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STRATEGIC DIRECTION SESSION ST2
Roads and quality of life

Rural Road: The Basis for Improving Living Standard of Rural People

1. In Retrospect of Rural Roads Development in China

1.1 Improvement of rural road

China's road network consists of national road, provincial road, and local road. County road and rural are usually known as rural roads, connecting counties, townships, and villages. The rural roads are functionally classified as collect road and access road. Great changes have taken place in rural roads in China, since its implementation of reform and opening-up policy, along with the rapid economic growth. Within the 24 years from 1978 to 2002, total mileage of the rural roads increased by 710 thousand km, with annual average growth of 30 thousand kilometres. By the end of 2002, total length of rural roads reached 1.3 million kilometres. Accessibility of the rural roads is continually improving. The proportion of township and village with motorized access increased from 91.5% and 65.8% in 1978 to 99.4% 92.5% in 2002 respectively. The quality of rural road is improving as well. The roads up to the lowest national engineering technology standard have increased from 260 thousand kilometres in 1978, accounting for 44% of the total; to 956 thousand kilometres in 2001, accounting for 75% of the total.

1.2 How the rural roads are improved

Though China's per capita GDP has increased to the present \$1000 USD from \$350 USD ten years ago with continuous growth of public fiscal revenue, China is still a developing country. As a country with 9.6 million square kilometres land area and a population of 1.3 billion, China's development is always restricted by the lack of sufficient funds. In accordance with jurisdictional authority and administration system in China, the responsibility for rural road construction and maintenance rests mainly with county and township government, with subsidies from the central government and the provincial government. Because of limited financial capacity, the improvement of public infrastructures and services are very slow in the rural areas where two-thirds of the population in China live. The rural people have to carry part of the responsibilities, which forms a contrast with the fact that financing of the urban public infrastructures and services is provided by the government. It is a serious challenge how to rapidly improve the rural road conditions. The fact shows that China's rural road development has got great achievements in recent years. The main experience and practices are as follows:

(1) Widespread awareness of the importance of rural roads' improvement

There is a popular saying in China's rural areas: "to be rich, road first". Road is the only modern transport facility in most of China's rural areas. The improvement of rural roads could bring rural people enough basic living necessities; help them enjoy the services of health, education and entertainment; bring them more economic opportunities and make them easy to participate the social activities. The improvement of the traffic conditions reduces the transport cost and increases the income of the rural people. A good road system is necessary for rural economic growth, social progress and rural people's living standard improvement.

(2) Rural road improvement and poverty reduction

In China, most poverty population exists in rural area, mainly in the western regions of China and the remote areas lacking of necessary transport infrastructures. Investigation shows isolation is one important factor for the poverty. Favourable transport condition could have direct or indirect effect on poverty reduction. The direct effect is to facilitate the poor people's access to such social services as education and health, as well as employment and market opportunities. In the course of rural road development, a large number of rural residents in the poverty areas contributed to the development, not only having the effect of reducing the constructing cost, but also providing job opportunity to the poor and having increased their income. The indirect effect means the long-term effect of improving people's mobility, namely, promoting the economic growth through more efficient resources distribution.

Since 1984, Chinese government has implemented seven rounds of "work-relief road development program", by providing living necessities, such as grain, cotton and oil, as the payment for the rural residents' work. It could improve the economic and living conditions in the poverty area. Poverty reduction road project is one of the key components of the development program. A total of 160 thousand kilometres rural roads were built from 1984 to 1993. In 1994, the government began to implement large-scale 'Eight Seven' poverty reduction program. The objective is to solve the poverty problem with adequate food and clothing among the 80 million poverty population within 7 years. Over the years from 1994 to 2000, CNY1 billion (about USD120 million) worth of the merchandise is used by the central government every year to continue the "work-relief road development program".

Implementation of the Program was limited to the 592 designated national level poverty counties in 21 provinces. The rural road and drinking water supply projects were given first priority, with annual investment in rural road about CNY700 million (about USD85 million). At the same time, the central government increases the grant-in-aid for road construction in poverty areas. Since 1995, annual grant-in-aid of CNY920million (about USD110 million) from the central government's special fund have been used for the poverty reduction road. The central government's grant-in-aid induces the local government's financial input and accelerates the improvement of road in poverty areas.

