet, while only 500 tons were sent to China.²² The disparity was reversed in the 1950s and

60s once long distance military roads were built to Lhasa and the 1962 Sino-Indian war broke out. With the border effectively sealed after the conflict, Tibet was plunged into deep economic dependence on China.

According to one Chinese scholar, economic aid has since reinforced the “Han belief that all minorities are backward, primitive barbarians who need the help of their Han older brothers.”²³ This racially anchored depiction of Tibetans, variously portrayed as uncivilized dependents or untamed free spirits, echoes eighteenth century European notions of the noble savage.²⁴ The Chinese outlook pre-dates the “peaceful liberation of Tibet,” but it provided a post facto rationale for China’s subsequent policies there.

During the Nationalist and early Communist period, the question of “minorities” was governed by fluctuating political philosophy. Sun Yat-sen at first sanctioned the assimilation of Mongols, Tibetans, Manchu, Tatars, and others into “a single cultural and political whole.”²⁵ However, in later years his thinking on the issue evolved. By 1924, he had become committed to the idea that “the government should help and guide the racial minorities in the country toward self-determination and self government.”²⁶



A sign near Gormo in September 2001 says “Xining: Building the Qinghai Tibet Railroad. Lhasa: Building happiness for the people in Qinghai and Tibet.” (Photo: ICT)

Under Chiang Kai-shek, a retreat from this liberal policy was made. Chiang did make isolated references to Sun's policy, stating at one time that minority regions should be helped "to achieve national independence through self-determination," and that a failure to ignore their aspirations would run contrary to "the spirit of our National Revolution."²⁷ However, his dominant view was that all the peoples within the Republic were but strands of a single common race, with no separate identity of their own.²⁸ Moreover, no reference to self-determination was ever incorporated into the Chinese Constitution. The fiction of a greater China was kept, even though Central Tibet and much of Eastern Tibet remained wholly outside of Chinese control from 1911 to 1950.²⁹ In the same manner, the Chinese construct of "minority nationality" in Tibet remained a fiction until 1951, edging closer to reality when the People's Liberation Army occupied the region in force.

Once Mao came to power, a remaking of the same theme emerged. The nationalities "problem" was recast as a "contradiction between the races" that would disappear once a homogeneous proletarian class emerged. Mao counseled against "Han chauvinism," and had even endorsed secession for "minority" regions during the 1930s.³⁰ But like his predecessors, the promise of self-determination for Tibet was never fulfilled.



Since the mid 1980s, tens of thousands of tons of wheat and rice have had to be imported to the Tibetan plateau to feed the burgeoning Chinese population there. Here, workers in Gormo are shown transferring the grain from the train to trucks, destined for Lhasa. More than half of the freight between Gormo and Lhasa has been taken up by grain, all of it heavily subsidized by Beijing. By the early 1990s, approximately 100,000 tons of wheat and rice had to be shipped into the TAR each year.

NOTES

- 1 Covering 71 percent of the PRC's total area, the western regions consist of Chongqing Municipality, Gansu Province, Guangxi Zhuang Autonomous Region, Guizhou Province, Inner Mongolia Autonomous Region, Ningxia Hui Autonomous Region, Qinghai Province, Shaanxi Province, Sichuan Province, Tibet Autonomous Region, Xinjiang Uygur Autonomous Region, and Yunnan Province.
- 2 *South China Morning Post*, 17 February 2000.
- 3 The Third Front did not include Central Tibet, but it did encompass Kham and Amdo. The defensive building strategy focused on railroads, highways, military and industrial infrastructure that would serve as a last line of defense from any invasion initiated on the coast. See Barry Naughton, "The Third Front: Defence Industrialisation in the Chinese Interior," *The China Quarterly*, no. 115 (September 1988): 351-386.
- 4 Communist Party Politburo member Li Ruihuan, chairing a meeting in Beijing on 16 April 1997, as cited in International Commission of Jurists, *Tibet: Human Rights and the Rule of Law* (Geneva: ICJ, 1997), 144.
- 5 Statement by Li Dezhu, Minister of State Nationality Affairs Commission in the Party Committee journal *Qiu Shi*, 1 June 2000, as cited by Tibet Information Network, *China's Great Leap West* (London: TIN, 2000), 8.
- 6 *People's Daily*, "Qinghai-Tibet Railway Kicks Off," 30 June 2001.
- 7 Anonymous, interview by ICT, March 2003, London, UK.
- 8 Other accusations including "harming ethnic unity" or "harming national unity" could be leveled with similar result: administrative detention or imprisonment. Tibet Information Network, "Dramatic Transformation of Lhasa Planned; New Railway Station Announced," News Update, 13 June 2001.
- 9 Willy Wo-Lap Lam, "China's Big Projects Raise Hackles," CNN Online, 14 March 2001.
- 10 Dulan County is a Mongolian & Tibetan autonomous county within Tsonub (Ch: Haixi) Mongolian & Tibetan Autonomous Prefecture, the same prefecture where Gormo is located.
- 11 World Bank Inspection Panel, *China Western Development Project Investigation Report* (Washington, DC: World Bank Inspection Panel, April 28, 2000), 21, line 31.
- 12 Both Tibet Work Forums were convened by Hu Yaobang, appointed by Deng Xiaoping as General Secretary of the Communist Party in 1980. His death in 1989 sparked the Tiananmen Square student demonstrations.
- 13 See *Cutting Off the Serpent's Head: Tightening Control in Tibet, 1994-1995*.
- 14 Sections V and VI of the 1984 Constitution of the People's Republic of China, as amended, address organs of self-government of "national autonomous areas."
- 15 For example, immigration and other policies in confederal states like Canada are the subject of concurrent jurisdiction between the federal and provincial governments. A changing U.S. model is discussed in Peter Skerry, "Many Borders to Cross," *Publius: The Journal of Federalism* 25, no. 3 (Summer 1995): 71-85.
- 16 A broader treatment of the legal status of Tibetan autonomy is given in a report by ICT and the International Human Rights Law Group, "The Myth of Tibetan Autonomy," (Washington, D.C.: ICT & IHRLLG, April 1994).
- 17 A number of measures illustrating exercise of powers in autonomous regions are outlined by Barry Sautman in "Ethnic Law and Minority Rights in China: Progress and Constraints," *Law & Policy* 21, no. 3 (July 1999).
- 18 The signing of the 17 Point Agreement between Tibetan delegates and Chinese government officials has been held up as the instrument formalizing Central Tibet's annexation to China. The agreement did not encompass the regions of eastern Tibet, Kham and Amdo.
- 19 Kham is an area subsumed by the southern half of Qinghai, part of western Sichuan, and the northeastern part of the Tibet Autonomous Region. Meanwhile, U-Tsang corresponds roughly with the Tibet Autonomous Region (TAR) except for the TAR's easternmost region which is part of Kham. For Amdo see note 9.
- 20 Marshall and Cooke, *Tibet Outside the TAR*, 26.
- 21 Wanluan Huang, "Historical Studies on British and Russian Economic Invasions in Tibet," *Xizang Yanjiu* [Tibet Studies] 2 (1982): 40-51, as cited in Rong Ma, "Economic Patterns, Migration, and Ethnic Relationships in the Tibet Autonomous Region, China," in *Population, Ethnicity, and Nation Building*, ed Calvin Goldscheider (Boulder, Colorado and Oxford: Westview Press, 1995), 43.
- 22 Chen Fanzhou et al, "Studies on Yunnan-Tibet Trade," *Xizang Yanjiu* [Tibet Studies] 4 (1988), 55, as cited in Rong Ma, 43.
- 23 Zhao Suisheng "Chinese Nationalism and Its International Orientations," *Political Science Quarterly* 115, no. 1 (2001): 26. In this report, use of the term "Han" refers to the majority people in the present day People's Republic of China who originally occupied a relatively small area in the eastern plains of China proper.
- 24 J.H. Parry, *Trade and Dominion: The European Overseas Empires in the Eighteenth Century* (Phoenix Press: London, 1971), 309.
- 25 Sun Yat-sen, *Memoirs of a Chinese revolutionary* (Taipei, China Cultural Service, 1953), 180, as cited in June Teufel Dreyer's *China's Forty Millions* (Harvard University Press: Cambridge, Mass. and London, 1976), 17.
- 26 Sun Yat-sen, *Fundamentals of National Reconstruction* (Taipei, China Cultural Service, 1953), 10.
- 27 Chiang Kai-shek, *Selected Speeches and Messages: 1937-1945* (Taipei, 1953), 265 as cited in Linda Benson, *The Ili Rebellion: the Moslem challenge to Chinese authority in Xinjiang 1944-1949* (New York: M.E. Sharpe, 1990), 13.
- 28 International Campaign for Tibet, *Jampa: the story of racism in Tibet* (Washington, D.C.: ICT, 2001), 33.
- 29 The 1947 Constitution of the Republic China only provided for representation by Tibetan, Mongol and "racial groups in the border regions" as "prescribed by law."
- 30 In 1931, the Chinese Communist Party adopted a resolution that recognized the "right of self-determination of the national minorities in China, right to complete separation from China and to the formation of an independent state for each national minority." Mao and the Chinese Communist Party drew away from secession rights during the 1940s, and avoided any references to self-determination by 1949. Conrad Brandt, Benjamin Schwartz and John Fairbank, *A Documentary History of Chinese Communism* (London: Allen & Unwin, 1952), 64 as cited in Warren Smith, *Tibetan Nation: A History of Tibetan nationalism and Sino-Tibetan Relations* (Boulder, Co.: Westview Press, 1996), 337.

TOOLS OF EMPIRE

HISTORICAL CONTEXT OF RAILWAY BUILDING

From their earliest beginnings, railroads have been used for more than just transportation. They provided conduits for people, capital, and goods, connecting far-flung regions in an age before flight. They were also tools of empire. Germany, France, Britain, Russia, and Japan vied for their control in China and Manchuria through a ‘scramble for concessions’ during the Qing Dynasty and later in the Republican era. Concessionary agreements and treaties to build and operate railway lines throughout the empire divided it into different ‘spheres of influence,’ imprinting upon it a colonial pattern.¹ By 1906, most of the railway system was under some form of external control. So were many of the adjoining areas. From these extra-territorial enclaves, rail line profits from transport and resource extraction enterprises were funneled to the colonial powers with only marginal benefit accruing to the locals. The arrangements undermined China’s economic and political integrity. It also had lasting military consequence.

Domination by outsiders rankled many Chinese during the early years of railway building. In 1859 Li Hung-chang, Viceroy of Jiangsu, objected to the construction of a proposed British railway from Suzhou to Shanghai on the grounds that “the construction of railways was deemed to be beneficial to China only when undertaken by the Chinese themselves” and that “there was a strong dislike of the employment of foreigners in the interior.”²

Fearful of western imperialist intentions, the government ordered the removal of the Shanghai-Wusung line, the first railway ever built in China, in 1877. The British undertaking was viewed as a national security threat that would encourage “invasions of Chinese territory” and threaten its “independence as a nation.”³

Yet, for many early Chinese advocates of railway development, particularly those among the ‘self-strengthening’ movement, just the opposite view was taken. The solution to foreign threats, they urged, was to modernize and harness the railway’s potential for national integration and defense. An ‘open door’ policy was pursued by Sun Yat-sen, who sought to depose the yoke of foreign control by encouraging investment of capital while limiting the hand-out of concessions.⁴ Although the extension of railway networks in the northeast proved a double-edged sword during the conflict with Japan, both Sun Yat-sen and Chiang Kai-shek recognized the railways’ utility in national development, territorial integration, and military confrontation.⁵

When the Communist Party assumed power in 1949, control of the railways was wrested back into the hands of the state. It allowed China to unify transportation policy in line with national and extraterritorial aspirations, building upon the foundations erected by previous governments.

CONQUERING THE 'FRONTIER' LANDS

Unlike south China and Taiwan which were subjected to heavy Chinese resettlement under the Qing Dynasty, imperial expansion to the north and west involved relatively few physical manifestations, a model Europeans' used in their overseas dependencies.⁶ Control was asserted in Mongolia, Tibet, and what is now called Xinjiang without the commission of large numbers of troops or settlers, relying instead on a system of administration that blended into existing national structures and customs. These Inner Asian frontiers shared a related history with China proper but were otherwise separated by substantial differences in culture, national identity, and physical geography.⁷

Informed by the experience of foreign railway domination, the new Republic of China embarked upon its own colonial rail building plans in the 20th century, turning to East Turkestan (Xinjiang), Manchuria, and Inner Mongolia. By 1918, Sun Yat-sen had already outlined a blueprint for a six system network, including a "central system" to cover the north and west. Chang Kia-ngau, former Minister of Railways, provided this assessment of it:

*"The colonization of Mongolia and Chinese Turkestan would be greatly encouraged by the construction of this system, colonization and railroad construction being dependent upon each other for their success."*⁸

The plan reflected a change in approach whereby distant rule over foreign peoples and their dominions had given way to a course of outright absorption. It was generally not a case of physical retreat by those under threat of greater subjugation. Indigenous populations like the Tibetans near the frontier with China were simply enveloped by the swiftly advancing matrix of Chinese and their administrative architecture, creating interspersed pockets of colonists living nearby existing Tibetan communities or displaced people whose lands were expropriated.⁹ In all the frontier areas bordering China, economic integration and resettlement became keys to extending political hegemony, and railways played an instrumental role.

Throughout China's occupied territories transportation infrastructure has determined the extent of population influx. It has enabled the advance of Chinese settlers and establishment of military garrisons by providing critical links to China. It has also provided the means by which administrative control is maintained, linking together the network of core state structures that exist in virtually every town: the military, public security bureaus, and local government and Communist Party organs. Without these connections, railways and roads in particular, economic integration would be impossible. The widely distributed pockets of natural resources could not be extracted for use in China's industrial hubs. Nor could the burgeoning population of settlers be supplied with all the food, fuel, and other necessities of daily life and lifestyle.

MANCHURIA

China's Manchu rulers first built railways in their home territory to counter growing Russian and Japanese military threats in the 1880s and 1890s. But in doing so, they opened the region to Chinese settlers, who prior to 1878 were generally restricted from venturing north of the Great Wall outside of China.¹⁰ This singular icon of Chinese civilization, built largely during the Ming dynasty (1368-1644) to keep out Mongol invaders also kept Chinese in. When Qing rule collapsed in 1911 restrictions on movement dissolved. Only physical and economic impediments remained in place.

After Sun Yat-sen assumed power that year, he echoed the earlier Qing imperative to expand the railway network. Construction was motivated by the need to open up the 'interior' for immigration and to countenance perceived foreign influences in Manchuria as well as Mongolia and Tibet. According to Leung Chi-Keung, Sun "emphasized that the most urgent and the only task then was railway-building, for on it hinged the existence of the Republic."¹¹

In Manchuria, an official from the Soviet-owned Chinese Eastern Railway line said that feeder lines in its northern half would "further the colonization of the enormous territories of Jilin and Heilongjiang provinces and assist in bringing settlers from other provinces of China."¹² When the state of Manchoukuo was proclaimed in 1932, Chinese efforts to integrate the region were halted. The suspension was only temporary, though. Once Japan was expelled from the mainland at the close of World War II, the process of Chinese migration was actually expedited by over a decade of furious rail-building by the Japanese, who were bent on dominating the region. Throughout the last century, immigration into Manchuria from adjacent regions has been heavy, and today the population is predominantly Chinese.¹³

A bustling street in Kashgar, East Turkestan (Xinjiang Autonomous Region), north of Tibet. When a new rail line from Urumqi reached Kashgar it caused a 30% increase in the Chinese population there, according to one source.



INNER MONGOLIA

The aggressive push to bring settlers northward, prompted by Japanese and Russian intrigues, brought about a similar result in Inner Mongolia. During the final decades of Qing rule, Chinese farmers were permitted to settle on the grassland steppes north of the Great Wall. Initially, they came at the invitation of Mongol lords who strictly controlled their entry, but in 1902 the Qing opened up the Inner Mongolian pastures for Chinese migration, prompting opposition and then calls for independence among the Qing's Mongol allies. Nonetheless, movements continued, intensifying under the Chinese Republic. One study estimates that the Chinese population there increased five-fold between 1912 and 1949, surpassing the number of Mongols by 11 to 1.¹⁴ Millions arrived after the railway reached Hohhot and Baotou from Zhangjiakou in the 1920s.

Colonists brought with them a sedentary agro-pastoral way of life, as well as foreign language, dress, and customs.¹⁵ The railway facilitated a restructuring of local production patterns and exchange. Many raw goods like wool and hides were exported outside the region to China and beyond while more localized markets for traditional products stagnated.¹⁶ Chinese traders suffered from the displacement of caravan trading, but the most widespread

impact fell on the Mongol herders who were pressured into farming. It disrupted age-old nomadic traditions, and has led to grassland degradation that continues to plague the region. While distinct social discontinuities still demarcate this part of Asia, and the ratio of Chinese to Mongol populations has increased over the last two decades, the pace of resettlement has not slowed. Of the 23.7 million inhabitants recorded in the last census, only 3.9 million were Mongol.

EAST TURKESTAN (XINJIANG UYGHUR AUTONOMOUS REGION)

Resettlement in East Turkestan has proceeded more slowly. Called Xinjiang, which means "new territory," by the Manchu, much of East Turkestan is geographically further removed from China than Inner Mongolia, and it produced significant resistance to Chinese rule until the People's Liberation Army occupied it in force in 1949.¹⁷ Since then, a massive program of immigration has been established, increasing the Chinese population from an estimated 200,000 to at least seven million of Xinjiang's 19.25 million population.¹⁸

Many arrived by a rail link from Lanzhou to the capital, Urumqi, when trains began running in 1961. Chinese came from Gansu, Hubei, Hunan and Anhui provinces, and later from the Shanghai area.¹⁹ The arrival of the rail line at the close of the Great Leap Forward was of singular importance in Urumqi's eclipse of border towns like Kashgar and Gulja (Ch: Yining), the reorientation of its commerce away from Russia, and the integration of the entire region with China.²⁰ The outcome was part of a larger effort undertaken by the Xinjiang Production and Construction Corps. Both a paramilitary organization and frontier builder, the Corps was responsible for moving 2.4 million people into East Turkestan. It "made towns and cities where there was nothing but vast wasteland, blank spots on the map."²¹

Today, the Uyghurs, Kazakhs, and other indigenous peoples may still constitute a majority block, but they are outnumbered by the Chinese in many urban areas like Urumqi, creating widespread ethnic tension and economic disparity. Meanwhile trains continue to bring in migrants to the region, stopping at major points like Turfan, Korla, and Aksu. In 2000, tracks reached the city of Kashgar near the Kazakhstan border. Few Chinese lived there until the 1990s, but today signs of a growing presence are evident. By one account, the Chinese population jumped by 30 percent in 2001, compared with a 2.5 percent increase a year before the railway began its operation.²² Migration and redevelopment of traditional neighborhoods have, according to a Uyghur living in the west, made Kashgar "virtually unrecognizable."²³



To the northeast of the Potala Palace, Chinese work units, including many associated with police and security, abound.

(ICT, 1995)

NOTES

- 1 The “sphere of influence” was a term that characterized the spatial arrangement of railway networks and related property rights as between Germany, Britain, France, Russia, and Japan. The territorial division was reflected by the fact that each power used its own gauge in rail construction, creating non-integrated networks that would serve the respective purposes of their administrators.
- 2 Chi-Keung Leung, *China: Railway Patterns and National Goals*, 20.
- 3 Tyler Dennett, *Americans In Eastern Asia*, 596-597, as cited in *ibid.*, 22.
- 4 See Kia-Ngau Chang, *China's Struggle for Railroad Development* (New York: The John Day Company, 1943).
- 5 Between 1937 and 1941, China transported over 27 million troops on rail lines under its control for the war effort. Leung Chi-Keung argues that China's efforts to integrate Manchuria through an aggressive railway building program actually prompted Japan's occupation of the area in 1931. *China: Railway Patterns and National Goals*, 81.
- 6 For a brief treatment of these areas under the Qing see Di Cosmo, Nicola, “Qing Administration in Inner Asia,” *The International History Review* XX, no. 2 (June 1998): 287-308.
- 7 China proper refers to the geographic areas of the People's Republic of China excluding the regions of Xinjiang, Tibet, Manchuria, and Inner Mongolia.
- 8 Chang was Minister of Railways (1935-1937), and Minister of Communications (1937-1942) of the Republic of China. Kia-ngau Chang, *China's Struggle for Railroad Development*, 50.
- 9 June Teufel Dryer, *China's Forty Millions* (Harvard University Press, 1976), 33.
- 10 Chinese Eastern Railway, *North Manchuria and the Chinese Eastern Railway* (Harbin, China: C.E.R. Printing Office, 1924), 5.
- 11 Leung, Chi-Keung, *China: Railway Patterns and National Goals*, 53.
- 12 Statement by G. Diky in North Manchuria and the Chinese Eastern Railway, Chinese Eastern Railroad Printing Office, 1924, X.
- 13 Until 1860, Manchuria included former Russian and Inner Mongolian territory. While provincial divisions have changed over the years, since 1956 Manchuria has comprised Jilin, Heilongjiang, and Liaoning provinces. According to a 2000 census, the combined population of the three provinces was 106.55 million, out of which 95.45 million were ethnically Chinese.
- 14 Rong Ma, “Migrant and Ethnic Integration in Rural Chifeng, Inner Mongolia Autonomous Region, China,” (Ph.D. diss., Brown University, 1984), 111.
- 15 Dee Mack Williams writes in *Beyond Great Walls*, (Stanford: Stanford University Press, 2002) that “beyond the massive stone enclosure that has become the singular icon of Han civilization, one apprehends a distinctive living space opening up ahead,” noting that while Mongols and Chinese have “lived in perpetual interaction for centuries, the fact remains that they did not live together.” Notably though, the entry of Chinese farmers in the 20th century into Inner Mongolia was a role reversal for the Mongols who had once brought their own way of life to northern China in the 13th century, 1-2.
- 16 Owen Lattimore, *Mongol Journeys* (New York: Doubleday, Doran & Co., 1941), 139.
- 17 Qing armies occupied parts of the region with military garrisons in the late 1600s, but while it was officially incorporated into the Chinese Empire as a province in 1884, several revolts followed, and in 1946 the East Turkestan Republic declared its independence, occupying roughly a third of Xinjiang bordering the former Soviet Union. For an account of these last events see Linda Benson's, *The Ili Rebellion: the Moslem challenge to Chinese authority in Xinjiang 1944-1949*.
- 18 The 1953 official census of the PRC records 200,000 Han out of 4,874,000 total population. Donald H. McMillen, *Chinese Communist Power and Policy in Xinjiang, 1949-1977* (Boulder, Co.: Westview Press, 1979), 325. It must be noted, however, that the accuracy of those figures suffered from well recognized methodological deficiencies at the time. The last census in 2000 is more accurate but suffers from its own deficiencies typical of Chinese statistics as discussed in Box 2.
- 19 See Lynn T. White, “The Road to Urumchi: Rustification from Shanghai Through the Cultural Revolution” (unpublished paper presented at the 27th Annual Meeting of the Association for Asian Studies, San Francisco, March 25, 1975), as cited in McMillen.
- 20 McMillen, *Chinese Communist Power and Policy in Xinjiang*, 11.
- 21 Statement by Wang Guizhen, Deputy Political Commissar of the Corps. Erik Eckholm, “Remaking a Vast Frontier in China's Image,” *New York Times*, 17 July 1999. The Corps remains a major institution of Chinese colonization in Xinjiang. For an account of its history and continuing role see James D Seymour, “Xinjiang's Production and Construction Corp, and the Sinification of Eastern Turkestan,” *Inner Asia* 2 (2000): 171-193.
- 22 Bill Smith, “Fear and Loathing Split Xinjiang's Would-be Las Vegas,” *China Review Magazine* 21 (Spring 2002).
- 23 Nury Terkel, statement before the U.S. Congressional-Executive Commission on China, “Open Forum on Human Rights and the Rule of Law in China,” 108th Cong., 1st sess., 10 March 2003.

