China builds its transport system for the future, looks for cooperation

by Jonathan Tennenbaum

With most of the world's nations trapped in a catastrophic spiral of financial, economic, and socio-political disintegration, China continues to maintain its impressive pace of development and modernization with the help of large-scale infrastructure projects.

A German-Chinese seminar on transport and logistics, held in Munich, Germany on June 11 and 12, provided important insights into China's development programs, while at the same time pointing the way toward the kind of long-term cooperation between industrial and developing countries, which the world requires in order to get out of the present economic depression.

'Mind-boggling' railroad projects

In remarks to the seminar, German experts repeatedly spoke of the "mind-boggling" scale of railroad construction in China. Between 1991 and 1995, a total of 11,250 kilometers of railroad track were laid in the People's Republic of China — more than enough track to cross the entire Eurasian continent, or the equivalent of about two and one-half times the highway distance from New York to Los Angeles in the United States. Newly created routes amounted to 4,356 kilometers, a major part of which was made up of the newly opened north-south trunk line from Beijing to Kowloon (about 2,400 km), with continuation to Hongkong. Second lines (double-tracking) were added on 3,848 kilometers of railway, including on 1,622 kilometers of the Lanzhou-Xinjiang (Sinkiang) rail line on the Eurasian Land-Bridge. At the same time, Asia's biggest rail terminal, Beijing West Passenger Station, was opened at the northern terminus of the Beijing-Kowloon-Hongkong line. Numerous other projects, including the electrification of an additional 2,742 kilometers of line, contributed to a major overall improvement in China's rail transport system.

Evidently, China is committed to maintaining a rapid pace of expansion and upgrading of its rail system, as a backbone of the national economy. During the Ninth Five-Year Plan, which extends to the year 2000, the Chinese Railways plan to build another 6,200 kilometers of railways, to double-track 2,900 kilometers, and to electrify 4,300 kilometers. At the same time, upgrading of existing track will make it possible to raise train speeds to 140-160 kilometers per hour on major sections of the lines between Beijing-Shanghai, Beijing-Guangzhou, Beijing-Harbin, and Lianyungang-Lanzhou (the latter being part of the Eurasian Land-Bridge from the Pacific port city Lianyungang to the Atlantic port Rotterdam). By the year 2000, the length of the rail system should reach 68,000 kilometers, with 34% double-tracked and 27% electrified.

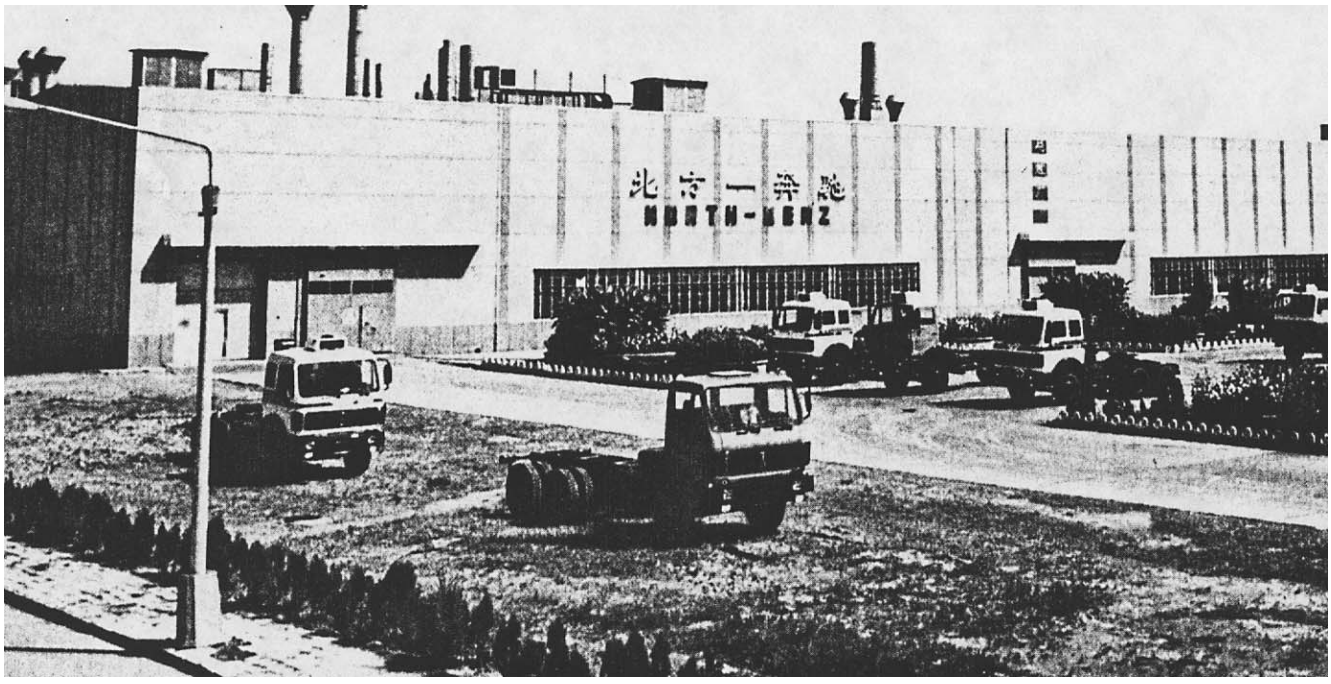
For the main job of building, maintaining, and equipping its rail system, China has its own, well-developed railroad construction and supply industry, including the giant state-owned locomotive and rolling-stock producer LORIC. At the same time, China is making major efforts to acquire advanced rail technologies and know-how from abroad. Cooperation with Europe and especially Germany, is attractive for a number of reasons. For one thing, the European and Chinese rail systems employ the same track gauge and have other significant technical similarities. Besides the high technological standard of German industry and a long tradition of sharing technology with developing nations, the German and Chinese rail systems share the characteristic of having to carry a high density of traffic in areas with high population density.