(3) Balance between economic benefit and social benefit

No doubt, road investment will produce not only the economic benefit as measured by reduced transport cost, travel time and road accident, but also a great deal of social benefits. Study shows that that every one China Yuan investment in China rural road will get back CNY4.9 on average from agriculture production. However, the significance of road investment far more exceeds its quantitatively measured value. Therefore, in China priority is given to 'economic road', 'resource road', in order to promote the local economic growth, meanwhile, great importance is attached to the "access road" in densely populated remote areas, which is the basic transport infrastructure for rural people.

The traffic volume of most rural road sections in China, especially township road, is under 200 MTU (medium truck unit), characteristic of mixed traffic, including motor vehicles, non-motor vehicles and pedestrians, fast (such as bus, minibus, and truck) and slow moving vehicles (such as motorcycle, farm use tractor, and tricycle). Non-motor vehicles are mainly bicycles and animal power vehicles. The traffic volume and composition are usually different from place to place, depending on economic conditions and time hours. For example, in economically developed eastern coastal areas the traffic volume grows very fast with more trucks on road, rather than farm use tractors, which is popular in rural areas. To build road needs a great deal of funds, especially in the mountainous areas, where the construction costs are very high and the impact on the ecological environment should be considered. Because of the limited funds, the rural road would have to be built at lower standard level.

The subgrade width of 80 percent of the existing rural roads is 4.5 m-6.5 m, which could provide more rural people with basic transport facilities as soon as possible under financial constraint. Moreover, for those who are living in the rural areas with no resources potentials or living conditions too severe or the costs of building the road too high, the people are resettled by the government to the better places where travel and living conditions are much better.

(4) Multi-channel financing

For a long time, China has no stable and enough funds for the construction and maintenance of rural road. The revenue of road maintenance fee charged on farm-use tractors by local government is the main financial source for rural road construction and maintenance, but the total amount of the revenue is far less than the actual needs. Now the problem of fund shortage is becoming increasingly striking because the number and proportion of farm-use tractors used as transport tool in rural areas are gradually reducing. Every region in China has adopted many kinds of means to raise funds for rural road. There are more than 10 financing channels, mainly including the road maintenance fee charged on farm-use tractors, rural residents' labour contribution (or payment instead of labour), work-relief, subsidy from central government's special funds for road, provincial government's subsidy from revenue of road maintenance fee charged on motor vehicles, local government fiscal revenue, bank loan and social donation, etc. The way of rural people's labour contribution (or money) accounts for nearly 30 per cent of the total investment in the whole country's rural road construction. The contributions of each of the above mentioned financial channels to the rural road are different from province to province depending on local economic development. For example, in the eastern coastal province of Zhejiang, government's input is more than 52 percent and rural people's labour and money contribution is only 18 percent. In the middle province of Anhui, rural people's labour and money contribution accounts for about 50 per cent of the total investment of road construction. In the year of 2001 and 2002, the central government implemented two special grant-in-aid programs to improve the rural road by using revenue of Treasury bond, with 200 thousand kilometres of rural roads having been improved or under improvement. Through multi-channel financing, the total investment in China rural road has creased from CNY1.7 billion (about USD210 million) in 1992 to CNY35.8 billion (about USD4.3 billion-USD60 billion) in 2001.

2. Current Challenges to Rural Road Development in China

The challenges that rural road development is being faced with are the pressures from road sector's interior and exterior factors.

2.1 The internal problem of road sector

Compared with China's rapid economic growth and the gradual improvement of people's living standard, China's road development is comparatively slow. Especially the rural roads, which account for 74 percent of China's total mileage, are underdeveloped on the whole. Now the existing problems are as follows:

(1) Low accessibility

Until now there are in 317 townships, accounting for 0.7 percent of the total with no motorized access. The number of the villages without motorized access is nearly 60 thousand, accounting for 8.2 percent of the total. It is estimated that nearly 60 million people have no motorized access to the most fundamental modern transport infrastructures and services.