ASSESSING THE IMPACTS

Both the Gormo-Lhasa railway and the increased traffic on the existing Xining-Gormo segment will have an impact on the lives and livelihoods of Tibetans in both Qinghai and the TAR where it will pass through. Over a prolonged time horizon, the socioeconomic, environmental, and political effects will extend over a Tibet-wide zone of influence. Impact intensity will be greater near access points to the line, but it will also radiate outward through the numerous linkages connecting Tibet's physical and social landscape.

The railway will present certain benefits to segments of Tibetan society in the form of expanded access to markets, capital, basic services, and employment opportunities. In theory, the enhanced transportation linkages created by the railway and road network could foster more equitable distribution of services and greater economic development. However, access and creation of market centers can also lead to entrenched marginalization of Tibetan communities and a host of other negative impacts. The interaction of the distinct socio-economic and legal framework in Tibet undermines the utility of any simple cost-benefit analysis.

Some impacts associated with the Xining-Lhasa Railway' include:

- Income distribution
- Employment rights
- Racial discrimination
- Language use
- Community characteristics
- Social service availability
- Property rights & ownership
- National and cultural identity
- Autonomous status & government representation
- Environmental degradation
- Dislocation of traditional economic exchanges
- Militarization

ECONOMIC INTEGRATION & RAILWAY RESETTLEMENT

While transportation infrastructures like the Gormo-Lhasa railway are not by themselves sufficient to drive large-scale resettlement, other factors make this outcome likely. They include the existence of preferential housing subsidies and wages, provision of government services, availability of land, and other forms of official encouragement. In conjunction with improved access to the region from the railway, and the economic activity it will foster, these combined elements of urban planning could stimulate sudden, massive, and, in some areas, unprecedented population influxes.

BOX 1. THE TIBETAN POPULATION

The Tibetan population reached 5,416,021 in 2000, according to China's 5th census. Living throughout the Tibetan Plateau, a geographic region covering 2.5 million sq. km (0.97 million sq. miles), more than half of Tibetans live outside of the Tibet Autonomous Region in parts of Sichuan, Yunnan, Qinghai, and Gansu that constitute Eastern Tibet (Amdo and Kham).

Despite the growing presence of settlers in Tibet's urban spaces, Tibetans still predominate over sizeable areas in places outside of county and prefectural seats.

Tibetan population (2000 Census):

TAR	2,427,168
Sichuan	1,269,120
Qinghai	1,086,592
Gansu	443,228
Yunnan	128,432
Other	61,481
Total	5,416,021

This is a source of great concern for many Tibetans both inside Tibet and in exile. “It is quite simple why the Chinese are building the railroad,” said a Tibetan shop owner from Lhasa. “They want more Chinese here. It is simple but sad.”² His concerns are echoed in a 2001 statement released by the Central Tibetan Administration in Dharamsala, India, that expressed alarm over the potential influx of “a massive number of laborers and immigrants, who will be given special provision” to come to Tibet.³

Prior to the 1950s, Chinese communities in the region were largely confined to a small corridor north of the Yellow River and eastward to the city of Xining where the fertile valleys supported agrarian settlements. Beyond that, to the west, political, cultural, and geographic barriers prevented the lowland Chinese from moving into Tibet in significant numbers. The topography and climate created a barrier between the two countries more formidable than the Great Wall or the deserts of the Tarim Basin. For centuries, direct contact between Chinese and Tibetan peoples was infrequent outside of trade routes and eastern frontier areas.⁴

Change came in dramatic fashion when the People’s Liberation Army secured control over much of Eastern Tibet in 1949 and the central region of U-Tsang (now the TAR) in 1950.⁵ Once military occupation ensued, China was able to strip away Tibet’s historic isolation and begin laying down the physical elements needed to support large-scale population movements in the future. With Soviet help, military roads were built to Lhasa from Xining in 1954 (Qinghai-Tibet Highway), Chengdu in 1954 (Tibet-Sichuan Highway), and from Kargilik (Ch: Yecheng) County in 1957 (Tibet-Xinjiang Highway). A telegraph to China was set up in 1952, an oil pipeline between Gormo and Lhasa was built in 1977, and a number of airports were built on the Plateau from the 1950s onward. In 1997, a fiber optic network was installed. The only major link missing between China and central Tibet was a railway.

RAILWAY AS A PREFERRED CARRIER

Like any choice between two or more alternatives, modes of transportation are subject to the relative preferences of its consumers. In terms of trip time and quality of service, railways show their strength over road travel in longer distance hauls. Although over 22,000 km (13,600 mi) of “highways” have been constructed in the TAR since the first military road to Lhasa was built in 1954, they are poorly maintained and often impassable due to landslides and inclement weather.⁶ Avoiding the congestion and unpredictable conditions of road travel, a railway could reduce an uncomfortable 30-hour bus ride from Gormo by almost half.

Locomotives also have the advantage of power. Trains can haul a tremendous volume of freight, whether military or civilian in nature. The average load of a freight car in China is over 55 metric tons (2,204 pounds = 1 metric ton) with a capacity to hold double that amount depending on the commodity and car.⁷ This would allow a 23-car train with an average load to deliver the equivalent of 250 five-ton trucks, which are typical on the Plateau.

A single 18-car passenger train can carry more than 1,500 people per trip.⁸ If 4-8 pairs of passenger trains are run daily on the line, as proposed by the MOR, they could bring over a 100,000 people a month to the region.⁹ This high-end projection will adjust dynamically with changes in land use, population patterns, and other demand factors, but even a fraction of that number represents a substantial delivery capacity.

The railway’s third advantage is cost. China’s railway sector favors inefficient lines because its pricing system is largely unresponsive to market fluctuations. On top of a basic national tariff schedule, a substantial flat surcharge is added in order to finance new railway construction, accumulated in a special fund managed by the MOR. The combination of tariffs creates a distortion that varies only minimally with differences in commodity prices, shipment size, and length of haul. In effect, the surcharge passes the cost of building and operating non-viable railways like the Gormo-Lhasa line to profitable operations in busy metropolitan centers to the east.

Coupled with a below-cost price subsidy for passengers and freight, the advantages of reliability, speed, and load capacities could translate into a substantial inter-modal shift towards railway transportation once it is completed. In China, rail traffic density is the highest in the world. Trains haul about twice as many ton-km of freight as road and may command as high as a 70 percent share of the country’s intercity passenger travel.¹⁰ It remains, according to the Asian Development Bank, “the preferred mode for medium-to-long-distance intercity transport.”¹¹

More importantly, a rail link to central Tibet will stimulate new demand for transportation overall to the region. Depending on the placement of the station and the nature of the surrounding community, it can serve as node for other transport systems like air and roadway, promoting greater intra-regional travel. Air travel, for example, has almost tripled in the TAR between 1995-2000, with up to 10 flights a day arriving in Lhasa during the peak summer months.¹² Many passengers, the majority of whom are tourists, can be expected to increase demand for rail travel through their own transit in the region and through the increased economic activity they will foster.



The railway arrived in Gormo in 1979 and was used by the military exclusively until 1984 when it was opened for civilian use.

GORMO & QINGHAI PROVINCE: JUMP-OFF POINT FOR THE RAILWAY

Today, transportation is the lifeline of the Chinese-oriented economy on the Tibetan Plateau. Clusters of migrants and settlers are conspicuous in proximity to major roadways and urban centers where they populate government and Party posts, industrial centers, and infrastructure construction sites.

The vector of population movements in the north have followed the original points of entry via China's northeastern passages into Amdo (Qinghai).¹³ Even after Qinghai became a province of China in 1928, the areas beyond Xining were "indisputably outside the direct rule of the Chinese state," and remained outside of full Communist control until 1953.¹⁴ Since then, along the existing railway line and connecting roads from Xining to Gormo, immigration and development have created a network of distinctly Chinese settlements. Most of the larger towns west of Lake Kokonor (Qinghai Lake) grew out of prison farms, resource extraction sites, and military outposts established in the 1950s and 60s in places where few Chinese had ever lived, creating a contested space still marked by periodic conflict and resentment.¹⁵ For this reason, the transformation of Qinghai's urban spaces serves as a model of concern for what may occur elsewhere in Tibet once the full influence of the railway to Lhasa materializes.

Before the tracks were laid from Xining to Gormo in 1979, towns along the route, like Kangsta (Ch: Gangca), Ulan, Themchen (Ch: Tianjun), Terlenkha (Ch: Delingha), as well as Gormo, itself, were established as part of a China's settlement and rustication programs. Some colonists were peasant farmers from adjacent provinces.¹⁶ Others were political prisoners sent to 'reform through labor camps' (*laogai*), exiled cadres from anti-rightist purges of 1957-58, and regular prison convicts. In all, more than 700,000 non-Tibetans entered the province from 1956-59.¹⁷ The goal was to increase Qinghai's population to 10 million by 1967, the same target set by Mao for central Tibet in a 1952 "Directive on Work in Tibet."¹⁸

The initial target was never met, but the foundation for continued movements of people was established. A generation of road-builders, industrial laborers, construction workers, field workers, and skilled professionals had created a stable network of economic bases for future development, as well as a familiar cultural environment that would ease the entry of those who would follow.



Trucks carrying several families of Chinese migrants and their belongings inch their way towards Lhasa after a light overnight snowfall in 1993, the year after checkpoints to determine if migrants had residency permits to live in the Tibet Autonomous Region were removed. (Photo: ICT)

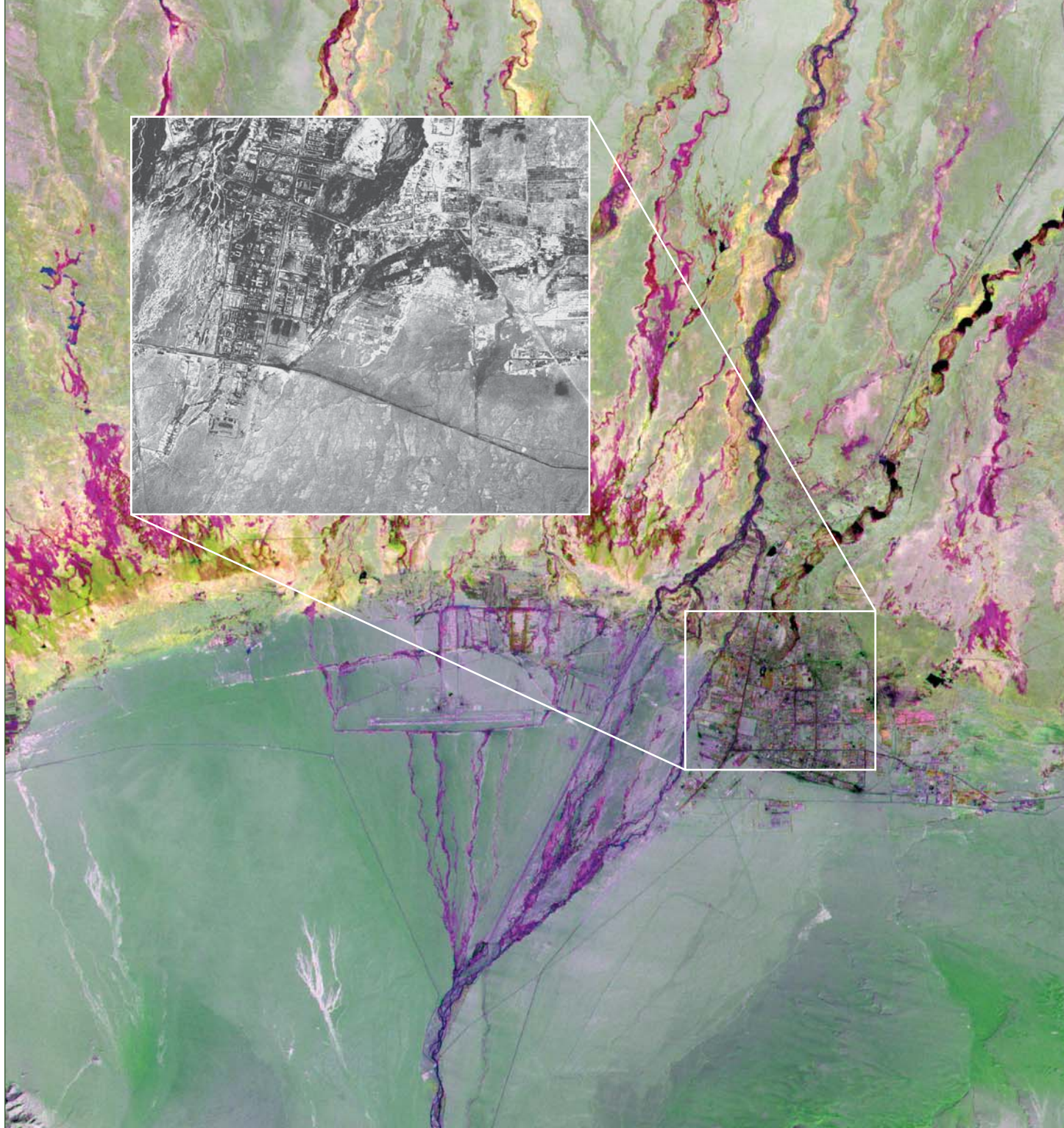
The early colonists were usually young men, and many were reluctant to settle on a permanent basis. In fact, hundreds of thousands left the region from 1960-63 after the famine caused by the Great Leap Forward (1958-60). But over time these settlements developed more permanent roots, diversifying their social and economic structures. In places like Terlinkha, founded as a *laogai* center, former inmates and their families were forced to stay in the town and become permanent residents.¹⁹ Others stayed willingly after completing a “forced job placement” term, becoming small business owners or workers in state construction projects or industry.²⁰ Migrants also came during the Third Front Strategy (1964-71) to work on public works projects.

A year after the Cultural Revolution (1966-76) was brought to a close, construction of the railway to Gormo was restarted, and an oil pipeline from the city was built to Lhasa. When the railway was opened for civilian use in 1984, the city's economy boomed, along with its population.²¹ Connection to China's railway system induced spontaneous migration by fostering industrial output and reducing travel time from China. Mining enterprises across the region were among the prime beneficiaries of this new link to China.²² With more than 123 kinds of mineral deposits identified, more than 30 salt lakes, and significant natural gas and oil reserves in the Tsaidam Basin, Qinghai is endowed with an abundance of exploitable resources.²³

Today, Gormo remains the primary entry point for goods flowing into the TAR, though passenger traffic is undergoing a rapid shift towards air travel. Over 85 percent of Chinese imports reportedly transit through the corridor via the main road.²⁴ Unlike many other Tibetan areas however, the city, like the prefecture itself is overwhelmingly Chinese.²⁵

Even though it is located in a Mongolian and Tibetan autonomous prefecture, the region's demographic profile was transformed by the initial settlement of thousands of Chinese prisoners and their PLA overseers in the 1950s. Many other migrants have since come to find work on the nearby salt lake or in the oil and gas fields of the arid Tsaidam Basin. The growing population has also attracted entrepreneurs, including many Hui shop owners, who augment an expanding service sector in the new economy.²⁶ Officially, Tibetans constitute less than 3.4 percent of Gormo Shi's 165,265 residents.²⁷ Part of its growth is captured by satellite imagery of the city shown on the following pages.

Despite the unprecedented magnitude of Chinese settlement in Qinghai, most of the province is still accorded Tibetan autonomous status. Only 21.9% of Qinghai's 5.2 million registered inhabitants are Tibetan, but the majority of Chinese occupy a small corridor in the northeast. Three and a half million people live in Haidong Prefecture and Xining District.²⁸ However, outside of this region, the demographic profile changes.²⁹ At least officially, Tibetans still constitute the majority ethnic group in four of Qinghai's six autonomous prefectures, and unlike the non-Tibetan population their distribution is relatively uniform throughout the province.³⁰



GORMO: JUMP-OFF TO LHASA

By 1968 (inset image), Gormo was already a well-established Chinese settlement, assured by years of government relocation policies in Eastern Tibet. The Gormo Prison Farm formed its basis 12 years earlier as a forced labor facility.

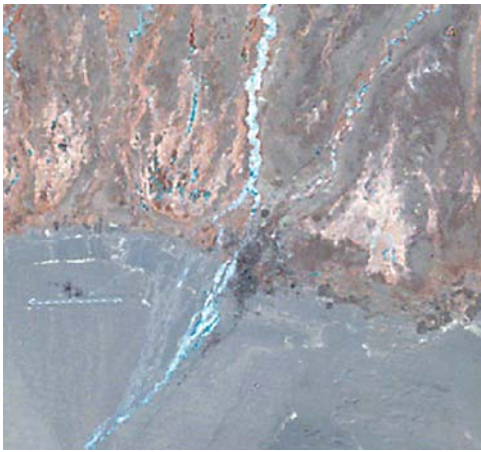
Since 1984, when the railway connecting it to Xining was built, Gormo Shi's population has doubled. It is now the second largest municipal area in Qinghai Province and a crucial entry point into the Tibet Autonomous Region for both goods and people. Many Chinese migrants have come to find work in the nearby salt mining operations and in the oil industry. Today, less than four percent of Gormo Shi's inhabitants are Tibetan.

Much of the growth in the city is reflected by the tremendous expansion of urban development, shown in this 2001 satellite image (background) as dark colored rectilinear features.

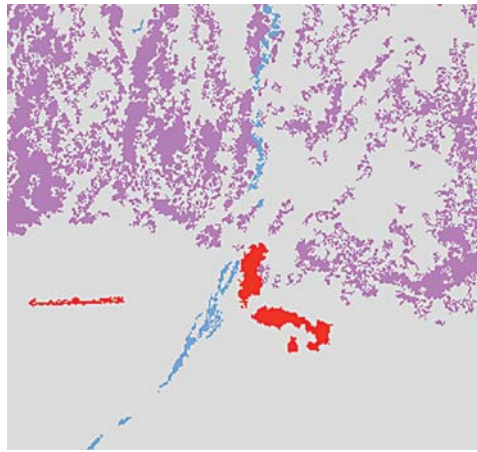
Once the existing railway connects to Lhasa, some 1,000 km (621 mi) to the south, the stream of migrants to both regions will expand, further transforming the urban and social landscape of Tibet.

ANALYSIS: GORMO, QINGHAI PROVINCE

11/28/1976 MSS Image: Overview of Gormo Area



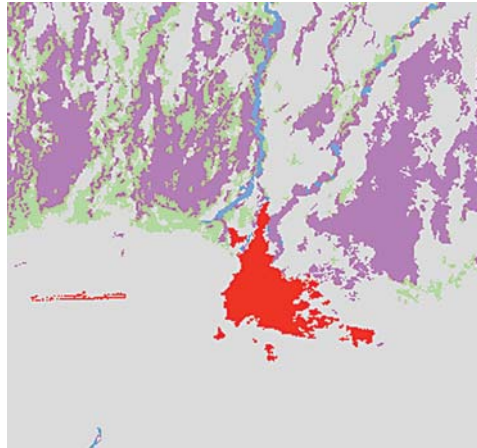
11/28/1976 Gormo Land Cover



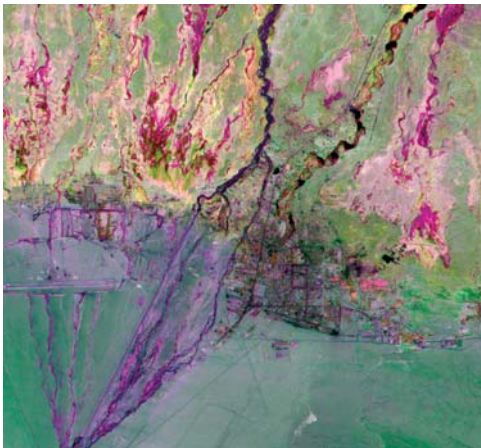
5/3/1994 Landsat 5: Gormo



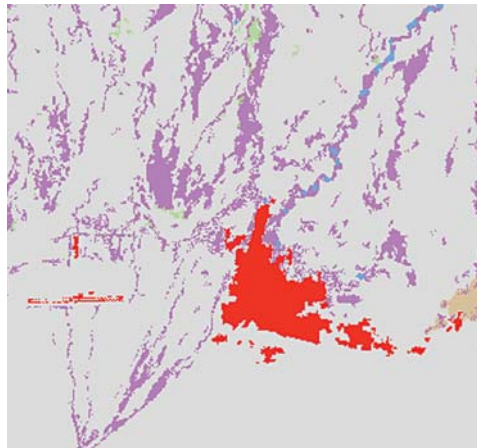
5/3/1994 Gormo Land Cover



4/12/2001 Landsat 7: Gormo



4/12/2001 Gormo Land Cover



ANALYSIS: GORMO, QINGHAI PROVINCE

GORMO: MSS IMAGES FROM NOVEMBER 1976.