Institutionalizing cooperation

Railroad cooperation between Germany and China already has a long tradition. In response to the boom of railroad construction in China, a German-Chinese Railroad Commission was formed, and long-term goals have been set. While the scale of joint projects is still relatively small in quantitative terms, this German-Chinese rail cooperation might serve as a seed-crystal and model for *institutionalized* forms of large-scale technology-transfer between advanced-sector and developing-sector nations in the future. Such cooperation will play a key role in global economic recovery through large-scale infrastructure development.

The German-Chinese railroad cooperation already includes, for example, the following aspects:

1. Intensive exchanges of experts, including fellowships and training programs for Chinese railroad engineers in Germany. Establishment of long-term working relationships between groups of Chinese and German experts and technicians, provides the key to successful transfer of technology, and can



The Inner Mongolia No. 1 Machinery Manufacturing Factory introduced production technology from the Baimler-Benz Corp. in Germany, based on a cooperation agreement signed in 1988, and produces North-Benz heavy trucks, as well as 14 varieties of rail cars. China is seeking more joint projects and technology sharing.

lay the basis for a continuous series of cooperative projects, reaching far into the future.

2. As part of a jointly agreed program, German expert teams have spent extensive periods in China studying the technical and operational characteristics of one of China's rail lines. These comprehensive investigations provide the basis for long-term joint cooperation on upgrading the Chinese rail system. In this way, key problems have been identified for solution, along with key areas for joint projects.

3. Such institutionalized cooperation opens up an ideal "transmission belt" for scores of German small and medium-sized high-technology companies (the so-called *Mittelstand*), which supply equipment and services for the German railroad system, to develop contacts, projects, and joint ventures in China.

In the long run, this sort of approach is the only way to develop stable markets for high-technology exports to China and other developing nations. By focussing on well-defined areas of industrial cooperation—particularly around large-scale development of transport, energy, water, communications, or other vital sectors—contacts and capabilities are developed on all sides in a coherent manner, over decades.

A 'New Bretton Woods' needed

While still embryonic in scale, the approach embodied in the German-Chinese railroad cooperation is absolutely coherent with Lyndon LaRouche's policy for a world economic recovery based on the Eurasian Land-Bridge and other Great Projects for infrastructure development. The precondition for such a recovery, of course, is ramming through an emergency bankruptcy reorganization of the world financial systems along the lines LaRouche has prescribed in his call for a "New Bretton Woods Conference." Once sanity has been restored in the financial system, and suitable mechanisms of productive credit generation for infrastructure development have been established, cooperative efforts of the indicated sort could be scaled up very rapidly.

Further interesting examples of industrial cooperation were provided by a speaker from China's LORIC company. She explained how U.S. and European companies were helping China to develop advanced electric and diesel locomotives, as well as providing improved technology for the production of locomotives and rolling stock. Advances in technology are crucial to increasing the passenger and freight train speeds as well as the performance of heavy-duty freight trains needed to haul the massive amounts of coal and bulk construction materials which presently consume 80% of China's rail capacity.

(The enormous burden of coal transport on its transport system, is only part of the heavy economic and environmental price which China pays for its continuing dependence on coal as its number-one energy source. Currently, China burns up over 1.2 billion tons of coal every year. This author maintains, as does LaRouche, that implementation of a crash program for nuclear energy is a matter of economic survival for China. Because nuclear fuel is more than 50,000 times more concen-

trated than fossil fuel, the immediate by-product of a transition to nuclear energy, would be to free up China's transport system for higher-value goods, thereby dramatically increasing its productivity.)