(2) Low road density and lack of systematic network planning

With rural roads as the main part, the road network in China has low density, which is just one-fifth to one-twentieth of that in developed countries. Now the rural roads have not been developed to form an efficient network, just individual county based independent local road system, characteristic of tree structure with county road as trunk and township/rural roads as branch. This kind of network configuration tallies with the administrative system. The roads usually stretch from county to townships, and then from townships to villages, lack of connections among counties, townships and villages. In 2001, the connectivity among counties is 2.4, that among townships is 1.2 and that among villages is 0.6.

(3) Low quality

In 2001, over 70 percent of rural roads have no asphalt or cement pavement and 44 percent of the roads are seasonally available for motor traffic. High gradient, too many curves and little turning radius are the features of the roads in the mountain areas, which have serious hidden peril of accident. Many roads are vulnerable to natural disasters. Every year, the road damage is very serious caused by such natural disasters as flood, mud-rock flow and landslide. In recent years, with the increase of people's income, the rural people's voice to demand for better and comfortable roads is growing stronger day by day, especially in the east and midland areas of China.

(4) Lopsided development among regions

The road density in the western China is 10 km/hundred square kilometres, which is the one-fifth that of the eastern areas. At present, about half of rural roads unable to meet with the lowest level of the road technical standard are in the western regions in China. 45 percent of rural road in the eastern region have been paved with asphalt or cement, while in the western region it is less than 17 percent. 69.7% of the townships and 52.6% of the villages of the national total with no motorized access are in the western region in China.

(5) In need of well organized maintenance system

In China, it is common that rural road lack well organized maintenance system. Owing to fund shortage, there is lack of stable work force and necessary maintenance equipment for rural road maintenance. At present, only 62.6 percent of rural road are regularly maintained.

(6) In need of integrated hierarchy of road network

A road network has two functional performances: mobility and accessibility. Mobility focuses on the efficiency and capacity to accommodate traffic volume. Accessibility focuses on the connectivity among the nodes or availability for the users. These two functional performances are realized by a road network, which is composed of arterial roads, collector-distributor roads (feeder roads) and access roads. At present, the total mileage of arterial roads is 335 thousand kilometres. The mileage of expressways has reached 25 thousand kilometres. Comparatively speaking, the accessibility of rural road needs to be improved in terms of both quality and quantity.

2.2 External Pressure

(1) The adjustment of national developing strategy

In the last decade, Chinese government took great effort on eliminating poverty and the poverty population was reduced greatly. However, there are still 30 million people living below the poverty line (annual per capita net income of CNY625, about USD76). If the level is raised to CNY825 □about USD100□the population below the poverty line will be up to 90 million. Most of those poverty populations are living in the remote areas or minority nationality regions, where the natural and economic conditions are poor. So the poverty reduction task is very hard. Now the Chinese government has made new deployment to eliminate absolute poverty as soon as possible.

Another challenge is the income gap between urban residents and the rural residents. In the past five years, the annual growth of per capita urban resident's disposable income is 8.6%, while that of rural resident is 3.8%. According to the present statistics, the ratio of urban resident's income to that of rural resident is 3:1, but if taking consideration of rural residents' earning in kind and urban residents' gray earnings, the ratio should be 5:1-6:1. In terms of consumption structure, urban resident's Engle coefficient was 37.9% in 2001, while that of rural resident was 47.7%. In the last decade, the Engel co-efficient of urban resident and rural resident declined by 15 percent and 11 percent respectively.

The increasing regional disparity is also a big problem in China. From 1991 to 2001, the average annual growth of GDP in eastern China is 13 percent, with per capital GDP up to CNY2680 □about USD1530. While in the west part of China, the average annual growth of GDP is 10 per cent, with per capital GDP up to CNY5211 (about USD630), which is less than half that of the eastern areas. The per capita GDP of the top five richest provinces in the eastern China is CNY15810 □about USD1910□while it is only CNY4541 □about USD550□of the top five poorest provinces in the western China. The disparity in road development is consistent with that in economic development between the eastern and the western regions in China.