This November image of Gormo indicates a relatively dry land cover as compared to the 1994 one. The “urban” area in red is found adjacent to the river, which appears to be flowing unimpeded in a north/south direction. The barren area at the bottom of the image covers much of the valley floor where Gormo is situated. The valley runs along the Kunlun mountain range some 40 km to the south. Notice the airport strip in the center-left of the image.

Coarse grain resolution and fewer spectral bands to define land cover classes make it more difficult for the early MSS sensor to distinguish differences that can be observed by the modern Landsat satellites. Along with these factors, terrain differences, and seasonal conditions explain why agriculture may not have been detected. In contrast, agricultural areas were more easily detected in the Lhasa MSS winter image due to the distinct spectral signature of the cleared fields and the distribution pattern along rivers and tributaries.

1994 GORMO: LANDSAT 5 IMAGES FROM APRIL 1994.

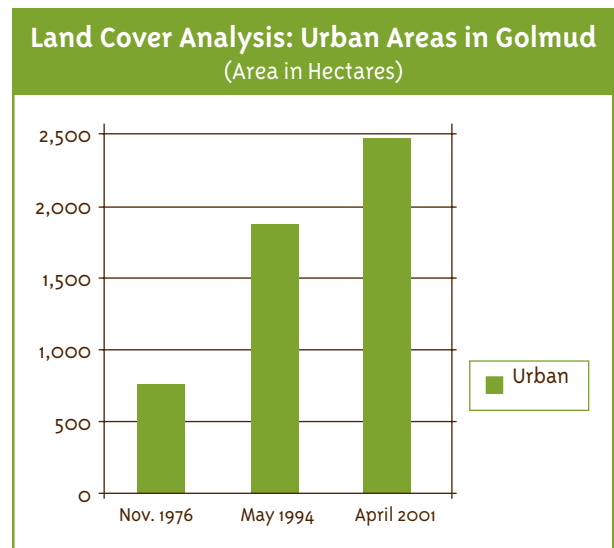
Comparison with the previous land cover analysis reveals a tremendous increase in urban development. Although caution must be exercised when comparing smaller scenes between MSS and Landsat, the analysis indicates that urban development has almost tripled. A number of roads can be seen entering the city in the north and south, not visible in the coarser MSS image. Structures aligned in rectilinear fashion can also be clearly seen clustered together, expanding southward and westward. Also, note the diversion of water flow in the long canal running north-south in the left-side image. The image was taken 10 years after a railroad became operational, connecting the city to Xining and Lanzhou.

In the two Landsat images (left-column images), healthy vegetation will have a reddish color (red, orange, reddish-purple, dark pink, etc.), while barren (rock, bare soil, sand, etc.) surfaces will appear green, gray, or light purple.

2001 GORMO: LANDSAT 7 IMAGES FROM MAY 2001.

Changes in urban land cover as well as wetlands coverage can be observed. Urban development continued to increase, this time by approximately 24 percent in the seven year period. Dramatic changes in surface water coverage, wetlands and other foliage can be related to natural fluctuations in the hydrologic cycle. An understanding of the local environment is necessary before conclusively identifying causes of change. However, the retreat of wetlands around Gormo in comparison to the previous image is dramatic. Absent an extended drought, human activity may have played a role through either drainage or diversion.

Areas containing large amounts of wetland vegetation in the 1994 imagery appear drier and much less vegetated in the 2001 imagery. (Since the older imagery was collected in May, while the newer imagery was collected in April, incomplete winter thawing in the newer imagery was a possible reason for the drier, less vegetated wetland areas. However, imagery searches for Landsat 7 imagery showed this area in May or June had similar dry and barren conditions in these wetland areas.)



Above: Gormo shows an unmistakable upward trend in urban growth. Although the first time period (1976-1994) examined is considerably longer than the second (1994-2001), creation of a railway link between Gormo and Xining in 1984 helped to double the population to its current level.

MIGRATION IN CENTRAL TIBET (TAR)

Because of central Tibet's (U-Tsang) distinct political treatment by China and geographical remoteness, it was spared from the heavy influx of settlers that had inundated eastern Tibet (Amdo and Kham) in the 1950s and 60s.³¹ Eastern Tibet's lower altitude was more accessible to China, and it had fallen under direct Chinese political control at an earlier point in time. Until the Tibetan National Uprising against Chinese rule in 1959, governing Chinese authorities kept up at least the pretense of a functioning Tibetan civil administration in Lhasa, tempering the pace of integration with China.³²

BOX 2. POPULATION STATISTICS: READER BEWARE

China has become more sophisticated in its census taking, but non-Tibetans in Tibetan areas are significantly under-represented in official statistics.

Omitted from the tally are the hundreds of thousands who constitute military personnel and unregistered or temporary migrants. Also left out are the indeterminate number of Han Chinese who changed their status to "minority" during the 1980s and 90s to gain certain benefits.

The 2000 census put the number of Chinese in the TAR at 160,000 out of a total population of 2.62 million. Despite the obvious growth in migration over the last ten years, this number indicates a decline of more than 9,000 Chinese since the 1990 census figure. More realistic estimates range from 300,000 up to a million.

In the first three decades of occupation, most of the Chinese in the TAR were military or security personnel, or cadres, professionals and skilled laborers, arranged by the government to man factories, government posts, hospitals, and schools.³³ Their numbers may have exceeded several hundred thousand during this period, contrary to official statistics, but many were there only temporarily, and their entry was regulated.³⁴

For years, the option of voluntary relocation within the PRC has been frustrated by the unpopular *hukou* (household registration) system. Under this 51-year-old framework, citizens are accorded a two-part status that determines their eligibility for a series of socioeconomic entitlements.³⁵ The Chinese government was able to restrict migration by controlling the distribution of entitlements and limiting the ability to convert one's *hukou* status through the use of quotas and other obstacles. It was especially effective when the state had near monopoly control over food distribution and urban job creation. Without proper documentation, a migrant had few rights to live and work in the city where he or she was not registered, and violations were easily discovered.

During the 1980s and 90s, the *hukou* system was incrementally relaxed. It allowed a larger pool of applicants to qualify for a conversion of their status from agricultural to non-agricultural. Quotas limiting the total number of non-agricultural registrants are still imposed by the Chinese government, and the Ministry of Public Security still has final authority over issuance, but a wide range of government personnel and other workers became eligible to apply for *hukou* conversion.³⁶ In other cases, personal reasons or pursuit of post-secondary education entitled individuals for consideration.

The controversial hukou, or residence permit, was the means by which the Chinese government sought to control where people lived and to prevent rural residents from moving to urban areas. Though widely reviled by many rural people and reformers, the system did – and could – help to keep large numbers of Chinese from residing in Tibet.



However, the *hukou* system has never been rigorously enforced in Tibet as it is in some Chinese areas. When national economic policy and legal reforms began affecting the TAR in the mid-1980s the demographic trends now in place began to accelerate. Restrictions on private ownership and inter-provincial travel were eased, and labor became a semi-mobile factor of production.³⁷ It permitted temporary residence without the need to obtain permanent urban registration under the *hukou* system.

Prior to 1991, it was difficult for migrants in the TAR who had registered for residence there to leave and find employment outside the region, even back in their hometowns. They needed work documents and transfer of residence permits to do so.³⁸ In 1992 though border controls between the TAR and adjacent provinces were eliminated, and by 1993 anyone with a government-issued identity card and proper letter of recommendation from “relevant authorities” could apply for a trading license.³⁹ This meant that itinerant laborers or other migrants could come to the

TAR without a formal transfer of residence without sacrificing any entitlements they may have had back home.

By 2000, *hukou* restrictions were relaxed even further in Tibet and other “western regions.” People who choose to work in these areas can now opt to keep their existing residence registration or have it transferred to their new destination. This flexible regime, not available in eastern provinces, promotes “a reasonable and orderly population immigration” by allowing migrants to work in western areas without revoking their entitlement rights at home should they wish to return.⁴⁰



The railway station in Gormo was connected to Xining around 1980 but was used exclusively by the Government and military for the next four years. Gormo, once a sleepy town of herders and traders at the foot of the Kunlun mountains, soon became the second largest city in Qinghai Province. (Photo: ICT)

GOVERNMENT RESETTLEMENT INCENTIVES IN TIBET

Despite the heightened level of integration with lowland China, Tibetan areas remain destinations of last resort for most Chinese migrants. Health concerns related to Tibet's high elevation, the cooler climate, inconvenient transportation systems, and fewer opportunities for professional development have been consistently cited as reasons for their avoiding or wanting to leave the TAR.⁴¹ Widespread racial prejudice against Tibetans may also deter some migrants from seeking to permanently settle.⁴²

To overcome their unwillingness, the Chinese government has relied on a combination of market forces, preferential policies, and propaganda to accelerate the influx of settlers. In conjunction with the removal of safeguards discussed above, intentional strategies have played a decisive role in facilitating migration and urbanization in the Tibet Autonomous Region. During the Third Work Forum on Tibet in 1994, reforms instituted under China's Communist Party Secretary Hu Yaobang were cast aside, and Chinese were once more "encouraged and supported" to move to Tibet.⁴³

Over the years, institutions from the central or provincial governments have been requested to send employees to work in the TAR for a predetermined period. University students are also encouraged to transfer residency to Tibet and other "minority" regions during the final semesters of study.⁴⁴ For their "sacrifice to the motherland" they are well compensated. Graduation requirements are lowered for students at risk of failure, while cadres, professionals, and other workers are able to earn substantially higher salaries.

In 2001, urban residents in the TAR who worked for state-owned units (departments – danwei) earned an average income of 6,958 yuan (\$841 U.S.), the highest of all regions and almost double the national average.⁴⁵ Registered urban residents are also entitled to subsidized education, healthcare, housing, and other commodities.⁴⁶ These subsidies are provided by financial transfers from Beijing, which accounted for more than 92 percent of the TAR's total reported revenue between 1995–2000.⁴⁷

Internationally, China has sought funding for resettlement through the World Bank. In 1999, the Chinese government requested Bank assistance in relocating nearly 58,000 mainly poor Chinese and Hui Muslim farmers further onto the Tibetan Plateau into Qinghai's Dulan (Ch: Tulan) county, a Tibetan and Mongolian autonomous area in the same prefecture as Gormo. The government classified the project as a poverty alleviation measure, but it eventually retracted its loan request following intense international criticism.

Other migration incentives are tied with the Western Development strategy. The flurry of infrastructure investment across Tibet and other western regions has created an added impetus to bring in workers from China, promoted through trade fairs, schools, media and institutional facilitators. The "army of skilled professionals" that China plans on building up with the assistance of the Asian Development Bank and UN Development Programme will be partly drawn from "professionals from eastern areas."⁴⁸

RAILWAY INFLUENCE

Enhanced railway links with China and the continued use of discriminatory economic policies will greatly expand the number of settlers coming to the TAR as well as to Eastern Tibet. Sichuan, Gansu and Yunnan provinces are home to a combined population of 151 million people.⁴⁹ Even a small proportion of migrants from the non-Tibetan areas of these provinces could have a dramatic impact on Tibet's demography. So, too, could more distant inter-regional migration.

The legacy of socialist urban planning and the recent creation of special economic zones and open coastal cities have created conditions of great economic inequality in China.⁵⁰ These circumstances have prompted many people to abandon China's countryside for towns and cities without obtaining the required changes in their *hukou*. These people constitute a majority of China's 'floating population.'⁵¹ Other rural dwellers have been displaced

A sign in Tibetan exhorts local Tibetans to "Uphold the one-child birth control policy and protect the environment." In many arid parts of Tibet, the environment cannot support a large population without suffering long-term damage. (Photo: ICT)



by environmental degradation. Distressed farmlands and fisheries, advancing deserts, and water shortages, among other declining environmental conditions, are suspected of displacing 20 to 30 million people in the last decade.⁵²

The China Daily reports that in the coming decade another seven million will be moved from “areas blighted by extreme, adverse natural conditions” as part of the government’s “ecological emigration and resettlement projects.”⁵³ In all, 200 million Chinese rural dwellers will move to the cities between 2000 and 2010, according to the United Nations.⁵⁴ This represents the largest movement of people in history, challenging the stability of China’s social, political and economic landscape, and that of Tibet’s.

Migrant workers from China have already begun arriving at points along the route, eager to secure railway-related jobs. Statistics indicate that Nagchu town and the surrounding prefecture north of Lhasa are 99 percent Tibetan. However, 100,000 unregistered migrants are said to reside in the area. Many “have come to claim one of the tens of thousands of jobs the railway is expected to create.”⁵⁵ By the end of 2002, 10,000 to 20,000 workers, mainly semi-skilled laborers from neighboring Chinese provinces, were reportedly working at various sites.⁵⁶

When the line becomes operational, transportation savings for certain commodities will induce economic development and settlement along nodes where existing populations are found or pockets of natural resources can be exploited. Some access points will be dedicated to mining operations. A People’s Daily report indicated that some 13 copper belts, as well as gold and cobalt deposits have recently been uncovered from geological surveys.⁵⁷ The reduction in transaction costs for bulk transport will make it more attractive to build mines in areas with ore concentrate previously considered too low. It will also prompt greater levels of prospecting in areas previously considered too inaccessible.⁵⁸

In the vicinity of railway stations themselves, features of development will depend on a blend of location-specific conditions and government directives. Stations designed for handling cargo will require warehousing and shipping facilities, and some places will entice processing and other business operations. On the other hand, passenger-focused terminals will tend to attract service sector enterprises like shops, restaurants, and lodging. Tourism is expected to become a prime magnet for these businesses. Last year, the 850,000 tourists who visited the TAR contributed to six percent of the region’s GDP.⁵⁹ By 2005, 1.4 million visitors a year are expected.⁶⁰

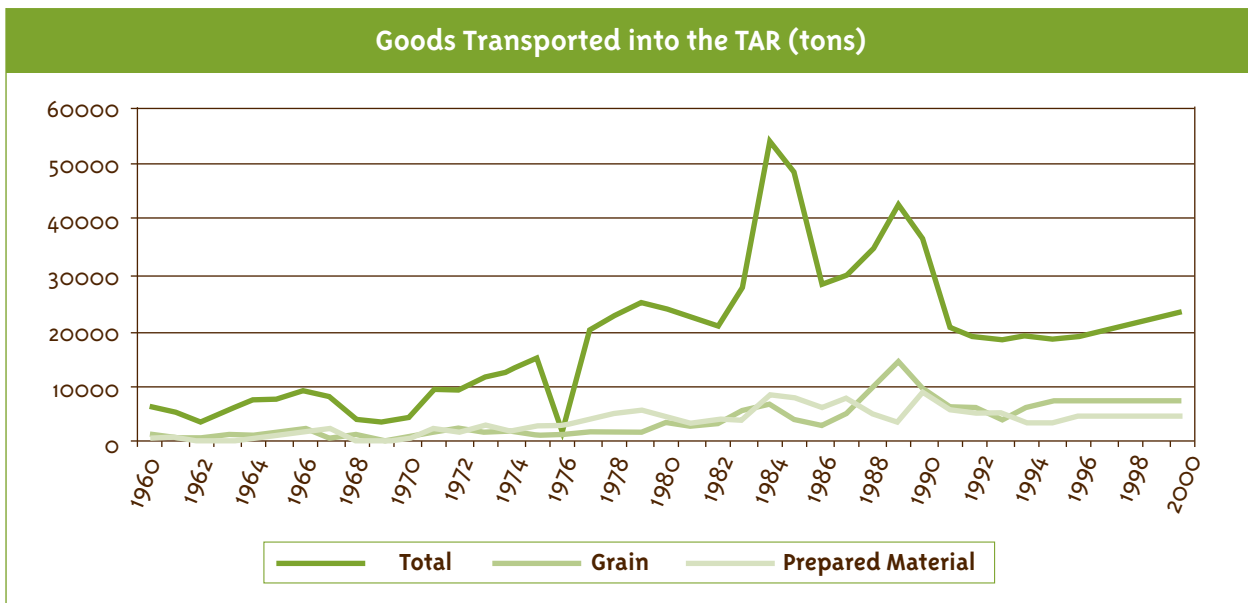
Economic migration in China is generally not a ‘blind’ undertaking. Instead, migrants often rely on a network of connections to provide them with advance tips for employment prospects.⁶¹ To mitigate risk, temporary laborers or settlers also often travel in groups for mutual support. Even though many are forced to live in temporary hovels by the roadside near work areas, their arrival represents the first step in the construction of a permanent immigrant community.⁶² In existing townships, as more people from the same place are introduced to the area, a new landscape is formed, creating a “village in the city.”⁶³



Thousands of Chinese and Hui workers are coming to find work on the railway line. Here, a truck full of the ones lucky to be hired leaves for a day of labor about 100 kilometers south of Gormo. (Photo: ICT)

Elsewhere, entirely new towns can be formed out of these communities. Plans to create 25 new townships in the TAR have reportedly been approved, many along the railway route.⁶⁴ In this way, stations can be designed as places to be rather than just places to pass through. While many migrants can be expected to return home after a prescribed period, some will bring families and stay to eke out a living as wage earners or by establishing themselves as small business owners that cater to the growing number of tourists, temporary migrants, or other settlers. Established in Amdo, this pattern represents an advanced stage of the settlement process.

Pushing the tracks across the rugged terrain, the government has ample tools at its disposal to create conditions for the process. The establishment of its own infrastructures and security apparatus will be among the first elements added to any new urban spaces. As the owner of all real property, it can dispense land rights to investors or migrants eager to occupy land of their own. Finally, as administrators of an evolving command economy, it has the financial and political means to establish industries in areas that present less than optimal investments.



Source: Statistical Yearbook of Tibet 2001.

SUSTAINING THE MIGRANT POPULATION

Expansion of capacity through increased volume and speed will help relieve the resource demands imposed by the growing Chinese presence in Tibet. Indeed, the burgeoning population of migrants, itinerant workers, and military personnel could not be sustained across Tibet's vast expanse without access to Chinese supplies. After decades of economic planning, they still rely on imports both for living and for lifestyle.⁶⁵

Food is a critical provision. In 2000, grain imports comprised over 30 percent of goods transported into the TAR from neighboring provinces.⁶⁶ Prior to the 1950s, Tibet produced an adequate, self-sustaining amount of food for its own needs, but once China entered the region, significant pressure was put on the food supply. Agricultural production has been continually increased in response to the growing demand, but Tibet's overall level of food security is inherently limited by a combination of low rainfall and temperatures with scarcity of arable land.⁶⁷ Combined with the existing limitation of roadway delivery, food shortage poses a significant impediment to Chinese migration. In precisely this context, a 1976 U.S. Central Intelligence Agency report, identified the railway as the "key to the future settlement of Tibet by large numbers of Han Chinese."⁶⁸

Trains will also sustain the growth of settlements by enabling wider and cheaper access to goods and commodities for industrial production and other economic activities. For example, the railway could reduce the high cost of shipping coal on the Qinghai-Tibet Highway.⁶⁹ In China, railway shipment of coal as well as other bulky commodities is not only common but vital for their daily transportation over long distances.⁷⁰ Importation of machinery, construction equipment, and material will also be greatly facilitated, assisting in the build-up of urban areas and infrastructure projects.



Lhasa, home to approximately half of the Chinese living in the TAR, is rapidly expanding. The dynamics and impacts of this expansion are highly controversial with many Tibetans feeling shut out, disempowered and overwhelmed by the surging Chinese population in their historic capital. (Photo: ICT)

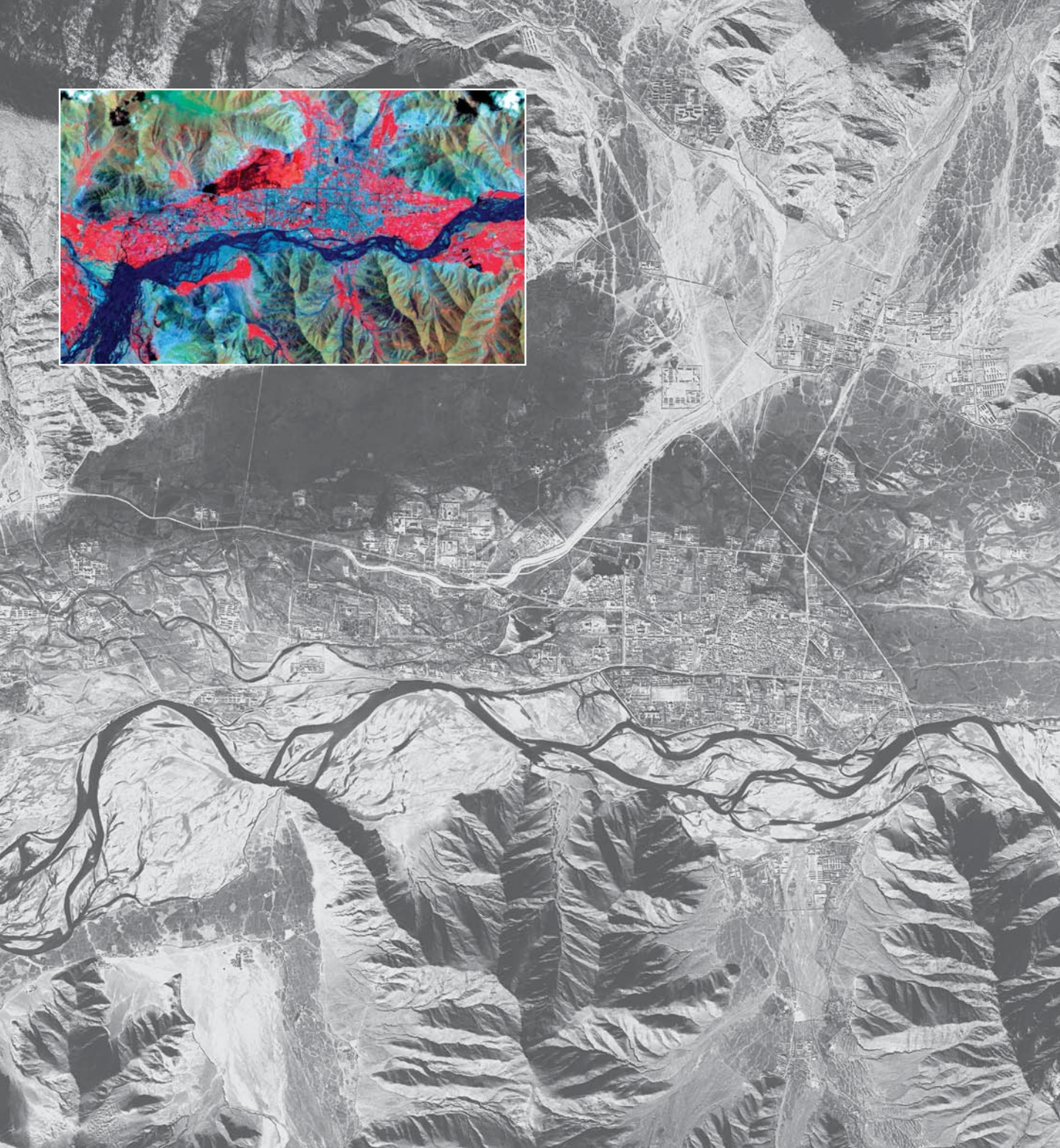
TRANSFORMING LHASA

By design, Lhasa's already dramatic metamorphosis will accelerate in the coming years. Under China's current Five Year Plan, the city's area is to quadruple by 2015 to 272 km² (105 mi²), and its urban population to increase by 30 percent over the next four years to over 300,000.⁷¹ Because the bulk of migrants may head for Lhasa, where most settlers in the TAR currently live, the railway link from Gormo will enhance the city's integration with China. In tandem with the city's designation as a special economic zone, placement of the railway station in Toelung Dechen, just north of Lhasa in Ne'u township (Ch: Liuwu) will likely fuel a boom in investment, real estate development, and labor migration.⁷² Urban sprawl between the station and city is already taking place.