High-speed rail and urban mass transport

Last January, China made an important step forward in high-speed passenger train development, with first tests of its SS-8 locomotive at 212 kilometers per hour. After breathless efforts by French, German, and other companies to sell China complete systems for the planned Beijing-Shanghai high-speed line, the Chinese decided for the time being to pursue their own R&D program. Research is also going on in the field of magnetic levitation systems. At the same time, in the field of "moderate high speed," China plans to make use of the European-developed technology of "tilting trains" (exploiting hydraulic mechanisms which tilt passenger cars when in curves) to increase the passenger transport speeds on existing track. Concrete plans already exist for implementation of this technology on the Guangzhou-Kowloon line.

Urban mass transportation systems were another important topic of the seminar. Zhang Jianhai, of the China International Consulting Corporation, outlined the reasons why urban mass transit is an economic life-or-death issue for China's cities. In 1989, some 80 million people lived in the 32 Chinese cities of more than 1 million inhabitants; by the year 2000, that figure will grow to over 100 million, and this does not count population increases in smaller and medium-sized cities. At present, with a few exceptions, public transport in China's cities is nearly exclusively based on buses. With the dramatic increase in road traffic in China's cities in recent years, traffic jams proliferate and the average road speed has fallen sharply, down to 7-8 kilometers per hour, or lower in the case of Shanghai's city center. This is happening at a time when China is still just in the *beginning phase* of a rapid buildup of urban population, along with dramatic increases in per-capita mobility. Anything more than a moderate growth of personal automobiles would spell doom for China's cities. The only realistic option is high-capacity mass transit systems based on rail.

An example of what can be done, is provided by Shanghai's first subway line, a joint project with the company Adtrans (ABB/Daimler Benz). This 16-kilometer line went into full service in April 1995. Designed to handle exceptionally high capacities, Shanghai Line 1 has already transported 220 million passengers! On peak days, this single line carries as many as a half-million passengers. A second line is now in construction, from the Pudong industrial development zone to the Shanghai city center, scheduled to go on line in December 1998. Adtrans is also involved in the first subway line for the city of Guangzhou (Canton) in southern China. Subway development is being launched in numerous other cities, including Shenyang, Dalian, Qingdao, Chengdu, Chongqing, and Shenzhen at the top of the list.

Given the enormous demand for urban transit in China, however, the present efforts represent only a bare beginning. Building up China's own engineering, construction, and production capabilities to handle the enormous scale of future construction, will surely become a big focus of cooperation with Germany and other industrial countries. Furthermore, as Chinese and German representatives both stressed, China is only a special case for the far greater task of building up modern urban infrastructure throughout the developing sector. A German speaker predicted that revolutionary technologies, such as the magnetic levitation train, will one day find wide application in China and other developing countries.

Inland waterways, roads, and airports

Along with its rail system, China is committed to major improvements in its harbors and inland waterway system. Much of the work is concentrated on the Yangtze River "trunk route," including dredging and deepening, and improvement of harbors and transshipment facilities. With the completion of the Three Gorges Dam project, including its system of locks, the portion of the Yangtze which is navigable by modern shipping, will be extended by 700 kilometers to the east. A further project is the Beijing-Hangzhou canal, with major construction already taking place on some sections. The Lianyungang port, official eastern terminus of the Eurasian Land-Bridge ending in Rotterdam, Holland, has already been massively upgraded over the last five years, and will be built up further. Additional container wharves will be set up at Dalian, Tianjin, Qingdao, Shanghai, and Ningbo.

Another major task is to extend China's underdeveloped road system, including the establishment of the main axes of a national expressway network. During the Ninth Five-Year plan, China plans to construct a total of 110,000 kilometers of new roads, with emphasis on 6,500 kilometers of high-quality expressways. The major lines will include:

- the "two verticals": Tongjiang (Heilongjiang province) to Sanya (Hainan province), and Beijing to Zhuhai (Guandong province);
- the "two horizontals": Shanghai to Chengdu (Sichuan province), and Lianyungang (Jiangsu province) to Horrgous (Sinkiang province);
- completion of the important highway sections: Beijing-Shenyang, Beijing-Shanghai, and Chongqing-Beihai.

A further major item in China's infrastructure buildup, is the construction and modernization of airports. Between 1980 and 1996, passenger air traffic in China has expanded by nearly 18 times, an incredible average rate of increase of more than 20% per year! Both air freight and air passenger volume are expected to double again over the next 15 years up to the year 2010.

To handle this enormous growth in air traffic, the number of airports for civilian passenger service was increased from 76 in 1980, to 142 at the end of 1996. Dozens more airports are expected to be opened in the coming years.