The employment of rural surplus labours is a serious problem in China. According to experts' estimation based on the amount of cultivated land in China that the rural surplus labour forces may be up to 200 million. Recently the Chinese government has taken employment promotion as one of the top priorities of its macro-economic policy.

In order to solve the problems, to provide employment opportunities and for rural surplus labours and to increase of rural residents' income, the Chinese government has been carrying out the western region development strategy and urbanization development strategy. Last year Chinese government put forward a complete national developing strategy in the next 20 years — the strategy of overall development of a comfortably-off society.

Rural roads will play an active and unique role in eliminating poverty□increase rural residents' income, reducing regional disparity and promoting rural labour force employment. It is China's realistic and significant choice to speed up the rural road improvement.

(2) The adjustment of the taxation policy in rural areas

Since 2001, the Chinese government has gradually carried out taxation reform in rural area, in order to lessen the rural people's burden and increase their income. This reform will benefit 900 million rural people directly. The new policy has repealed the practice of rural residents' labour or monetary contribution to the rural road, which makes the fund shortage more serious for rural road development. This undoubtedly affects the rural road construction and maintenance. So new financing channels and new fund-raising mechanism should be set up.

3. Targets of rural road development in the next 20 years

According to China's affirmed strategy of overall development of a comfortably-off society, by the year 2020, total GDP will be four times as much as that in 2000 and per capita GDP will exceed USD3000. Then, the economic and social development will be more comprehensive and balanced. This developing process will change this lower-and-moderate income country up to the above-average income country.

The Ministry of Communications has set forth the new targets of transportation development in the next 20 years. Among them, the goals concerning the rural road development are as follows:

By the year of 2010, all the townships and villages shall be accessed by roads. All the county-to-township roads shall be paved with bitumen or cement pavement. All the township-to-village roads shall be paved. The total mileage of the rural roads will increase to 1.75-1.90 million kilometres. Over 95 percent of the villages with motorized access will have regular bus service.

By the year 2020, all the township-to-village roads will be paved with cement or asphalt pavement. The total mileage of rural roads will be 2.20-2.60 million kilometres. All the villages with motorized access will have regular buses.

In order to achieve the goal of the 2010, in the next 8 years China needs to build 450-600 thousand kilometres new rural roads and pave 640 thousand kilometres road pavement with cement or asphalt. The total investment will be about CNY470-500 billion (about USD57 -60 billion).

4 The policies and Measures

4.1 Raising funds

Rural road is a kind of public product, the government has the responsibility to provide. Therefore, a long-term development program should be made with long term financing policy and mechanism, to ensure there is sufficient fund for rural road construction and maintenance. Meanwhile the market mechanism should play an active role in the construction, maintenance and management of the rural roads. At present, the market mechanism has not been fully established and the shortage of funds is very severe, so it is necessary to address the issue based on research and consultation. Before the establishment of new institutional system, the Ministry of Communications decided to take CNY40 billion (about USD4.8 billion) from the central government road construction special fund every year to subsidize the rural road construction in the next five years□ so as to guide the local government increasing their investment in rural roads.

4.2 Planning

Road planning is the basis of construction and one important measure of government as well to optimize the investment. Now the rural road planning is underway in each of the province in China, as required by the Ministry of Communications. The planning will determine the short-term development priority, optimize the network layout and link the short-term construction projects with long-term planning.

4.3 Technical policy

The state encourages adapting advanced practical technique, materials, technology and equipment in the rural road construction and maintenance, so as to reduce the costs and improve the engineering quality.

At present, there is lack of technical standard suitable for every local rural road, meeting with local conditions. The state encourages the local authorities establishing these kinds of technology standards so as to accommodate local conditions, meeting local traffic demand and to ensure traffic safety, to reduce cost and to promote the investment efficiency.

4.4 Road maintenance

On the base of government support, the state encourages to introduce market mechanism in all parts of China in order to enhance maintenance efficiency, lower the maintenance cost and guarantee the road operation service.