Prior to China's military occupation of the city, Lhasa covered approximately two square kilometers, and hosted a population of 20 to 30 thousand, including an estimated 2,000 Chinese residents.⁷³ Since the 1950s, Lhasa has been radically transformed by a massive build-up of government infrastructure and security apparatus. Clusters of state-run enterprises, People's Armed Police stations, schools, and government and Party buildings have spread eastward and northward from the original city (shown on the satellite images on the following pages). PLA bases ring its perimeter, and security personnel are stationed throughout the neighborhoods. This constellation of facilities became magnets for new housing districts, and secondary and tertiary service providers, at first commissioned according to principles of Chinese socialist urban planning, and now influenced by an emerging market economy and paid land-use system.

Today, sprawling commercial strips with Chinese signs dominate the streets of Lhasa where migrants have taken up jobs in the trade and service industries as laborers and entrepreneurs, working in restaurants, shops, and service businesses. They have joined the thousands of military, government, Party, and security personnel who have dominated the city's functions since 1959. Under threat of intermittent demolitions, the original city around the Barkor residential district where Tibetans still predominate, now constitutes less than two percent of the Lhasa's urban landscape.⁷⁴

In terms of population, a senior official said that half of Lhasa's inhabitants were Chinese.⁷⁵ It was a surprising admission even though most observers have put the Chinese population at 70 percent or more. He went on to say that, "in the future, the number of migrants will be determined according to the requirements of economic development."



LHASA: THROUGH SPACE AND TIME

Lhasa is located in the southern portion of the Tibet Autonomous Region at an altitude of 3,650 m (11,972 ft) above sea level. Sheltered by the surrounding mountains, Lhasa's micro-climate is dry and mild with most rainfall occurring in the summer months. The fertile valley has long been a major agricultural area, irrigated by the Kyi Chu River, a tributary of the great Tsangpo (Brahmaputra), which flows past the southern edge of the city.

Since 1970, when the background satellite image was taken, Lhasa has undergone dramatic growth as a result of government-fostered urbanization and Chinese migration, hallmarks of China's rule in Tibet for the last 52 years. The light blue rectilinear features in the 2001 image (inset) reveal dramatic enlargement of urbanized areas as well as densification of previously developed patches.

The railway now under construction from Gormo promises to facilitate plans to quadruple the city's area by 2015 and increase its population by 30 percent over the next four years.

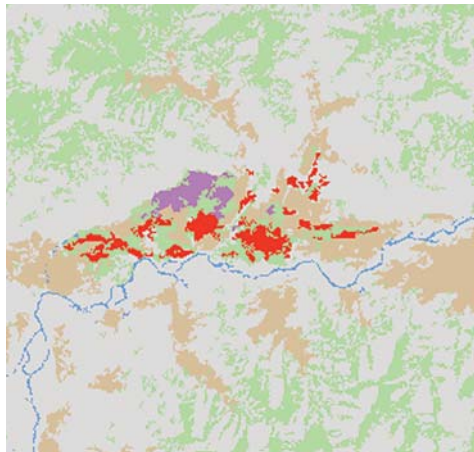
ANALYSIS: LHASA, TIBET

12/17/1976 MSS Image: Overview of Lhasa area



10 0 10 kilometers

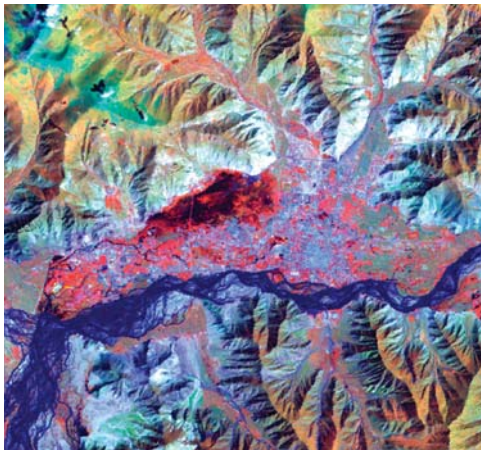
12/17/1976 Lhasa land cover



10 0 10 kilometers

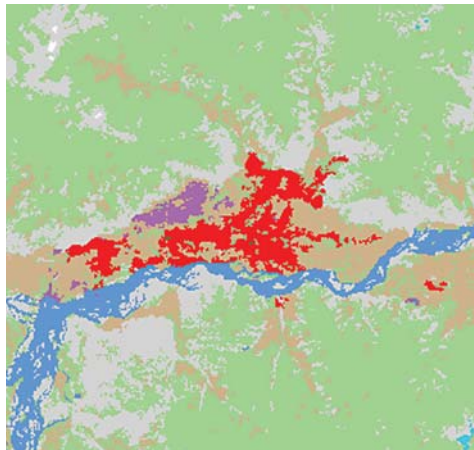


9/14/1991 Landsat 5: Lhasa



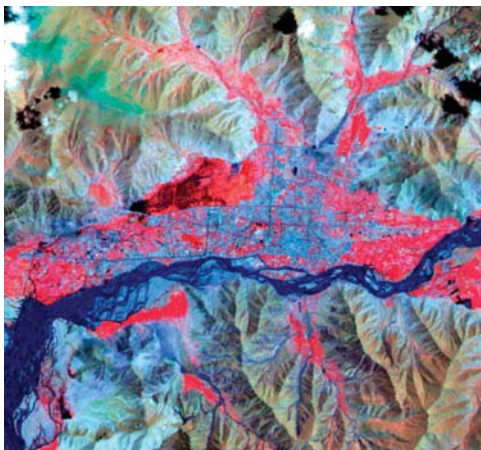
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9/14/1991 Lhasa land cover



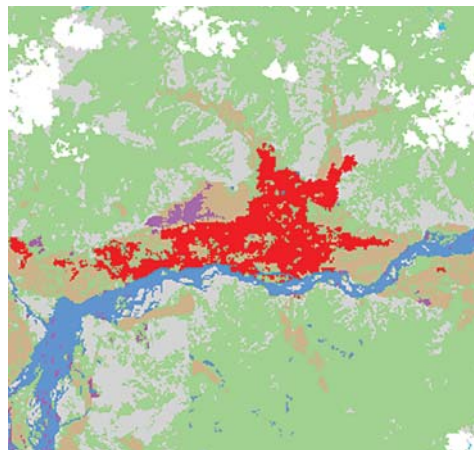
10 0 10 kilometers

6/13/2001 Landsat 7: Lhasa



10 0 10 kilometers

6/13/2001 Lhasa land cover



10 0 10 kilometers

ANALYSIS: LHASA, TIBET

LHASA, 1976

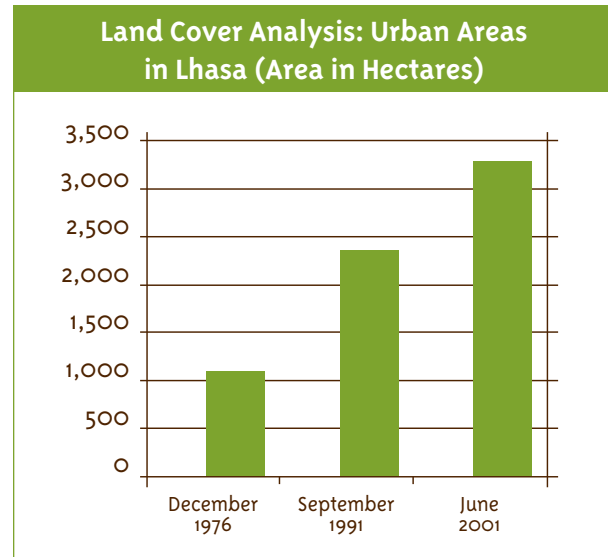
Overall, Lhasa expanded significantly between all three images (MSS-Landsat5-Landsat7). The Lhasa “urban” statistics of the 1976 MSS may be somewhat deflated, due to a combination of the coarser pixel size of MSS and a diffuse urbanization pattern. The November 1970 Corona and December 1976 MSS show a thin river with the urban area right up to the banks. Meanwhile, the September 1991 Landsat5 and June 2001 Landsat7 show a much wider river with the urban area moved slightly north of the river. As with any area, seasonal differences have significant effects on the landscape. During the Fall and Winter months, the Kyi Chu river flow is greatly reduced, explaining the increase in water flow in the 1991 and 2001 scenes. Seasonal differences also contribute to differences in vegetative cover and detection of agricultural features.

LHASA, 1991

Between 1976 and 1991 the city underwent tremendous expansion. Areas previously covered by various forms of vegetation (trees, shrubs, grass) appear to have been converted to impervious surfaces (concrete, blacktop pavement, metal or wood buildings). The land cover analysis indicates that development more than doubled during the period.

LHASA, 2001

Between 1991 and 2001 certain areas appear to have been urbanized more heavily, including the areas surrounding the Potala Palace and the areas in the city’s north. Aside from increased urban area and a denser type of development, there also appears to be a much more developed road network within the city of Lhasa. The analysis indicates a 29 percent increase in urban land cover since 1991. Wetland area concentrated in the center left showed a marked decrease from 1991 to 2001 as a result of human disruption.



Above: The analysis shows an unmistakable upward trend in urban growth.

ENVIRONMENTAL PRESSURE

The Gormo-Lhasa railway will pass through a fragile, but still dynamic series of ecological regions. Unlike environmental conditions in China, which have deteriorated to near crisis levels, Tibet's vast wilderness remains relatively intact. Geographically, the Tibetan Plateau is the world's highest and largest plateau with an average elevation of 4,000 meters (13,123 ft.). Its unique geography is home to the largest grassland area in Eurasia and provides the source water for ten of the earth's great river systems, including the Mekong, Salween, Bhramaputra, Yellow, and Yangtze rivers.

But much of Tibet's ecology, which sweeps from mixed coniferous and broad-leaved forests in the southeast to the cold steppes and desert in the northwest, is both sensitive and non-resilient to human disruption. In recent years, a number of environmental impacts in the region have been identified, including deforestation, grassland degradation, soil erosion, and biodiversity loss.⁷⁶ The creation of the Gormo-Lhasa railway and continued influx of settlers may amplify these effects to unsustainable levels, the subject of particular concern by the Central Tibetan Administration in Dharamsala, India.⁷⁷

CONSTRUCTION IMPACTS

From Gormo, the railway will descend southward through belts of temperate desert in the Tsaidam basin before passing through a vast region of cool alpine meadows which forms a transition zone between the eastern and western ecoregions of the Tibetan Plateau. Throughout the zone, as in all mountain regions, the interplay of elevation and latitude determine the local distribution of plant and animal communities. Shrubs, willows and grasses thrive on the valley floors but vegetation becomes sparser as the altitude rises, retreating altogether at the higher elevations, leaving only rock and exposed soil. Areas along the route are also dry. Descending from Gormo to Lhasa, the precipitation increases from less than 200 mm per year (7.87 in) to just over 400 mm (15.75 in).⁷⁸ This cool, dry climate is not conducive to recovery of damaged ecosystems except after long periods of time.

Some impacts will be caused directly by the construction of the railway's infrastructure. These include terminals, support facilities, bridges, tunnels, and tracks along the route. Site preparation will involve substantial slope cutting, tunnel boring, and rail-bed foundation work.⁷⁹ Extensive earthworks from these operations could increase risk of landslides and soil erosion, and inappropriate disposal of spoil could result in water pollution and habitat loss.⁸⁰ Alpine plant communities are particularly susceptible to disturbances. Depending on local conditions and the extent of soil disruption, plant composition and cover could be affected over extended areas.⁸¹



Decimation of wildlife on the Tibetan plateau, especially the endangered Tibetan antelope, the chiru, is closely tied to transportation and the increase of non-Tibetan settlers on the plateau. Increased populations along the railway line between Gormo and Lhasa could further contribute to an already out-of-control poaching problem.

When the Qinghai-Tibet Highway was built, for example, the local environment underwent substantial change. Construction techniques set in motion a cycle of frozen soil degeneration along the road alignment, which ultimately transformed the high-cold swamp meadow into meadow steppe. The retreat of permafrost ultimately led to significant environmental change, transforming the high-cold swamp meadow into localized meadow steppe.⁸² Contemporary engineering standards would likely have prevented much of that damage, but the scale of the railway project is much larger.

Part of the route will intrude into reserve areas. It will bisect the western edge of the Chang Tang nature reserve, a 300,000 km² area in the TAR characterized by alpine rangelands with many endemic animal species such as the wild yak, Tibetan antelope, and black necked crane. It will also pass through the Hoh Xil nature reserve, and Three Rivers Source Reserve in Qinghai which was established in 2001 to address declining environmental conditions in watershed areas of the Yellow, Yangtze, and Mekong rivers.

In building the railway in ecologically fragile areas and permafrost regions, the MOR admitted that construction would have a "devastating impact" on the environmental surroundings.⁸³ A senior engineer also warned that damage caused to "the delicate ecological environment" of watershed areas "will be very difficult to recover, imposing a significant impact in the downstream areas."⁸⁴

In terms wildlife populations, the railway may fragment habitats by creating a linear barrier between previously connected habitat patches. In studies of animal species in Europe and North America and elsewhere, highways, roads and railways were found to affect habitat quality and population viability.⁸⁵ While pledges by the Chinese government have been made to construct animal passes along the route, their effectiveness will be limited by a poor understanding of migration and reproduction patterns of many animals in Tibet.⁸⁶

POPULATION & DEVELOPMENT PRESSURE

The railway's greatest environmental impacts will be caused by the migration and activity it will foster. Access roads and branch lines connecting to the trunk in a fish-bone pattern could result in a network of transportation corridors that reach distant locations. Existing population nodes will grow, and the spatial pattern and type of human activity could spread to previously unsettled areas. Under both scenarios, environmental conditions could be affected far from the main line, even across international borders, causing pollution of air and water, habitat and biodiversity loss, and land degradation. Dutifully avoided, these issues have never been addressed by the Chinese government.

LAND DEGRADATION

Many of Tibet's rangelands are still healthy, but owing to the high elevation and low average rainfall, the land's carrying capacity is among the lowest in the PRC.⁸⁷ The population strain, excessive cropping and livestock production that have degraded China's ecosystems have also been felt in some parts of northeastern Tibet along the transportation corridor between Gormo and Xining. In spite of poor conditions, agricultural operations there continue to expand. A drop in Lake Kokonor's water level has been recorded in recent years as a result of excessive irrigation.⁸⁸

In that vicinity, a World Bank evaluation found that "increasing cultivation and grazing pressures in mountainous areas are having devastating ecological impacts and there appear to be limited and possibly even no environmentally sustainable development options available in those areas."⁸⁹ Despite the dramatic reductions in biomass across China and the alarming rate of desertification, much of the literature on poverty alleviation continues to promote a singular approach to land use. Cropping, is touted as the only purpose fit for "reclamation" of what is considered valueless "wastelands."⁹⁰

Rangeland degradation is a result of many factors, some natural, but increasing population on a finite land base is a major cause. Settlers who take up farming or livestock production will encroach on increasingly marginal land causing reductions in vegetation cover and soil fertility.



In the 1980s and early 1990s logs were often dumped into rivers that carried them to China. Though this method is cheaper, it results in much wastage. Trucks were increasingly used in the 1990s but transportation costs remained high. While most of the great forests in Tibet are in the eastern parts of the plateau, there are significant logging operations in the southern TAR, and the railway could be used to remove this wood. (Photo: ICT)

Intensification of agriculture may be especially pronounced in the Lhasa region and in the densely populated valleys of the Yarlung Tsangpo River (Brahmaputra) where the soil is fertile.

To cope with scarcity of land, crops might be planted higher up on sloped ground and excessive use of imported chemical fertilizers may occur, made more affordable by the railway. In the short run, yields will increase, but over time soil productivity can be dramatically reduced without organic fertilization.⁹¹ A UN Development report called China "one of the most seriously eroded countries in the world," and notes the strong correlation between poverty and land erosion.⁹² In Tibet, both hillside areas and marginal lands are particularly vulnerable to erosion and can be quickly denuded from bioterracing or overgrazing. Studies have shown that disturbances to plant communities in cold regions often lead to changes lasting for decades or longer.⁹³

"It takes little insight to recognize that the large and still increasing population, the unevenly distributed and rapidly depleting resource stocks, and the widespread deterioration of environmental conditions are inextricably related in China." – China Human Development Report, 2002.

Soil loss and deforestation in Tibet were identified as the main causes of the disastrous flooding that occurred in August 1998 along the Yangtze River, affecting some 240 million people.⁹⁴ Since then, a logging ban was put into place in Tibetan areas of Sichuan and in the TAR to stem the rate of forest loss, but commercial logging has still been reported.⁹⁵ Rail access may prompt an increase in locally sanctioned cutting in those areas where cost advantages for shipment can be realized. In rural parts of Tibet, host to more than one fifth of the PRC's timber stock, railway resettlement is likely to increase fuel wood use by settlers, compounding the pressure.⁹⁶

MINING

An increase in mining activity in and around railway access points will also impose a series of environmental costs, including pollution and habitat loss. Referring to the Tsaidam Basin's larger-scale mining operations, scientists from China's Commission for the Integrated Survey of National Resources said that "there are few measures to prevent pollution, with the result that wastes pour into the rivers, endangering livestock, contaminating lakes downstream."⁹⁷ The wastes include deadly chemical and heavy metal byproducts of smelting and leaching such as cyanide, arsenic and mercury. If uranium mining is pursued near Lhasa, reported years ago to contain one of the largest deposits in the world, waste from mill tailings could pose similar hazards.⁹⁸

Small scale mining activity may also increase due to the influx of economically depressed migrants. Thousands of gold prospectors have already been drawn to the east central part of the Plateau to eke out a living in small-scale mines. Riverbeds have been deeply gouged and pasturelands destroyed from excavations.⁹⁹

BIODIVERSITY LOSS

Tibet's landscape constitutes a relatively marginal food resource outside of its forested area in the southwest, but it supports a number of animal species found nowhere else.¹⁰⁰ Indigenous mammals like the white-lipped deer, the diminutive Tibetan gazelle (chiru), Tibetan wild ass, argali sheep, and wild yak once thrived there in abundance.

Pyotr Kozloff wrote in 1908 that "the fabulous quantity of wild mammals to be found everywhere in north-east Tibet can be accounted for by the almost complete absence of their worse enemy – man."¹⁰¹ However, the situation has changed over the last several decades. Subsistence and commercial hunting operations as well as habitat loss have led to a significant decline in animal populations.¹⁰²

For many of the thousands of poor migrants who will enter Tibet to work on the railway or in search of other opportunity, an income and food supplement from wildlife will provide relief from economic hardship. In the past, animal populations were decimated in the vicinity of sites where settlers or temporary workers congregated. Gold miners from China, moving from one area to the next as shallow mines are exhausted, have been blamed for widespread impacts in locations such as Chumarleb county. According to the Qinghai Daily,

*"The gold peasants stole and pillaged the animals and property of the pastoral herdsmen and they wantonly poached wild animals so that the Tibetan antelope, the Mongolian gazelle, the white-lipped deer, the wild yak, the wild donkey and the musk ox, which lived in this area in great numbers in former times, have now virtually disappeared."*¹⁰³

If the steady intrusion of migrant communities continues to spread unchecked through remote areas, wildlife will be put at risk of permanent decline. The railway and connecting roads are likely to promote intensified hunting by providing access to relatively unexploited pockets of wildlife and by lowering the cost of bringing the animal parts to their intended markets.

Creation of reserves like the Chang Tang offer hope of some protection, but the business of animal parts trading can be lucrative. Bears' gall bladders, chiru horns, and snow leopard bones among many other items are valued for medicinal purposes, and the large trade in chiru wool has led to large-scale depopulation over much of its traditional range.¹⁰⁴ Limited resources and lax anti-poaching enforcement have allowed organized gangs of armed Chinese poachers to regularly intrude into protected areas for weeks-long expeditions.¹⁰⁵ A number of Tibetans have also engaged in commercial hunting as a result of increasing market pressure and changing cultural mores.

AIR POLLUTION

Like all high mountain regions, the valleys of Tibet are prone to trapping airborne pollutants. These same areas are favored for transportation arteries, and urban and industrial development. In combination with the thin air, public health risks can quickly develop. The emissions of sulfur dioxide, nitrogen oxide, and suspended particulates in Lhasa are still small but show a growing trend. Its air quality now ranks below that of Suzhou and Dalian in China, host of 16 of the world's top 20 most polluted cities.¹⁰⁶ Further increases in industrial, household, and automobile emissions will accompany Lhasa's planned expansion, and other valleys of Tibet can be expected to experience a similar result if transportation routes penetrate further into the Plateau.

“The right to development is an inalienable human right by virtue of which every human person and all peoples are entitled to participate in, contribute to, and enjoy economic, social, and cultural and political development, in which all human rights and fundamental freedoms can be fully realized. The human right to development also implies the full realization of the right of peoples to self-determination, which includes...the exercise of their inalienable right to full sovereignty over all their natural wealth and resources.”

Article 1, UN Declaration on the Right to Development.

ROAD TO PROSPERITY?

Economic development has been advanced as a leading basis for constructing the railway. *The People's Daily*, an official Chinese news outlet, said that economic returns of 4 billion yuan (US \$480 million) for the TAR could be expected from 2001-2005.¹⁰⁷

Because of the breadth of the railway's linkages, the potential impact, both positive and negative will have region-wide effects. In a positive sense, the prospect of enhanced welfare is derived from a reduction in transportation costs and increased accessibility to remote locations. It would allow farmers and other businesses to reduce their input costs and generate higher revenues by accessing more lucrative markets. Indirectly, railway-induced economic development presents more diversified employment and business opportunities, which could raise employment rates and income levels.

However, the type and distribution of these effects will depend on the composition of the railway's users and those indirectly impacted.¹⁰⁸ In a segregated society like that of Tibet's, there will be pronounced distributional inequities accompanying income flows and asset accumulation. Chinese investors, contractors, developers, and migrants, together with a minority of Tibetans are likely to capture a substantial portion of the railway's benefits while the socio-economic costs will fall disproportionately on the majority of Tibetans. These considerations are an important part of an overall assessment, and they undermine the government's unqualified claim that it will improve “the local people's material and cultural well-being.”¹⁰⁹

The complexity of balancing development issues in Tibet, as in many areas of the world, is reflected by mixed sentiments expressed by some Tibetans. A Tibetan writer in his twenties from Amdo told ICT that no Tibetan would regard the railway as being in the interests of the Tibetan nation and culture, but that from a narrower economic perspective, there were clearly some short-term opportunities for Tibetans.¹¹⁰ The writer, who is now in exile, said:

“There's no doubt that the railway is going to be destructive to Tibetan society. Eighty per cent of the Tibetan population lives in rural areas and the railway project promotes urbanization. This means that a policy of urbanization is being imposed on Tibetans, more and more of them will move into small towns and will begin to earn a living from business rather than agriculture, so they will be abandoning a traditional way of living.

“The current situation is that the Tibetans are very subordinate to the Chinese. This is the main anger that we bear in our hearts in Tibet, we are always excluded. There is direct discrimination in terms of our language, our education, our careers, which are all related to our participation in the economy.

Of course there are some favorable possibilities and opportunities. In my area in Amdo, there are many young people who once wanted just to study and to earn a stable income, and now they want to do business and make money. Most of the products they sell are from mainland China, they're grabbing the opportunities from the hands of the Chinese and Huis. They're really trying to penetrate the Chinese market. For these sort of Tibetans in central Tibet, the railway will bring opportunities. Although they are very much a minority, this trend will be a model for others.”¹¹¹

INDICATORS OF TIBETAN POVERTY

After more than five decades of Chinese-imposed development in Tibet, Tibetans remain subject to tremendous socio-economic hardship. Statistically, their condition is reflected by the annual survey data collected for the TAR, which provides an inference of conditions impacting them in other parts of Tibet as well. Rates of illiteracy exceeded 67 percent for the TAR in 1999, compared with 11 percent for the People's Republic of China.¹¹² Infant mortality is significantly higher than in China, and one study found that more than 50 percent of children in the Tibet Autonomous Region were affected by stunted growth as a result of malnutrition.¹¹³

In terms of income, disparities between Chinese and Tibetans are substantial. They exist on a regional basis between China and Tibet, within shared urban spaces, and increasingly, between Chinese and Tibetans in rural areas. In 2001, the average household income per person of the TAR's rural residents, predominantly Tibetan, was the lowest of all the provinces and regions in the PRC, estimated at 1,404 yuan (US \$170), approximately 59% of the national average.¹¹⁴ The province fell to this lowest position in 1997 after a continuous decline throughout the 1990s. Using an absolute poverty line recommended by the National Bureau of Statistics of China (880 yuan in 1999), it appears that rural poverty rates have not decreased during this last decade, despite considerable aggregate economic growth. By the end of the decade, more than one and five rural Tibetans were still living under this poverty line.

DUAL ECONOMIES

Economic marginalization of Tibetans arises from a series of factors that will not be removed by the railway's economic impact. Abstracting from economic policies in the east, China has adopted an approach to development in the TAR tied to GDP growth, a measure particularly ill-suited in Tibet to assessing inequality reductions, or eradication of absolute poverty. It does not, as an approach, measure whether Tibetans as a group have moved toward a situation that can be regarded as materially and socio-logically improved. These normative evaluations are best understood in Tibet in the context of broader theories of development and political economics.¹¹⁵



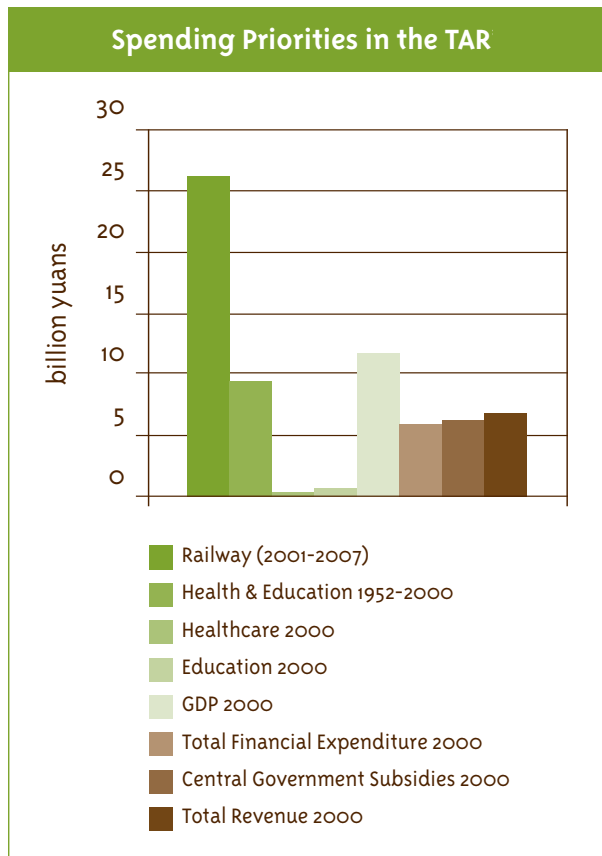
One of the greatest controversies surrounding the railway, both in Beijing and Tibet, is whether the massive cost of the railway is justified given the dire poverty of so many rural Tibetans. Children like these have little access to health care and education. The US \$3.2 billion price tag of the railway exceeds the combined health and education expenditures in the TAR over the last 50 years. (Photo: ICT)

Structurally, Tibet's economy is poorly diversified, with a limited industrial base that is "largely government owned and controlled, urban and construction oriented, and highly concentrated and specialized in areas of government priority."¹¹⁶ This configuration explains the composition of the primary and secondary sectors and also the size of the tertiary sector, which is unusually large in comparison to other parts of the PRC. The sizeable bureaucracy of government and party agencies in the TAR dominate this last sector, diverting spending away from more productive investments and programs designed to meet the needs of Tibetans.

In the secondary sector, which includes resource extraction, the prospect of under-reported inter-regional wealth transfer may have contributed to the TAR's historically depressed GDP. Exploitable resources are state property under China's legal framework, and provisions to compensate 'autonomous' areas for their extraction were only recently created.⁴² To what degree economic surplus has been extracted from the region in the past five decades due to undervalued or unreported pricing is not known. Given Tibet's wealth in timber, hydroelectric potential, and mineral deposits, any distortions could have led to a significant difference between actual and reported GDP levels and composition. In any event, higher value-added secondary sector production such as processing is generally undertaken outside of Tibet, an activity that will be facilitated by the railway.

Since railway-facilitated development will concentrate in market towns and industrial centers where the machinery of civil administration, Chinese cadres and migrants have clustered together, it will bypass most Tibetans who live in rural areas and subsist as agro-pastoralists. More people are moving to towns and cities in Tibet, but the level of urbanization is much lower than in China, and a substantial number of arrivals are non-Tibetan.¹¹⁸

China's political and economic elites have directed scarce productive resources away from in-province rural development, where great need has been identified. Field observations suggest that similar expenditure prioritization is made in other Tibetan autonomous areas as well.¹¹⁹ In outlying locales, where community development has been neglected, Tibetans will remain isolated. Their access to adequate and appropriate education, healthcare, product and input markets, finance, or political decision-makers will remain physically unchanged, thereby exacerbating the welfare imbalance between rural areas and Chinese oriented urban zones. It is a regressive feature of the railway, and indeed most of China's economic planning in Tibet.



SEGREGATED NETWORKS & ECONOMIC STRATIFICATION

The penetration of a physical transportation network from China has enabled a fairly homogeneous social and economic network to follow, embedded along a similar path. It extends into Tibet largely insulated from the host environment by virtue of its strong connection to the Chinese core. These networks are highly segregated, with structural rigidity coloring the nature of business and social contacts, employment opportunities, and political favors. Rather than breaking down these rigidities, the railway may reinforce the barriers of economic exclusion.

The year after the TAR's border controls were terminated and government offices in Lhasa began renting out ground floors to shop owners, the number of small Chinese businesses in the city swelled by 5,300.¹²⁰ The flow of migrants to Tibet's cities continues today. Social networks are likely to have played a critical role in the manner of labor migration since migrants who travel between provinces often obtain prior knowledge of economic prospects in order to mitigate their risk.¹²¹

These personal connections, embodied in the concept of *guanxi*, often characterize Chinese business practices.¹²² It can help someone obtain a business license or credit, or find a job, business contact, or housing. But it also deprives Tibetans of this social capital because of racial discrimination. Hiring practices in Lhasa's construction industry provide an illustration. In addition to hiring migrants from Lhasa and Shigatse, the handful of larger companies responsible for most construction often bring in outside labor through contacts in China. It is one of the growing links between Chinese communities that bypass the pool of Tibetan labor, with growing repercussions for employment, asset accumulation, and, ultimately, poverty.

Officially, between 1997 and 2001 22,278 jobs were created by private enterprise in the TAR, but no record was given for the level of Tibetan ownership or employment.¹²³ Years of educational neglect, first under the feudal system and then under Communist authority have resulted in a poorly trained workforce that must also struggle with institutional biases and the growing dominance of the Chinese language in commerce. "Why aren't the Chinese helping Tibetans with our small business?" asked one Tibetan businessman from Lhasa. He added:

*"They discriminate against Tibetans. From small businesses on the Barbkhor, allowing Chinese peddlers to have the best spot, to large scale things like housing projects where they kick us out of traditional houses so they can build large concrete apartments for the migrants."*¹²⁴

Another Tibetan expressed his concern to ICT about future prospects:

*"Although I have a government job, which right now is secure, I am not so certain after the railroad. I have an advantage anyways, I studied in China. Most Tibetans don't have that advantage."*¹²⁵



This camp south of Gormo is a temporary construction camp, but many new permanent settlements will be built for maintenance workers, signal stations and sidings. (Photo: ICT)

Despite its long history of planning, Tibetans have not been trained to undertake key managerial positions or high value-added jobs in the planning, construction, and future operation of the railway. Under the Western Development Strategy, technically skilled workers from “eastern areas” will instead be enticed to the “remote and poor areas” through financial incentives and subsidies.¹²⁶ Among the construction site laborers, construction companies have chosen to employ even unskilled laborers from the “inland.”¹²⁷ 100,000 jobs are expected to be created for construction work, and more than 2,000 positions when operations begin.¹²⁸ So far, reports state that fewer than 200 college students have been recruited from the TAR, without indication of whether any are ethnic Tibetan.¹²⁹

The lack of participation by Tibetans and scarcity of resources committed to their education and training has attracted concern by experts. During a discussion before the U.S. Congressional-Executive Commission on China, former UN Development representative, Arthur Holcombe, told the panel that without correcting the deficiencies,

*“Tibetans will continue to be hurt rather than be helped by the continued expansion of Tibet’s market economy, and the new railway to Tibet will only intensify migratory trends, exacerbate ethnic income disparities and further marginalize Tibetans in traditional economic pursuits.”*¹³⁰

The current UN Development Programme representative in China addressed a similar theme. She cautioned a Beijing audience that without the Tibetans’ “active engagement and cooperation, any development program will not take root in the Tibetan community and thus will only have a very limited impact.”¹³¹

LAND RIGHTS

Those with existing interests in land and business enterprises nearest the railway access points will benefit disproportionately from it. In China, possessory interests are transferable, allowing some landholders to profit from rising demand in rental markets. According to investment guidelines promulgated by the government, investors in railways, and railway stations will have priority rights to develop adjacent land.¹³²

Meanwhile, those who must pay higher rental rates will experience a concomitant reduction in welfare. Neighborhoods in Lhasa have already undergone dramatic demographic and physical changes, and experienced rising rents. Lower income Tibetan households face an additional disadvantage described by the Tibetan Centre for Human Rights and Democracy:

*“Discriminatory allocation procedures ensure that Chinese immigrants are either guaranteed housing on arrival in Tibet or are put at the top of the waiting list. To make room for the new arrivals, huge numbers of Tibetan families and even whole neighbourhoods have faced eviction from and demolition of their traditional residences. Those relocated were often given no compensation, and forced to pay new rents up to ten times as much as for their previous dwellings. The official justification for this destruction is “beautification.”*¹³³

The extent of involuntary relocation, and expropriation of land or housing to make way construction along the route has not been disclosed, but China’s 1990 Railway Law permits such actions.¹³⁴ A Tibet Information Network report from June 2001 indicated the possibility of farmers losing their land in Toelung Dechen while along the path of the railway near Lhasa. A former official interviewed for the report said that while “some farmers may receive a little compensation for their land, it is unlikely that it will be enough to fully make up for the loss of their livelihoods.”¹³⁵

PATH TO ASSIMILATION

In certain areas, increased pressure to assimilate can be sudden and profound. Without adequate institutional safeguards, the Tibetan language, community characteristics, customs, and traditional livelihoods will all be exposed to intensified threats from railway resettlement and the resulting economic dislocations.

In parts of the world where plurality of tradition is respected, minority groups connected through common geography or other bases have flourished with their sense of identity intact. They are protected by power-sharing arrangements and institutional networks that create a durable preservation system for their members, even as they participate in the functioning of the larger state.¹³⁷ Underpinning these arrangements, often constitutionally entrenched, is the affirmation that difference is to be respected.

“Once a nationality’s language, costume, customs and other important characteristics have disappeared, then the nationality itself has disappeared too.” – 10th Panchen Lama, 1962¹³⁶

Tibetans, on the other hand, have been afforded little space to dictate their own social and economic plans.¹³⁸ Deprived of robust indigenous social institutions and economically marginalized Tibetans feel growing pressure to assimilate. Poverty and disempowerment have caused a social crisis among many Tibetans who are forced to compete with a growing number of settlers and live under an administrative system that promotes the notion of Chinese racial superiority. Several Tibetans interviewed by ICT described an environment that devalues their identity as Tibetans.¹³⁹

LANGUAGE

Language will become more vulnerable to displacement, especially in major population nodes and industrial centers where it is affected by a combination of institutional neglect, racism and the influence of Chinese commercial expansion. These related factors are by-products of, as well as precursors to, migration. Without institutional incentives to maintain Tibetan as the working language, a critical mass of settlers can quickly introduce linguistic competition in key areas. Preventing regression of the Tibetan language will be difficult, because the larger political and economic systems strongly assail cultural variations outside of the Chinese model, particularly linguistic ones.

Where migrants consolidate power, strengthening linkage points with China, even more migrants will be encouraged to come, reinforcing a segregated flow of economic activity that promotes uniformity in communication. This is likely to be most pronounced in the dozens of new towns that may be created. Most of them will spontaneously arise along transportation access points connected to the railway.¹⁴⁰

Certain programmatic measures have been passed in the TAR to promote Tibetan language education, but according to TIN, these were either withdrawn or never implemented.¹⁴¹ Meanwhile, the National People's Congress recently passed a language law aimed at, among other things, benefiting "national unity and unity of the nationalities." It states that, "local governments and other relevant organs at all levels must adopt measures to popularize *putonghua* and to promote standard Han characters."¹⁴²

NOMADS

From the 1950s onwards, the Chinese authorities have implemented ambitious plans to reconstitute Tibet's pastoral/nomadic economy into an agrarian one. Mechanized farming was introduced, herd sizes grew, and new crops were substituted for traditional ones. This plan emphasized growth over sustainability and did not take into account established cultural norms.

Changing patterns of economic activity and land use that will result from the construction of the railway are likely to dramatically affect traditional lifestyles and livelihoods.

Few groups will be subject to more potential hardship from this policy than Tibetan nomads. Often labeled backwards or uncivilized, their methods of herding and stewardship of the land are sophisticated and centuries old. By using mixed herds and seasonally demarcated pasturelands, the nomads have traditionally been able to respond to changing ecological conditions without compromising the stability of the rangelands. Degradation of this ecosystem arising from encroaching populations and fencing of pastures will affect nomads disproportionately.¹⁴³ As a renewable resource, they depend on rangelands for the health of their livestock, a source of their livelihood and way of life.

ERODING POTENTIAL FOR SELF-GOVERNMENT

"Regional autonomy" under article 4 of the Constitution is accorded to "minority nationalities" who live in "compact communities," but no provision is made for the loss of such compactness resulting from demographic change. By putting in place policies that facilitate settlement, the Chinese government can undermine this compactness and lay the foundation to justify a subsequent revocation of autonomous status at a politically convenient time.

Legally, neither the Tibet Autonomous Region nor the other autonomous areas enjoy any protective guarantees against dissolution. Article 14 of the Law on Regional National Autonomy (LRNA) simply states that demarcation lines of all "national autonomous areas" can be merged, withdrawn or changed "if it is really necessary."¹⁴⁴ That determination, whether deemed necessary or otherwise, rests with the State Council, which has the power to "approve the establishment and geographic division of autonomous prefectures, counties, autonomous counties and cities" under article 89 of the Constitution.¹⁴⁵

If Tibetans cease to retain their majority status over significant contiguous areas without guarantees of collective rights or fixed representation, even fundamental political reforms may fail to deliver a workable framework of genuine autonomy.

A rail line will facilitate quicker and cheaper transport for the Chinese military, which until now has maintained long supply lines by road for food and supplies for tens of thousands of soldiers in the TAR.



STRATEGIC & MILITARY SIGNIFICANCE OF THE RAILWAY

Part of China's calculation for building the railway across Tibet is its military importance. During periods of conflict, railroads became critical elements of China's wartime logistics architecture, providing mass transit for troops and supplies. Lines that were outside of Japanese control in WWII were used almost exclusively to carry freight or passengers related to wartime activities. Pitched battles were also fought over control of the railway system during the civil war, which has been cited as a decisive factor in the Communist victory over the Nationalists.¹⁴⁶

In Tibet, where overland supply lines are constrained by the rugged terrain, reliable transport of troops and supplies cannot be easily maintained. As a result, the number, location, and size of military installations have been circumscribed. Difficulties in restocking food supplies and goods for personnel would be addressed by the railway, allowing for higher levels of sustained troop concentration on the Plateau. A railway's high load capacity and all-weather capability would also greatly ease the delivery of heavy armaments such as field artillery and missiles as well as heavy machinery for construction.

POSTURING IN SOUTH ASIA

In 2001, Jane's Intelligence Digest reported that "the PLA considers it necessary to build up a network of roads and mule tracks to bring military hardware and troops to the forward areas of the disputed border [with India]."¹⁴⁷ Part of that effort, according to Vijai Nair, includes the build-up of intelligence gathering stations along the border and the possibility of mobile nuclear missile deployment. Nair also cites the construction of major airbases in Tibet and acquisition of mid-air refueling technology, allowing China "for the first time, to execute combat operations over the Indian Himalayas."¹⁴⁹

The result of a rail-enabled logistics architecture will be a heightened militarization of the Tibetan Plateau. Thus far, much of the military apparatus there has been focused on keeping the political aspirations and expressions of national sentiment of the Tibetan people in check, but a railway could facilitate a strategic build-up with regional implications for South Asia. Feeder lines or access roads could service army bases and airfields along the Indian border, hundreds of kilometers from the trunk line. Indeed, the *Qinghai Daily* described the railway as "the political [front] line" in "consolidating the south-western border of the motherland."¹⁴⁹ "With even a single line," writes defense expert William Triplett, "the PLA could move about 12 infantry divisions to central Tibet in 30 days to meet up with their pre-positioned equipment."¹⁵⁰

While there are outwards signs of improved relations between Beijing and New Delhi, including recent dialogues on trade and anti-terrorism, ever since China's invasion of Tibet, relations between the two countries have been uneasy. A week before India conducted a nuclear test in May 1998, India's Minister of Defense called China "potential threat number one." He also cited "mistakes in the early 1950s," in an ostensible reference to India's handling of Tibet's plight during the first years of occupation.¹⁵¹ By 1962, three years after the Tibetan National Uprising, open conflict broke out between the two Asian giants over boundary issues dating back to the Simla Conference of 1914.¹⁵² By the time hostilities ceased, China had annexed some 40,000 km² (15,444 mi²) at Aksai Chin in Kashmir. Today, it continues to claim to another 90,000 km² (34,749 mi²) along the Indian state of Arunachal Pradesh, a region with vast timber resources across from the Burmese border.

NUCLEAR MISSILES

China maintains a number of its estimated 128 to 168 land-based nuclear missiles on or near the Xining-Gormo Railway.¹⁵³ Several DF-4 missiles with a range of 4,750 km (2,970 mi) are positioned in Tsaidam che (Ch: Da Qaidam), Terlenkha, and Tsaidam chung (Ch: Xiao Qaidam).¹⁵⁴ Along the eastern segment of the rail corridor, missile launch brigades have been established in Datong, Wulan, and Xining.¹⁵⁵ These missile sites and their support units could be relocated to central Tibet once tracks are laid from Gormo to Lhasa. New deployments of the longer range DF-31 or DF-41 missiles and quicker mobilization of tactical nuclear weapons to the region may also have been considered as part of the railway's strategic value.¹⁵⁶

At the moment, moving heavy armaments through the region by road is a risky undertaking. Poor surface conditions, low capacity bridges, and traffic congestion make missile transport and other equipment exceedingly difficult. A railway to Lhasa is not likely to suffer from any of these constraints. Moreover, railway transport of missiles is common. Across from Taiwan in China's coastal provinces for example, "rail is the normal way of moving launchers and missiles."¹⁵⁷

Since the collapse of the Soviet Union, Chinese fears of a nuclear exchange with Russia have receded, but other anxieties have filled the void. The prospect of American and regional missile defense systems and the ongoing rift with Taiwan are fuelling tension. Nuclear testing by India and friction on the Korean peninsula are also contributing to a heightened perception of nuclear vulnerability. To address the concern, China is expected to earmark significant amounts of its rising defense budget for strengthening its nuclear forces.¹⁵⁸

Chinese military planners have been exploring a doctrinal strategy that would preserve the deterrent value of its strategic forces ever since the days of Ronald Reagan's Strategic Defense Initiative (SDI or Star Wars). Moving away from the 'minimum deterrence' strategy of a 'no first-use' policy, the concept of 'limited deterrence' has emerged. It provides for "the ability to respond to any level of nuclear attack," whether tactical or strategic, which puts a premium on survivability of its nuclear forces.¹⁵⁹

Mobile delivery systems would be one means of reducing the vulnerability of China's arsenal from a crippling first strike. It would also preserve a powerful counterstrike capability. To that end, China has reportedly completed development of a rail mobile version of the DF-31 ICBM, similar to the Ukrainian built SS-24s, and may shift focus away from road launch vehicles.¹⁶⁰ If deployed in the west, missiles could be moved up and down the Xining-Lhasa line and concealed in tunnels throughout the mountainous terrain, away from populated eastern areas. In addition to presenting a moving target to military adversaries, launches could be made at any point along the 1,987 km (1,325 mi) of track, within striking range of targets as far away as the United States.¹⁶¹

NOTES

- 1 Xining-Lhasa railway refers to the fact that the extension of the railway from Gormo to Lhasa was a long-planned extension from Xining. See Chapter 1.
- 2 Anonymous, interview by ICT, February 2003, Lhasa, Tibet.
- 3 From a published statement made by Kalon T.C. Tethong, Minister, Department of Information and International Relations, Central Tibetan Administration, 15 May 2001.
- 4 Mao, for example, referred to the Red Army's pillaging of Tibetan areas in Kham and Amdo during the Long March of 1935 as China's "only foreign debt." See Edgar Snow's *Red Star Over China* (New York: Grove Press, 1973), 203. Under the Qing Dynasty, which reached the height of its influence in Tibet during the 1700s, an imperial official known as the Amban was made responsible for the administration of Tibet. The Amban's oversight came to an effective end in 1847, and as the International Commission of Jurists states, "Tibet's position on the expulsion of the Chinese in 1912 can be fairly described as one of de facto independence." See ICJ, *The Question of Tibet and the Rule of Law* (Geneva: ICJ, 1997), 85.
- 5 For an account of these years see Tsering Shakya, *The Dragon in the Land of Snows* (New York: Columbia University Press, 1999), and Melvyn Goldstein, *A History of Modern Tibet* (London, Berkeley, and Los Angeles: University of California Press, 1989).
- 6 The figure refers to highways in operation as of 2000.
- 7 The average static load of a coal bearing train, for example was 61.1 metric tons in 2000, while a petroleum bearing car held 49.8 tons. *China Statistical Yearbook 2001*, 521. For a discussion of train capacity see E.P. Anderson, "Overcoming capacity constraints on Chinese railways" (Washington, D.C.: Transportation, Water and Urban Development Department, World Bank, November 1993).
- 8 A typical long distance passenger train has 18 cars with the following capacities: 11 coach cars seating 110-128, one or two dining cars, three to four hard sleeper for 66 people, and two soft sleeper cars with 32 places.
- 9 *People's Daily*, "Construction of Tibetan railway well under way," 8 November 2001.
- 10 Louis S. Thompson, "The Evolving Railway System in China," *Railway Gazette International*, (February 2003), 95. The railway share of all passenger travel, excluding air travel, in passenger-km was 36% in 2000.
- 11 Asian Development Bank, *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the PRC for the Ganzhou-Longyuan Railway Project*. (September 2001), 3.
- 12 Freight traffic from civil aviation remains relatively low, however, reaching 0.6 percent of the total in 2000. Statistics were drawn from the *Tibet Statistical Yearbook 2001*. China Southwest Airlines has increased its passenger travel to the TAR by 20 percent annually over the last several years. Ninety percent of passengers are tourists, three quarters from China. "Tibet becomes one of China's busiest traffic hubs," *People's Daily*, 21 September 2002.
- 13 See note 9 in Chapter 1 for a brief comment on Amdo.
- 14 David Goodman, "Qinghai and the Emergence of the West: Nationalities, Communal Interaction and National Integration" (paper presented at the Institute for International Studies Annual Workshop, Lake Macquarie, December 2002), 7. Not far from Xining, in the Haidong Prefecture, the 14th Dalai Lama was born in the village of Takste, which has already lost most of its cultural distinctiveness as a Tibetan area.
- 15 In the latest expression of ethnic tension, Hui and Tibetans clashed in Amdo in February 2003. See Oliver August, "China tries to quell ethnic strife near Tibet," *The Times*, 24 February 2003.
- 16 Clarke, Graham E., "The Movement of Population to the West of China: Tibet and Qinghai," in *Migration: The Asian Experience*, ed. by Judith M. Brown and Rosemary Foot (New York: St-Martin's Press, 1994), 236.
- 17 Sangjiejia, ed., *Qinghai baike quanshu [Qinghai Encyclopedia]* (Beijing, 1998), 42.
- 18 For the Qinghai population target see Chen Yunfeng, *Dangdai Zhongguode Qinghai* [Contemporary China's Qinghai] 1 (Beijing, 1991), 85, as cited in David Goodwin, "Qinghai and the emergence of the West," 11. For the Directive on Work in Tibet see Tibet Information Network, *Great Leap West*, 28.
- 19 Ma Bufang created a small colony at Terlenkha (Delingha) in 1929, but it was not until 1954 that large scale organization of a labor camp was undertaken by the Laogai Bureau and PLA. Marshall and Cooke characterize its "purely colonial installation" as "the rawest form of Chinese subsumption in Tibetan areas" in *Tibet Outside the TAR*, 1848.
- 20 *Ibid.*, 1862.
- 21 United States Embassy (Beijing), "Environmental Conditions in Tibet," in *Environment, Science & Technology* Section (December 2001) retrieved from www.usembassy-china.org.cn/english/sandt/Railway-Lhasa.htm.
- 22 Marshall and Cooke, *Tibet Outside of the TAR*, 1863.
- 23 www.china.org.cn/e-xibu/2JI/3JI/qinghai/qing-ban.htm.
- 24 From the *Beijing Review*, 20 August 2001, as cited from the China Internet Information Center retrieved from <http://www.china.org.cn/english/2001/Aug/17751.htm>. Goods are transported along the 2,122 km "Qinghai-Tibet highway" which stretches from Xining to Lhasa.
- 25 Tsonub Prefecture, called Haixi by the Chinese. For a description of demographic restructuring in Qinghai, see Tibet Information Network, "The Politics of Population Transfer: An Ethnographic and Historical Survey of Haidong and Haixi," TIN Special Report, 29 October 1999.
- 26 The Hui are Chinese Muslims who live primarily in the Ningxia, southern Gansu and parts of Inner Mongolia. They are among China's officially designated minorities, but aside from religious identity, they speak Chinese are generally not considered an ethnically distinct group.
- 27 *Qinghai Statistical Yearbook 2000* (Beijing: China Statistics Press, 2001), 43. The actual proportion of Tibetans in the prefecture, like all areas in Tibet, is even lower due to the presence of unregistered migrants and military personnel who are not counted among the records. See note 1, Chapter 1, for an explanation of Gormo Shi.
- 28 Haidong and Xining are the two sub-provincial areas in Qinghai not designated as autonomous.
- 29 Xining District's 2000 population numbered 1,979,200 while Haidong prefecture had a population of 1,520,074 out of a provincial total of 5,181,560. These areas constituted 2.8% of Qinghai Province's total area.
- 30 Huangnan (66% Tibetan), Hainan (61% Tibetan), Golog (91% Tibetan), and Yushu (97% Tibetan) prefectures. *Qinghai Statistical Yearbook 2001*, 44.
- 31 See note 19 in Chapter 2 for a description of Tibet's regions.
- 32 Creation of the *Preparatory Committee for the eventual establishment of the Autonomous Region of Tibet* (PCART) in 1955 acknowledged the distinct political identity of central Tibet, but not of Kham and Amdo. The acknowledgment factored into the decision to postpone implementation of nationalities policies that had been imposed in other "minority" regions like Xinjiang and Mongolia. PCART existed in parallel with the Government of Tibet until the latter was abolished in 1959 but both bodies were subservient to the Chinese military administrators. The evolution of Chinese control over Tibetan polity is described in Tsering Shakya, *The Dragon in the Land of Snows: A History of Modern Tibet since 1947* (New York: Columbia University Press, 1999).
- 33 Rong Ma, "Economic patterns, migration, and ethnic relationships in the Tibet Autonomous Region, China," 66.

- 34 Officially, the Chinese presence peaked in 1980 at 122,356 before CCP Secretary Hu Yaobang's visit to the TAR. Since then, government figures record a steady decline: 81,217 in 1990, and 75,122 in 2000. Not only do the more recent figures grossly understate the actual Chinese presence (see box 2), but they contradict unmistakable trends in demography that have been apparent to even casual observers for almost two decades.
- 35 The first part is based on a person's place of permanent residence, commonly divided into urban and rural. Depending on the locality, the urban/rural classification governs eligibility for certain types of employment, business transactions, and other activities. The second part of the *hukou* classified people into agricultural and non-agricultural status-holders qualifying the latter holder for state-subsidized grain and other privileges. For a good overview of the complex workings of the *hukou* see Kam Wing Chan and Li Zhang, "The Hukou system and rural-urban migration in China: processes and changes," *The China Quarterly* 9, no. 1 (1999).
- 36 Quotas are imposed largely by the State Council and State Planning Commission. While numbers of people eligible for conversion to a non-agricultural *hukou* have risen, the quota ceiling has not kept pace. Therefore, there are many more applicants than there are spaces available for conversion. In the event of denial, there were other options. Certificates of temporary residence, blue-stamp urban *hukou*, and *hukou* for small cities and towns were created as lesser substitutes.
- 37 Clarke, "The Movement of Population to the West of China: Tibet and Qinghai," 245.
- 38 *Ibid.*, 237.
- 39 *Tibet Radio*, February 3, 1994, as cited by *Cutting off the Serpent's Head*, 23.
- 40 *People's Daily*, "Flexible Residence Registration Policy Introduced to Help Develop West," 14 July 2000.
- 41 For example, Ma Rong surveyed a number of Tibetan and Han cadres and intellectuals in June–September 1988. *Supra* note 125, 63.
- 42 Chinese migrants told an ICT human rights monitor in Lhasa in 2002 and 2003 on a number of occasions that they didn't like living with "the dirty Tibetans." However, it is difficult to conclude to what extent racial prejudice has deterred migrants from settling in Tibet, given their ability in many places to segregate themselves into existing Chinese communities.
- 43 Hu Yaobang believed that Tibetans should be given a commanding role in governing their own affairs. After a highly critical assessment of the work of Chinese cadres in the TAR, he ordered the withdrawal of thousands of Chinese cadres following his 1980 visit to Lhasa. See Wang Yao, "Hu Yaobang's visit to Tibet, May 22–31, 1980," in Robert Barnett, ed., *Resistance and Reform in Tibet* (London: Hurst & Company, 1994), 288.
- 44 An exiled Tibetan and former high school teacher in Qinghai who graduated from the Qinghai Teachers University in the 1990s told ICT of three "graduating student mobilization meetings" (*bi ye dong yaun da hui*) he attended. In each one, he said school administrators urged students to "pay back the motherland by going to the country-side, especially minority areas." Anonymous, interview by ICT, March 2003, Washington, D.C.
- 45 *China Statistical Yearbook 2002*, 331.
- 46 Kam Wing Chan and Li Zhang, "The Hukou system and rural-urban migration in China: process and changes," 64.
- 47 On the expenditure side 42 percent of the TAR government disbursements were used for administration and capital construction projects. See Tibet Statistical Bureau, *Tibet Statistical Yearbook 2001*, 106.
- 48 Vice Minister of Personnel, "Human Resources Development Goal for Western China," retrieved from www.china.org/cn/english/5596.htm. The UNDP has agreed to provide training and US \$1 million in assistance from 2002–2004. The Asian Development Bank incorporated human resource development into its country program for China in 2001 and agreed to provide US \$1 million for technical assistance in support of the Western Development Strategy.
- 49 According to the 2000 census, 83.3 million people live in Sichuan, China's fourth most populous province. Most live in the non-Tibetan eastern half at the foot of the Tibetan Plateau.
- 50 For a thorough overview of factors influencing the development of China's cities see Anthony Gar-Oh Yeh and Fulong Wu, "Internal Structure of Chinese Cities in the Midst of Economic Reform," *Urban Geography* 16 (Aug–Sept, 1995). Major centers like Beijing and Shanghai have undergone tremendous development, generating significant wealth for its residents while cash-starved peasants in the hinterland continue to toil in poverty.
- 51 Xueqiang Xu, Nanjiang Ouyang, and Chunshan Zhou, "The Changing Urban System of China: New Developments Since 1978," *Urban Geography* 16 (Aug–Sept, 1995): 495. Floating populations refer to non-local, non-registered populations.
- 52 Elizabeth Economy, statement before the U.S. Congressional-Executive Commission on China, *China's Environmental Challenge: Political, Social and Economic Implications*, 108th Cong., 1st sess., 27 January 2003.
- 53 *China Daily*, 10 March 2003.
- 54 As cited by David Lague, "The Human Tide Sweeps Into Cities," *Far Eastern Economic Review*, 9 January 2003.
- 55 Jeremy Page, "China's Railway to Tibet Erodes Nomadic Life," *Reuters*, 23 August 2002. A *People's Daily* report also describes "queues of people" lined up at the Chengdu bus terminal hoping to find jobs in the railway's construction. See "Rural Laborers Flow Westward," 16 February 2001.
- 56 On December 3, 2002, *Xinhua* reported 10,000 workers. A November 2002 *China Today* article puts the number at 20,000.
- 57 *People's Daily*, "Mineral Resource Found Along Qinghai-Tibet Railway," 8 January 2002.
- 58 The difficulties posed by limited transport infrastructure were cited in an internal TAR document published sometime after the Third Tibet Work Forum in 1994. It noted that "many mines are far from trunk highways," and "transport costs are too high and so the mining products lack competitiveness." Taken from *Xizang Zizhiqu Guota Zhuanti Guibua (1996–2020)* [*Tibet Autonomous Region National Land Specialist Plan (1996–2020)*] as cited in Tibet Information Network, *Mining Tibet* (London: TIN, 2002), 41.
- 59 In comparison, there were only 3,250 tourists in 1980. *Xinhua*, "Tibet braces for peak tourist season in May," 9 April 2003.
- 60 *Xinhua*, "Tibet's tourism industry aims high," 5 December 2002.
- 61 Cai Fang, "Economic Reasons for Migration, the Organization of the Labor Force and the Selection of Jobs," *Social Sciences in China* (Spring 1998): 77–84.
- 62 Zhang Zhiliang, et al., "The mode of immigrant settlement in the "help the poor" program," *Chinese Journal of Population Sciences* 9, no. 4 (1997): 312.
- 63 Cai Fang, "Economic Reasons for Migration, the Organization of the Labor Force and the Selection of Jobs," *Social Sciences in China* (Spring 1998): 77–84.
- 64 Jeremy Page, "China's railway to Tibet erodes nomadic life," *Reuters* 22 August 2002.
- 65 Rong Ma, "Economic patterns, migration, and ethnic relationships in the Tibet Autonomous Region, China," 55.
- 66 *Tibet Statistical Yearbook 2001*, 247. Despite increases in agricultural efficiency in recent years, grains such as rice and wheat, staples of the Chinese diet, do not grow well at high altitude and must still be trucked in.
- 67 An ICMOD study called the TAR's food security "low." ICMOD, *Making Tibet Food Secure: Assessment of Scenarios* (Kathmandu, Nepal: ICMOD, 2002).
- 68 U.S. Central Intelligence Agency, *The Integration of Tibet: China's Progress and Problems*, [1976].
- 69 "The Qinghai-Tibet Railway: an engineering miracle," *China Today Special Report*, November 2002.

- 70 Coal shipments in 2000 comprised some 41.4 percent of all rail freight in the country. *China Statistical Yearbook 2001*, 520.
- 71 As reported in Tibet Information Network, “Dramatic transformation of Lhasa planned; new railway station announced,” 13 June 2001.
- 72 Lhasa Municipality includes Tolung Dechen County, Lhasa City, and five other counties.
- 73 International Commission of Jurists, *Tibet: Human Rights and the Rule of Law*, 101.
- 74 Tibet Heritage Fund, *The Old City of Lhasa: Report From a Conservation Project* (Berlin: Tibet Heritage Fund, 1998).
- 75 Jin Shixu, vice president of the Commission for Planning and Development in the TAR speaking to reporters from AFP, Reuters, and others in Lhasa. See Boris Cambreleng, “Half of Lhasa’s Population are Chinese Immigrants,” *Agence France Press*, 7 August 2002. According to the *Tibet Statistical Yearbook 2001*, Lhasa’s urban population was 141,360 in 2000, while it reached 403,752 for the larger municipal area.
- 76 Lu Zhi, *Biodiversity Conservation in Tibet: A WWF Report*, (September 2001).
- 77 The Central Tibetan Administration (Tibetan government-in-exile) in India released *Guidelines for International Development Projects and Sustainable Development in Tibet in Exile* in 2000.
- 78 Outside the zone, in the humid monsoon swept forests in southwestern Tibetan areas in Sichuan and bordering counties of the TAR, up to 5,000 mm of precipitation may fall. Meanwhile, in the arid northwest, less than 50 mm may reach the ground.
- 79 To cope with the challenge of permafrost, the depth of both the rail-bed excavation and subsequent embankment build-up will probably be exceptional. Jia Jianhua, et al. “Choice and Construction Technology of Foundation Types for Railway Building in Permafrost Regions, Qinghai-Xizang Plateau,” 183.
- 80 For an enumeration of generalized risks associated with railway construction see European Commission, “Towards Sustainable Economic and Development Co-operation,” *Environmental Integration Manual: Sector Guide - Railways-*, (October 2000), 1096.
- 81 Physical impacts caused by vehicle traffic can have decades-long effects on plant communities. Forbes, “Cumulative impacts of vehicle traffic on high arctic tundra: soil temperature, plant biomass, species richness and mineral nutrition,” *Nordicana* 57 (1998): 269-274. Airborne particulate from road traffic and construction has also been found to affect large areas of tundra along the corridor. B.C. Forbes, “Tundra disturbance studies. III: short term effects of Aeolian sand and dust, Yamal Region, Northwest Siberia, Russia,” *Environmental Conservation* 22 (1995): 335-344.
- 82 Disruption in soil created a feedback loop whereby soil dehydration led to plant cover loss and desertification. Cheng Guodong, State Key Laboratory of Frozen Soil Engineering, Lanzhou, “Interaction between Qinghai-Tibet Railway Engineering and Permafrost and Environmental Effects,” January 2001, citing Zhou Youwu, Qiu Guoqing and Gao Dongzhi in “China’s Frozen Soil” (Beijing Science Publishing House, Beijing, 2000). Grassland classification can be made according to vegetation type and climate. See for example, the class categories used in *The Atlas of Population, Environment and Sustainable Development of China*. Beijing: Science Press, 2000, 135.
- 83 Tony Allison, “High hopes for railway on the roof of the world,” *Asia Times Online*, 23 March 2001.
- 84 Shenfu Cai, “Engineering Environment and Construction Targets of Qinghai-Tibet Railway,” 57.
- 85 References to a number of studies are cited in Scott Jackson, “Overview of transportation impacts on wildlife movement and populations,” (paper presented at the 7th Annual Meeting of the Wildlife Society, Nashville, Tennessee, September 16-19, 2000).
- 86 For example, fencing along the Xining-Gormo line may have distressed the wildlife in the region, but no study to assess the impacts is known to have been undertaken. Dr. Robert Hoffman, Smithsonian Institute, interview by ICT, January 2003, Washington, D.C.
- 87 For a comparative charting by province see *The Atlas of Population, Environment and Sustainable Development of China*, (Beijing: Science Press, 2000), 220.
- 88 Lake Kokonor is Tibet’s largest lake. *Xinhua*, 26 March 1998.
- 89 World Bank, “Environmental Summary and Evaluation,” *China: Western Poverty Reduction Project*, no. 269 (October 31, 1998), 3.
- 90 See Zhang Zhiliang et al. “The push-pull theory of migration and its application,” 255. Dee Mack Williams discusses the dichotomy of perception towards grassland ecology between Han and Mongol in *Beyond Great Walls*.
- 91 In the Northeast part of China, organic soil content has been reduced to 1-2 percent, according to the *Atlas of Population, Environment and Sustainable Development of China*, Beijing: Science Press, 2000, 112.
- 92 See *China Human Development Report 2002: Making Green Development a Choice* (United Nations Development Programme) 21. It states that official accounts put “more than 85 percent of the poverty-ridden counties are located in serious land erosion regions,” 21.
- 93 B.C. Forbes, “Tundra disturbance studies. III,” 335-344. Some tundra damaged by a few seasons of anthropogenic impacts can require hundreds of years to rebuild. B.E. Willard and J.W. Marr, “Recovery of alpine tundra under protection after damage by human activities in the Rocky Mountains of Colorado,” *Biological Conservation* 3, no. 3 (1971): 181-190.
- 94 The figure is cited from CNN Online, “China dynamites dikes upriver to save city of 7 million,” 9 August 1998.
- 95 A Tibetan refugee provided an account of clear-cutting in the town of Thewo, and in parts of Kham. See DIIR, Central Tibetan Administration, *Guidelines for International Development Projects and Sustainable Development in Tibet* (Dharamsala, India: CTA, 2000), 55. The secretary of the Sichuan provincial Party Committee, Xie Shijie, said that “Sichuan has almost lost all its forest reserves as a result of several decades of arbitrary felling. *China Daily*, 24 August 1998, as cited in TIN, “China floods force logging bans in Eastern Tibet,” TIN Update, 26 August 1998.
- 96 Pressure on forest cover by migrants was noted by Li Wenhua, “Forests of the Himalayan-Hengduan Mountains of China and strategies for their sustainable development,” (Kathmandu, Nepal: ICIMOD, 1993), 159.
- 97 Tibet Information Network, *Mining Tibet*, 154.
- 98 The claim made by Yin Fatang, a Communist Party official, is contained in Richard Pascoe, “Uranium-rich Tibet still awaits steam,” *South China Morning Post*, 24 August 1982, as cited in International Campaign for Tibet, *Nuclear Tibet*, (Washington, D.C.: ICT, 1993), 40.
- 99 Supra note 97, 150-153.
- 100 George B. Schaller has surveyed many of the animal species living on the Tibetan Plateau, particularly in the Chang Tang, in several books such as *Wildlife of the Tibetan Steppe* (The University of Chicago Press: Chicago & London, 1998), and *Tibet’s Hidden Wilderness* (Harry N. Abrams: New York, 1997).
- 101 Schaller, *Wildlife of the Tibetan Steppe*, 109.
- 102 G.Q. Cai et al., “Observations of large mammals in the Qaidam Basin and its peripheral mountainous areas in the People’s Republic of China,” *Canadian Journal of Zoology* 68, (1990): 2021-2024 as cited in Richard Harris et al, “Status and trends of Tibetan Plateau mammalian fauna, Yeniugou, China,” *Biological Conservation* 87 (1999): 13.
- 103 *Qinghai Daily*, “Exploring the ‘Corridor of Gold,’” 18 January 1999 as cited in TIN, *Mining Tibet*, 161.
- 104 George Schaller, *Wildlife of the Tibetan Steppe*, 296.
- 105 Local government and Communist Party officials have also been widely reported to sanction illegal hunting expeditions, often engaging directly in the activities themselves. George Schaller described several accounts in the early 1990s in the Chang Tang in *Tibet’s Hidden Wilderness*, New York: Harry Abrams, 1997. One study indicated that localized extinction of Tibetan antelope and other species may occur in Yeniugu valley near Gormo, “should strong market forces continue to produce incentives for non-locals to engage in extensive poaching.” Daniel Miller, et al, *Biological Conservation* 87 (1999): 18.

- 106 Lhasa's Air Pollution Index, as formulated by Chinese authorities, includes sulphur dioxide, nitrous oxides and total suspended particulates, but it does not adjust for the size of particulates, nor the relative percentages of different emissions, both of which can affect the danger of exposure. See United Nations Development Programme, *China Human Development Report 2002*, 27.
- 107 "Qinghai-Tibet Railway to drive economic development in Tibet," *People's Daily*, 3 December 2002.
- 108 A number of reports on road development and poverty reduction have been written, but contemporary treatment of socio-economic impacts related to state-sponsored resettlement and ethnic conflict are often avoided by multilateral development institutions and others as being too political despite the obvious implications of these issues for development and welfare. These studies are still useful, however, when understood in the context in which they are offered. See for example, Christiaan Grootaert, *Socioeconomic Impact Assessment of Rural Roads: Methodology and Questionnaires*, Draft, 28 March 2002, and Colin Gannon et. al, "Transport Infrastructure and Services," chapter 4.2 in *Poverty Reduction Strategy Sourcebook*, vol. 2 (Washington, DC: World Bank, 2001).
- 109 State Council Information Office, *Ecological Improvement and Environmental Protection in Tibet*, White Paper, 10 March 2003.
- 110 Amdo here refers to the region, not the town.
- 111 Anonymous, interview by ICT, March 2003, London, U.K.
- 112 United Nations Development Programme, *China National Human Development Report 2002: Making Green Development a Choice*, 13.
- 113 A study conducted in 16 Tibetan counties by the Chinese National Ministry of Public Health in 1989 concluded that the mortality rate among infants (under one year of age) was 92 per 1,000 as compared with 68 per 1,000 in the rest of the PRC. The continued disparity in mortality rates is confirmed in a separate survey conducted by Dr. Nancy Harris, et. al. in "Nutritional and health status of Tibetan children living at high altitudes," *New England Journal of Medicine* 344, no. 5, (February 2001), as cited in *Delivery and Deficiency: Health & Health care in Tibet* (London: TIN, 2002), 45.
- 114 National Bureau of Statistics of China, *Statistical Yearbook of China 2002* (Beijing: China Statistics Press, 2002), 331, 345.
- 115 Since the 1950s there has been a debate within the field of economics over competing models of economic growth. It is one that pits the conceptualization of economic growth as a linear and/or "neoclassical" process, versus the analysis of the structural linkages that tie and subordinate local economies into a larger network of relationships. This latter perspective sheds light on the concept of structural dualism, as it exists between the have and have-nots among and within nations. For a critique of the various economics of development paradigms and the conception of development as a multidimensional process, see Michael P. Todaro, *Economic Development in the Third World*. 3rd ed. (New York & London: Longman Inc., 1985), 61-91.
- 116 Andrew Fischer, *Poverty by Design: The Economics of Discrimination in Tibet* (Montreal: Canada Tibet Committee, 2002), 12.
- 117 Under the revised Regional National Autonomy Law, Article 65, states that, "The State should adopt measures that give a certain level of compensation to national autonomous areas from which natural resources are exported." Significantly, the language is non-binding in nature, and article 65 is vague, with no discernable standard given.
- 118 According to government officials, China's urban population stood at 36% in 2001 compared to 10% in the TAR.
- 119 Observations from several Tibetan autonomous prefectures were made in 2002 and 2003.
- 120 TIN & Human Rights Watch, *Cutting off the Serpent's Head*, 22.
- 121 Cai Fang, "Economic reasons for migration, the organization of the labor force and the selection of jobs," *Social Sciences in China* (Spring 1998): 77-84.
- 122 *Guanxi* has no English equivalent, but it refers to relationships that carry with them an implied set of obligations and privileges. It exists apart from friendship, but is also more than a crude quid pro quo. See S. H. Park, and Y. Luo, "Guanxi and organizational dynamics: organizational network in Chinese firms," *Strategic Management Journal* 22 (2001): 457.
- 123 *People's Daily*, "Private Businesses Drive Tibet's Economy," 18 November 2002.
- 124 Anonymous, interview by ICT, February 2003, Lhasa, Tibet.
- 125 Anonymous Tibetan government worker, interview by ICT, February, 2003, Lhasa, Tibet.
- 126 Statement by Vice Minister of Personnel, "Human Resources Development Goal for Western China," retrieved from www.china.org.cn/english/5596.htm.
- 127 John Gittings, "A railroad to progress or just another chain to China?" *The Guardian*, 9 February 2002.
- 128 *Xinhuanet*, "Qinghai-Tibet railway to drive economic development in Tibet," 3 December 2002.
- 129 China Radio International, *China Trains First Batch of Technical Staff for Qinghai-Tibet Railway*, September 2002.
- 130 Arthur N. Holcombe's statement before the U.S. Congressional-Executive Commission on China, *Ethnic Minorities in China: Tibetans and Uighurs: Roundtable before the Congressional-Executive Commission on China*, 107th Cong., 2nd sess., 10 June 2002, 9.
- 131 Remarks made by Kerstin Leitner in Beijing at an international aid symposium for the TAR. *Agence France-Presse*, "China should give Tibetans more say in development, culture: UN," 25 June 2002.
- 132 Beijing Office of the People's Government of Tibet Autonomous Region, retrieved from www.tibetguide.com/cn/.
- 133 TCHRD, *Racial Discrimination in Tibet (2000)* (Dharamsala, India: TCHRD 2000).
- 134 Article 36 of the Railway Law directs local governments to support railway construction and to "assist the railway transport enterprise to carry out land requisition for railway construction, to dismantle or move any structures or inhabitants thereon and make due arrangements for them."
- 135 Tibet Information Network, "Dramatic transformation of Lhasa planned; new railway station announced."
- 136 The 10th Panchen Lama's petition to Mao was one the boldest critiques of China's Tibet policy ever delivered by a Party insider. For his efforts, he spent 14 years in detention, almost 10 years in a Beijing prison. See Tibet Information Network, *A Poisoned Arrow: The secret Report of the 10th Panchen Lama* (TIN: London, 1997), 70.
- 137 For example, in Canada existing treaty rights with aboriginal peoples, including title to land, are constitutionally protected. Collective rights to federal government services and education for minority communities are also guaranteed. Similar collective rights and genuine autonomy have been given to the Basques in Spain.
- 138 See Chapter 2, for an analysis of this exclusion.
- 139 Roundtable Discussion involving Tibetans raised under Chinese rule and educated under the Chinese educational system. Sponsored by ICT, 5 December 1998, Washington, D.C.
- 140 The People's Daily states that "nearly 120" new towns have been built just in the TAR during the last several years. "120 Satellite Towns Built in Tibet," *People's Daily*, 17 October 2000. The reference, however, may also reflect the reclassification of rural townships into urban townships between 1998 and 1999.
- 141 Tibet Information Network, "Tibet Autonomous Region's Regulations on Tibetan Language unlikely to stop the growing influence of Chinese," News Updates, 30 January 2003.
- 142 Law on the Common National Language passed on October 31, 2000, effective January 1, 2001. *Putonghua* refers to the 'standard' Chinese language, Mandarin.
- 143 See Daniel Miller, "The Importance of China's Nomads," *Rangelands* 24, no. 1 (2002): 22-24.
- 144 *Law of the People's Republic of China on the Autonomy of Minority Nationality Regions*, 6th National People's Congress, 2nd sess. (1 October

- 1984), as amended by the 9th National People's Congress, 20th Meeting of the Standing Committee (28 February 2001). Under article 2 of the LNRA and article 30 of the Constitution, national autonomous areas refers to autonomous regions such as the TAR, autonomous prefectures, and autonomous counties.
- 145 The State Council is the primary executive body of the People's Republic of China, headed by the Premier.
- 146 Leung Chi-Keung in "Railway Patterns and National Goals," 94, argues that control of the railway system, more than control of the territories, cities, or population was in fact the decisive factor in the civil war's outcome. He cites June 1949 as the turning point in the Communists' favor. At the time, the Communists held only a third of the territory, but the government had lost more than 80 percent of the railway system.
- 147 Jane's Intelligence Digest, "Tensions on Indo-Chinese border," 3 November 2000. The report also notes that more than a hundred incursions "at various levels of severity" by PLA troops have occurred into Ladakh and Arunachal Pradesh in the previous two-and-a-half years.
- 148 Vijai K. Nair, "The Chinese Threat: an Indian Perspective," *China Brief* 1 no. 9 (November 8, 2001).
- 149 As cited in Tibet Information Network's News Updates, "Route Proposed for Qinghai-Tibet Railway," 24 December 1998.
- 150 William C. Triplett, II, "The Dragon in the Indian Ocean," *China Brief* 3 no. 4, (February 25, 2003).
- 151 AFP 18 May 1998. India conducted a series of five nuclear tests May 1998, prompting Pakistan to respond with six detonations of its own.
- 152 Negotiations between Tibet, Britain, and China at the Simla Convention focused on border issues and the status of Tibet. Although China later repudiated the agreement, Britain and Tibet jointly agreed to be bound to its provisions, and included an agreement defining the Indo-Tibetan border, known as the McMahon line. See Warren Smith, *Tibetan Nation: A History of Tibetan Nationalism and Sino-Tibetan Relations* (Westview Press: Boulder, 1996), 200-202.
- 153 The International Institute for Strategic Studies puts the number of nuclear missiles at 128 in *The Military Balance: 2002, 2003* (London: Oxford University Press, 2002), 222. Meanwhile, higher estimates have been published by the Monterey Institute Center for Nonproliferation Studies from a compilation of sources. See www.nti.org/db/china/wdeptdat.htm.
- 154 According to a report by Robert S. Norris and William M. Arkin in "Nuclear Notebook", *Bulletin of the Atomic Scientists* 55, no. 4 (May/June 1999). A DF-4 is known as a CSS-3 under NATO designation.
- 155 The 809th Launch Brigade in Datong, and 812th Launch Brigade in Wulan are part of Base 56 in Xining. These brigades are part of the Second Artillery Corps which constitutes China's strategic nuclear forces. *Directory of People's Republic of China Military Personalities* (Hong Kong: Defense Liaison Office, U.S. Consulate General, November 2002), 68.
- 156 China is reported to possess some 182 non-strategic nuclear weapons delivered by aircraft, short range surface-to-surface missiles, artillery shells, and low yield bombs. Supra note 242, 222.
- 157 According to an unpublished statement made in 2002 by a leading U.S. Air Force China specialist.
- 158 Agence France Presse, "Analysts Tell AFP PRC Defense Budget Increase Earmarked for Developing Missiles," 7 March 2003.
- 159 Paul H.B. Godwin, "China's nuclear forces: an assessment," *Current History* 98, no. 629 (September 1999): 262.
- 160 The Kanwa Information Center, "China Starts Mobile Deployment of DF 31," 10 March 2003. Earlier, a January 1, 2002 Jane's Intelligence Review article said that China was reportedly developing a rail launched DF 31. The Soviet Union built the SS-24 rail missile systems in the late 1980s that can launch from an erector raised through a sliding car roof. Russia is scheduled to maintain its fleet on active duty until 2006. See Federation of American Scientists, "RT-23/SS-24 Scalpel," retrieved from www.fas.org/nuke/guide/russia/icbm/rt-23.htm. See also Moscow RenTV "Russian TV shows missile-carrying trains saved by Putin," translated by FBIS, 17 November 2002.
- 161 The DF-31 has a reported range of 8,000 km and could be fired over the North Pole.

CONCLUSION

Information gathered for this report indicates that the decision to build and maintain the Gormo-Lhasa railway was based primarily on political and military considerations rather than economic ones. Tibet's small population and limited demand for inter-regional transit, unless they were to grow dramatically, are not sufficient to justify the official estimate of US \$3.2 billion for the railway's construction as well as its substantial operational costs.

As the construction costs are borne by the Chinese government, the railway could be of significant benefit to Tibetans under the right conditions. Railways are essentially a neutral technology capable of benefiting, subjugating or even ignoring surrounding populations. In themselves, railways do not necessarily cause migration, exploitation of natural resources or significant cultural impacts. It is, therefore, political and economic forces that determine the impacts of railways – particularly in remote areas where transport is otherwise limited.

During the 19th and 20th centuries, many governments built railways in their territories or colonies for reasons that had less to do with providing improved transportation infrastructure for their subjects than extending political control and facilitating economic exploitation.

The planning and first phase of construction of the Gormo-Lhasa railway has instilled little confidence that it will differ significantly from many of the railways built by colonial powers. Lack of meaningful consultation with the Tibetan populace, an atmosphere of fear surrounding dissenting opinions, the predominance of military usage of transportation arteries, and the need to deliver supplies to a growing settler population all indicate that this railway is primarily meant to facilitate the Chinese occupation of Tibet.

Moreover, two other considerations belie the exploitative nature of this project. The first is that Beijing is willing to spend US \$3.2 billion or more on a project that will primarily benefit the Chinese migrant population, the military, and natural resource extraction industries, while broad sections of the Tibetan population continue to live in poverty. The second is that Beijing refuses to acknowledge the validity of the Tibetan people's greatest concern about

this railway: the looming danger of significantly increased Chinese population influx.

While the railway's construction could significantly increase resource extraction from the Tibetan Plateau with little or no benefit to Tibetans, this study finds that Tibetans are far more concerned about Chinese influx than the environmental implications of the railway.

Without changes in policy, the current pattern of growth and development will accelerate, increasing dominance by Chinese settlers in the modern urban economy and widening the economic disparity between Tibetans and Chinese. Ultimately, the influx of migrants and economic integration with China is likely to dilute the distinct Tibetan culture and result in a level of assimilation similar to that found in Inner Mongolia.

There is little doubt that the railway's construction enjoys widespread support among the Chinese civilian and military population in Tibet and would bring considerable benefit to them. The Chinese settler and migrant populations in Tibet rely much more on imported foods, products, and materials from China than do Tibetans.

Tibetans face questions of serious and long-term consequence regarding the railway that are not easy to answer and will continue to spark debate in sectors of Tibetan society. Many Tibetans support better transportation facilities within Tibet and believe that their own government prior to 1959 neglected transportation infrastructure. However, Tibetans know that the trade off for this significant infrastructure development is a significant increase in Chinese settlers and military.

Under the current policy framework, the railway's construction is premature, especially given the needs of the Tibetan people in areas such as healthcare and education where funds would be better spent.

ICT believes that this railway, if constructed and operated to suit China's priorities of political integration and economic exploitation, is likely to create negative impacts that substantially outweigh any benefits provided to the overall Tibetan population.



RECOMMENDATIONS

FOR THE GOVERNMENT OF THE PEOPLE'S REPUBLIC OF CHINA:

As a condition for proceeding with the construction and operation of the Gormo-Lhasa railway, the Government of the People's Republic of China (PRC) should first ensure that the following measures are implemented:

1. Significant measures must be taken to stem the influx of non-Tibetans into Tibet¹

- Migration and settlement of non-Tibetans in all Tibetan areas should be restricted by a combination of legal, economic and other policy measures, including the re-establishment of border checks, tightening of employment and residence regulations, rollback of financial incentives, and reform of commercial and property rights laws.
- **2. Economic regulations must be changed to provide long-term net benefit to the Tibetan people, with a view to fostering their self-sufficiency**
- The Tibetan people should be empowered to regulate the operation and construction of the railway and make appointments to key positions throughout relevant bureaucracies. Tibetans should be given full control of oversight bodies such as the Qinghai-Tibet Railway Company and power to determine tariff schedules, permissible shipment types and transportation routing.
- Freight tariff rates should be structured to benefit local Tibetan businesses, industries, and communities.
- Subsidies, taxation incentives, and other preferential policies for non-Tibetan commercial enterprises in Tibetan areas should be exhaustively reconsidered to ensure that Tibetan communities are not socially and economically marginalized by the railway's impacts.
- A greater proportion of the revenue generated from the extraction of natural resources in Tibet should go to autonomous regional governments and be allocated for locally determined needs such as education, vocational training, healthcare, and social services.

3. Significant human rights improvements and increased transparency in governance must occur

- Freedom of speech should be protected so that all segments of Tibetan society can express their opinions and provide suggestions regarding the railway without fear of reprisal. An essential first step is for the government to openly acknowledge that population resettlement is a contentious issue and to end all criminal and political reprisals against those Tibetans who raise it. Advocating steps to reduce the Chinese population influx should not be considered "endangering the unity of the nationalities," a punishable offense.
- The Chinese government, through relevant bodies such as the Ministry of Railways, should make information public, in both Chinese and Tibetan languages, on the implications of the railway, including demographic change, social displacement, environmental damage, and financial costs.
- Tibetan, Chinese and international organizations should be allowed to visit the construction sites, interview officials and personnel and otherwise assess the project and make recommendations, without fear of reprisal. International institutions such as the International Labor Organization and UN Special Rapporteur on Population Transfer should be invited to assess the railway's impact on the Tibetan people.
- Open debate and decision-making regarding the railway's construction, and operations, should be secured within the People's Congress of the Tibet Autonomous Region and the People's Congresses in other Tibetan areas along the railway's route.
- Rigorous measures to protect Tibetan culture and language in communities that could be affected by the railway must be implemented.
- The Chinese government should implement existing laws for minority autonomous areas in a manner that guarantees the constitutional and legal rights and protections that are provided for minority nationalities under Chinese law.

4. Environmental implications and natural resource extraction must fully assessed and regulated

- Environmental impacts from the railway's construction, and from railway-induced population growth and economic activity such as natural resource extraction, should be fully assessed by independent organizations.

5. The railway must not become a vehicle for the further militarization of the Tibetan Plateau

- The railway should not facilitate increased militarization of the Tibetan Plateau by subsidizing the movements of military personnel, supplies, and armaments by the People's Liberation Army, which could lead to escalating regional tensions and further repression of the Tibetan populace.
- The Tibet Autonomous Region should remain free of nuclear weapons that would be transportable by railway to Lhasa or deployed along the route in fixed position or mobile delivery systems.

FOR ALL OTHER GOVERNMENTS

Until the Government of the People's Republic of China effectively implements measures outlined in the recommendations above, the International Campaign for Tibet urges all other governments to undertake the following measures:

- Governments should instruct their officials involved in trade development, export promotion, economic development and economic assistance projects to discourage commercial involvement in the railway or with those enterprises that may directly benefit its construction or operation.
- Governments should prohibit technical exchanges with the People's Republic of China where such exchanges have the substantial likelihood of contributing to the construction or operation of the railway.
- Governments should deny export licenses to commercial enterprises that seek to export goods, services or technologies for the purpose of supplying such goods, services or technologies for use in the construction or operation of the railway.
- National regulatory bodies for the rail transit industry should issue advisory alerts to their respective industries about the controversial nature of the railway.
- Governments should establish policies designed to ensure that the Tibetan people are empowered to direct economic development on the Tibetan Plateau, includ-

ing policies that promote dialogue between the Chinese leadership and the Dalai Lama or his representatives in order to achieve a negotiated agreement based on genuine autonomy for Tibet.

- Governments should establish mandatory national codes of conduct for development projects and investment in Tibet, conforming to guidelines issued by the Central Tibetan Administration in Dharamsala, India (similar principles were adopted by the United States as part of the Tibetan Policy Act of 2002 [Section 616 of P. Law 107-228]):
 1. All development projects should be implemented only after conducting a thorough needs-assessment of the Tibetan people through field visits and interviews.
 2. All development initiatives should be preceded by cultural, social and environmental impact assessments.
 3. Development projects should foster self-sufficiency and self-reliance of Tibetans.
 4. Projects should promote accountability of the development agencies to the Tibetan people and active participation of Tibetans in all project stages.
 5. Projects should respect Tibetan culture, traditions and the vast Tibetan knowledge and wisdom about their landscape and survival techniques.
 6. Agencies should have a local presence at all stages of the project to ensure that the intended target group benefits.
 7. Tibetan should be used as the working language of projects. It will be important for the development project staff to know the Tibetan language.
- National security intelligence organizations should conduct studies of the security threat potentially posed by the completion of the railway. Such studies should particularly examine whether the railway might be used in the context of strategic or theater ballistic missiles. The study should also consider how the railway would contribute to the permanent militarization of the Tibetan Plateau and the consequent implications for regional security in South Asia.

FOR THE UNITED STATES GOVERNMENT

In addition to the general recommendations for all governments, the International Campaign for Tibet urges the United States Government (USG) to undertake the following specific actions:

- The USG, in accordance with provisions of the Tibetan Policy Act of 2002 as contained in Section 616 of P. Law 107-228, should avoid any involvement in the construction or operation of the Gormo-Lhasa railway through the Trade and Development Agency, Export-Import Bank, and through United States participation in international financial institutions.
- The USG should prohibit any technical or educational exchanges between China and the United States that have the substantial likelihood of contributing to the construction or operation of the railway.
- The Office of the United States Trade Representative and the Department of Commerce should discourage any U.S. commercial involvement in the railway or those enterprises that may directly benefit from its construction or operation.
- All foreign service officers, commercial service officers, and others working at the U.S. Embassy in Beijing or any U.S. consulate in China, should be made aware of U.S. policy on economic development in Tibet as articulated in the Tibet Project Principles in the Tibetan Policy Act of 2002 (Section 616 of P. Law 107-228).
- The Department of State should work with the Trade and Development Agency and other relevant U.S. government entities to create written policy guidance that can be used to advise U.S. businesses wishing to invest or operate in Tibet.
- The Federal Railroad Administration should issue an advisory alert to industry partners about the controversial nature of the railway.
- The American Intelligence Community should complete a Special National Intelligence Estimate, or similar study, of the security threat that the completion of the railway may pose to the United States, its friends, and allies abroad. Such a study should particularly examine whether the railway might be used in the context of strategic or theater ballistic missiles, and how the railway would contribute to the permanent militarization of the Tibetan Plateau.

FOR INTERNATIONAL FINANCIAL INSTITUTIONS**AND DEVELOPMENT AGENCIES**

Until the government of the People's Republic of China effectively implements measures outlined in the recommendations above, bilateral aid and development agencies, non-governmental organizations, and multilateral development organizations such as the World Bank, Asian Development Bank, and the UNDP should:

- Not provide any financial support that would be used in the construction or operation of the railway, any or closely related commercial activities that would directly benefit from it.
- Neither provide nor facilitate the provision of any technical assistance to the People's Republic of China without reliable assurances that such assistance would not be used for construction or operation of the railway.

FOR CORPORATE ENTITIES

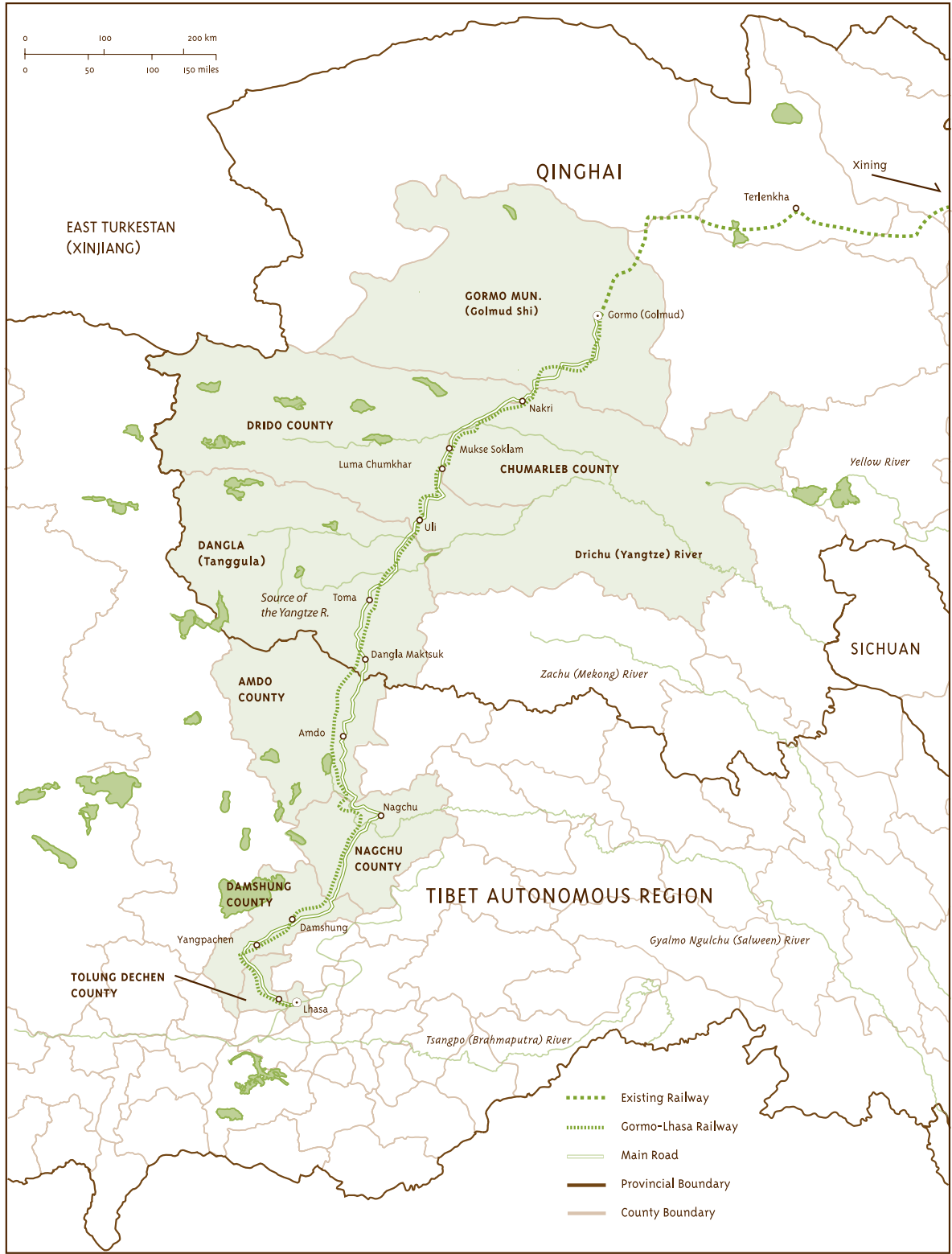
Until the Government of the People's Republic of China effectively implements measures outlined in the recommendations above:

- No partnership or joint venture should be entered into with any commercial or governmental entity in China for the purpose of developing, producing, or selling goods, services, or technology to be used for the construction or operation of the railway or any closely-related commercial activities that would directly benefit from the railway's construction or operation.
- No business entities should assist in providing or procuring financial assistance for construction or operation of the railway or any closely-related commercial activities that would directly benefit from the railway's construction or operation.
- No financial services companies should underwrite corporate or governmental bonds without reliable assurances that proceeds would not be used for the construction or operation of the railway or any closely-related commercial activities that would directly benefit from the railway's construction or operation.

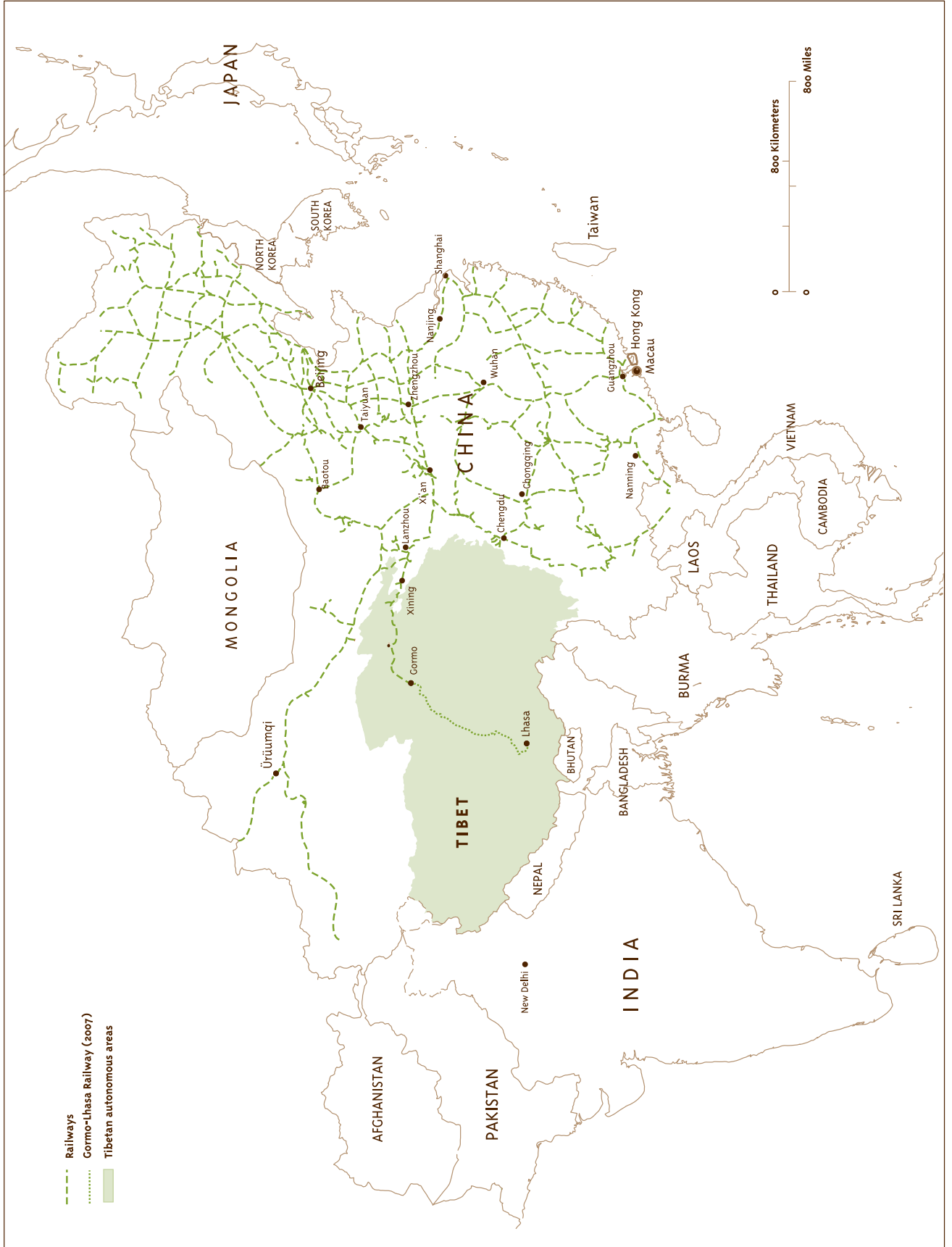
NOTES

- 1 See note 1 of the executive summary regarding the definition of "Tibet."

GORMO-LHASA RAILWAY IN TIBET



RAILWAY MAP OF CHINA & TIBET





APPENDIX A

SATELLITE IMAGE INTERPRETATION

Of the four types of sensor technologies used in this study (Corona, MSS, TM, and ETM), only TM and ETM are still currently in use. Although optimal comparisons between the scenes were limited by differences in time of year, atmospheric conditions and technical capabilities of the sensors, the historical imagery provides a valuable snapshot in time, providing certain information not available from any other source. Availability was a significant factor in the selection of the images used in this study.

THE SENSORS

CORONA

The Corona imagery is only available in grey tones, but its superior resolution compensates for the inability to distinguish between certain land cover features that the MSS and Landsat TM and ETM sensors can. Corona was the United States' first photo reconnaissance satellite system, operating from 1960 to 1972. Corona imagery provides high-resolution images with ground resolution as detailed as two meters square per pixel, having the appearance of aerial photographs. The spatial detail of Corona imagery offers visual and analytical benefits and rivals data from more modern satellite systems. In many places, including Tibet, Corona provides the only historical record of land surface conditions available outside of written descriptions that may exist.

LANDSAT (MSS, TM, AND ETM SENSORS)

The Landsat program has been in operation under the U.S. National Aeronautic and Space Administration (NASA).

The Multispectral Scanner (MSS): This sensor mapped the earth from 1972 to 1982. The MSS Spectral detects reflected radiation from the surface of the earth in four spectral wave regions. The MSS sensor has a ground resolution of roughly 60 meters, compared to roughly 30 meters for Landsat TM. The spectral/radiometric resolution of MSS is between 0.5 and 1.1 micrometers, a narrower range versus the 0.4 to 3.0 micrometers of Landsat TM.

Thematic Mapper (TM): The TM was designed to measure solar radiation reflected and emitted by the earth's surface. It contains seven spectral bands sensitive to different wavelengths of visible, infrared and thermal radiation. The

ground resolution of Landsat visible and infrared imagery pixel vary from 30 meters to 120 meters depending on wavelength and system.

Enhanced Thematic Mapper (ETM): Landsat's seventh satellite, the Landsat Enhanced Thematic Mapper (ETM) satellite contains sensor bands that measure reflected solar radiation. Landsat 7 also contains an additional thermal band sensor as well as a panchromatic band, which while displaying in gray scale (black, white and variations in between), has a ground resolution of 15 meters.

ETM PAN-SHARPENED (14.25 M) VERSUS TM (28.5 M)

When comparing Landsat ETM scenes that show pan-fused/pan-sharpened scenes (e.g., 2001 images) side-by-side with 28.5 m Landsat TM scenes (e.g., 1994 Gormo/1991 Lhasa images), the 14.25 pan-sharpened images will show more detail. The detail of the higher resolution imagery can give a false impression of greater density of roads and buildings when compared with the softer shapes of the 28.5 m image of a city. In deriving the land cover classification map in the study, 28.5 m resolution was used for both years to facilitate a comparable measurement of land cover.

GUIDE TO LAND COVER ANALYSIS

Analysis of the Tibet imagery involved creating a land cover map of the study areas that informs the reader by use of a color coded legend. The approach taken in deriving a digital land cover map from multi spectral imagery is to group individual image pixels with similar spectral and spatial characteristics into thematic land cover information categories, or classes. After converting the multi-dimensional satellite images into a single layer of pixel clusters, each cluster is assigned to its appropriate land cover class (discussed below). Ideally, this requires some local knowledge of surface characteristics and land cover types in the study area. Once the land cover is rendered it can help visually identify such features as urban cover, water, wetlands, grasslands, and agriculture. As between the older MSS satellite imagery and the Landsat, the MSS' lower spectral resolution is less conducive to visual interpretation than TM imagery although it can still identify land cover on a coarser scale.

INTERPRETATION

Interpretation of the imagery requires an understanding of the role each spectral region plays. The infrared region is particularly useful in the interpretation of the state and health of vegetated surfaces. Healthy green vegetation provides a more intense response in the infrared sensor bands. Healthy vegetation will have a reddish color (red, orange, reddish-purple, dark pink, etc.) while barren (rock, bare soil, sand, etc.) surfaces will appear green, gray, or light purple. Visual analysis requires interpretation of color that is limited to, at most, three measurements at a time. The visual analysis of changes from decade to decade was based on interpretation of the color patterns revealed in the imagery. These color patterns are a result of assignment of specific spectral bands to the red, green, and blue hues of the printer. The Landsat TM and ETM illustrations in the paper are all displayed in an RGB=453 band combination, and the MSS illustrations are displayed in RGB=421. While these band combinations are not equivalent, with MSS images appearing bluer, vegetation is red-orange in both. Interpretation of the meaning of colors in a scene is somewhat relative to the scene. In comparing scenes of the same area taken on different days, there is usually some variation of the color balance, as can be seen between two Landsat dates.

The land cover was derived using the 13-class GeoCover legend as a guide; not all classes from GeoCover are represented in the final land covers for Lhasa and Gormo. Two factors should be considered when making comparisons between land cover derived from MSS versus Landsat TM and ETM: the resolution of the imagery and the spectral bands. More detail is visible in the Landsat imagery, enabling more accurate land cover identification and interpretation. MSS, the older sensor has a coarser resolution (66 m) than the TM (28.5 m). There is also more spectral information in the 6 bands of TM than in the 4 bands of MSS, although both have an infrared band which provides key information for identifying vegetation.

The 28.5 m resolution of TM is good for identifying these kinds of features or changes:

1. Urban expansion
2. Hydrological and wetland changes
3. Overgrazing/desertification
4. Deforestation and health of forests
5. Erosion, silting of waterways
6. Agricultural lands - extents, activity

The land cover derived from the imagery was done at the full resolution of the imagery (66 m for MSS, 28.5 m for TM), then generalized to a minimum mapping unit (MMU) of 1.4 hectares to remove speckle from the land cover caused by mixed pixels (1.4 hectares is approximately 16 Landsat pixels). Some fine detail is lost by MMU generalization but produces a land cover with cleaner, clearer shapes.

CAVEATS

The statistics derived from the land cover classification are good indicators of regional trends but are not as reliable when examining small areas like Lhasa and Gormo. Interpretation of land cover will vary by analyst and is also influenced by the spectral quality, date, and resolution of the imagery. Delineation of urban areas is not usually significantly affected by seasonal changes (winter versus summer imagery). In the case of a city with a lot of vegetation, an urban area might be underestimated in the summer, but this doesn't seem to be an issue for Lhasa and Gormo.

BAND COMBINATIONS USED

The TM and ETM illustrations in the paper are all displayed in a RGB=453 band combination, and the MSS illustrations are displayed in RGB=421. While these band combinations are not equivalent, with the MSS images appearing bluer, vegetation is characterized as red-orange in both. Interpretation of the meaning of colors in a scene is somewhat relative to the scene. In comparing scenes of the same area taken on different days, there is usually some variation of the color balance, as can be seen between two TM and ETM dates.

APPENDIX B

CHINA'S RAILWAY SECTOR

RAILWAY SECTOR BUREAUCRACIES

China's railway sector falls primarily under the jurisdiction of the Ministry of Railways (MOR), which oversees the construction and operation of national railways. Under its oversight, 14 Regional Railway Administrations have been delegated significant authority to manage most rehabilitation and construction projects, make basic staffing and organizational decisions, and retain some profits based on their performance.

Other bureaucracies that play essential roles include the State Planning Commission (SPC), the Ministry of Finance (MOF), and the State Price Bureau (SPB). The SPC is responsible for preparing long-term economic plans, and it has the authority to approve all major capital projects. The MOF sets the annual budget managed by the MOR, generally in line with SPC targets. Lastly, the SPB is responsible for overseeing MOR proposals for fare changes.¹

The state-owned Qinghai-Tibet Railway Company was formed in 2002. Administered directly by the MOR, it will be responsible for overseeing engineering tenders, construction designs, and transport operations of the railway between Lhasa and Gormo.

SECTOR CONSTRUCTION & FINANCING

Construction efforts will be undertaken by Chinese entities, relying on expertise from the Ministry of Land and Resources, the State Seismological Administration, and the Chinese Academy of Sciences, and other institutions. With the possible exception of Russian technical involvement, there have been no reports of direct foreign assistance for the construction of the Gormo-Lhasa Railway or upgrades to the Xining-Gormo segment.

The Chinese government stated that the Lhasa railway would be financed entirely by government funds. However, funds to construct the Xining-Gormo-Lhasa Railway must come from a finite and fungible pool of funding. In the "western regions" alone, a total investment of about 127 billion yuan (U.S. \$15.8 billion) would be needed during the 2001-2005 year period to complete a series of upgrades and new line construction. This accounts for nearly 50% of total investment earmarked for all large and medium-sized capital construction projects in the Tenth Five-year Plan.

In order to meet the demand for funding a number of sources have been tapped.

DOMESTIC SOURCES

Generally, sources of Chinese railway finance include loans from national and international development banks, state-allocated funds, funds recruited by local governments, and a special construction fund.

- **Construction Fund.** This fund accumulates capital through a surcharge collected on rail freight operations on a per kilometer-ton basis. It is managed by the MOR.
- **State Development Bank.** Established in 1994, this state-run bank has been a key provider of infrastructure finance, especially for the railway sector.
- **Railway Bonds.** The MOR issued the first of \$3.5 billion yuan bonds to domestic investors in 1997 to finance the development of four national lines.
- **Stock Floats.** In 1996, the Guangshen Railway Company and the Sanmao Railway Company listed depository receipts on Hong Kong and New York exchanges. Future stock listings are possible for the sector.

EXTERNAL PRIVATE INVESTMENT & BUSINESS VENTURES

China's accession to the World Trade Organization has required the government to ease regulations and policies that restrict foreign investment in the railway sector. Under the new rules, foreign companies can take minority stakes in rail freight joint ventures in 2003-2004 and will be able to hold majority shares by 2004. Foreigners will also be permitted to build and operate rail lines for 22-year periods.

Transactions involving sales, leasing, production, and development of supplies and services in China's railway sector also present opportunity for international commercial transactions. No evidence of private foreign involvement in the Lhasa railway's construction or future operations has surfaced to date. However, technologies, construction machinery, engineering services, and supplies of rolling stock, etc., may find their way into the line directly or through third party contracts.

Areas where international assistance or business transactions could arise include the following:

- Development of information technology systems and software
- Project & general management
- High-tech equipment sales and development
- Rolling stock for low pressure, high altitude performance
- Earth-moving and construction equipment provision
- Railway-integrated telecommunications
- Permafrost infrastructure engineering

A number of foreign suppliers have entered the Chinese railway market, including the following:

- ABB Daimler-Benz
- ABC Rail Products China Investment Corporation. (Delaware, USA)
- Alstom (France)
- Ansaldo Signal (parent of Union Switch and Ansaldo Segnalamento Ferroviario)
- Bombardier (Canada)
- MotivePower
- Power Corporation (Canada)
- Siemens AG

GOVERNMENTAL & MULTILATERAL DEVELOPMENT INSTITUTIONS

A number of governments and multilateral lending institutions have also formed cooperative relationships to assist China's railway sector modernize and finance projects. In order of contribution levels, Japan, the World Bank, and the Asian Development Bank have provided the largest amount of external financing.² Technical assistance is also given in areas of business and commercial practices, and institutional strengthening.

- **World Bank.** Since 1984 the World Bank has provided financing for nine projects in China totaling U.S. \$2.2 billion. Assistance was given for seven national railway projects and one local railway project.
- **Asian Development Bank.** The ADB has focused on railway development in less developed areas. It has provided nine loans since 1989, totaling U.S. \$1.36 billion to help finance construction of 1,754 km of new railways. From 1989-1997 it also provided \$4.2 million in technical assistance.

- **Governmental Involvement.** Foreign government commercial services are involved in actively promoting commercial ventures in the sector.
- **Japan Bank for International Cooperation.** Between 1980-1997 Japan has provided financing for 15 projects in China totaling 578 billion (U.S. \$78 billion). Funds helped to expand rail capacity, particularly in major coal transport corridors, and develop new sections in inland provinces. Japan established the Japan-China Railways Council in 1997 to exchange training and technology.
- **Canada's International Development Agency (CIDA).** CIDA has been working with Chinese shippers and transport operators through China's State Economic and Trade Commission. The provision of Canadian technical training is being given under the China Intermodal Transport Services to Interior Provinces Project.

NOTES

- 1 U.S. & Foreign Commercial Service and U.S. State Department, "China: Railroad Industry," *Industry Sector Analysis*, 1999.
- 2 Source: Asian Development Bank, *Report and recommendation of the president to the board of directors on a proposed loan to the People's Republic of China for the Ganzhou-Longyan Railway project*, September 2001.

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