# Liupan Mt. Area

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**Abstract**

This paper examines the role of transportation in poverty alleviation efforts within the Liupan Mountain Area of China. It argues that improved transportation infrastructure unlocks market access for agricultural products, fosters industrial development, and ultimately boosts incomes and well-being in impoverished regions. By analyzing the interplay between market openness, industrial structure, and strategic transportation planning, the paper provides recommendations for sustainable poverty reduction initiatives in the Liupan Mountain Area.

## 1 Introduction

The development of China's contiguous poverty-stricken regions has consistently constituted a crucial part of the national poverty alleviation initiative. Notably, the Liupan Mountain (六盘山) Area, as a representative region within this belt, has long faced with challenges such as inconvenient transportation and scarce resources. As China intensifies its efforts in the poverty alleviation campaign, the key role of transportation in poverty reduction is becoming increasingly apparent, especially in regions like the Liupan Mountain Area. This paper aims to delve into the mechanisms through which transportation functions in the poverty reduction process in this area, exploring its positive impacts on the local economy, society, and the well-being of people there.

In the era of globalization and informatization, transportation is considered the belt connecting regions internally and externally, playing an irreplaceable role in fostering economic prosperity and social progress. Particularly in impoverished regions, optimizing transportation infrastructure and enhancing transportation efficiency not only facilitates the comprehensive utilization of local resources but also contributes to breaking down information barriers, propelling market-oriented processes, and providing robust support for poverty alleviation and wealth generation.

By meticulously examining the practical role of transportation in poverty alleviation, we can gain a better understanding of its contribution to sustainable development in impoverished regions. Consequently, this paper aims to provide sensible recommendations for future development in the Liupan Mountain Area through a comprehensive analysis of its transportation system.

## 2 Impact on Poverty Alleviation of Transportation

Enhancing transportation infrastructure in the Liupan Mountain Area facilitates the more convenient entry of agricultural products into the market, thereby promoting the development of the rural economy. Strengthening transportation connections not only aids in tapping into new markets but also propels industrial upgrading, providing additional economic opportunities for impoverished regions.

When delving into the relationship between market openness and industrial development, our initial focus is on the interaction between the key industries in the Liupan Mountain Area and transportation. According to available data, over the past decade, the development of Ningxia Hui Autonomous Region, including the core impoverished belt within the Liupan Mountain Area, has witnessed significant growth in the secondary and tertiary industries, becoming the main engines of economic growth, with the primary industry following closely behind. However, the industrial structure of the Liupan Mountain Area remains predominantly agrarian, indicating a substantial share of agriculture in the local economy.

Transportation plays a pivotal role in market openness and industrial development. Firstly, by improving the road and rail networks, the transportation cost of agricultural products is reduced, and efficiency is enhanced. This makes it easier for agricultural products from the Liupan Mountain Area to circulate to urban centers and other regions, breaking geographical barriers and expanding market reach.

Specifically, potential key industries in the Liupan Mountain Area, such as agriculture, forestry, and animal husbandry, can benefit from the support of transportation infrastructure. Products can be more efficiently transported to markets, boosting sales and contributing to increased income for farmers. This, in turn, aids in poverty reduction and aligns with the overarching goal of achieving sustainable development.

Furthermore, the development of transportation infrastructure in the Liupan Mountain Area should prioritize supporting the development of local distinctive industries and leveraging advantageous resources. Through the strategic planning of transportation routes, better service to local industry chains can be achieved, promoting industrial upgrading and adding value to products.

In conclusion, the close connection between market openness and industrial development necessitates robust support from transportation infrastructure. Through an in-depth examination of the industrial structure and transportation development in the Liupan Mountain Area, we can provide more targeted recommendations for future policy formulation and project planning, fostering sustainable poverty alleviation and development in the region.

# 3 Current Status of Transportation

In this section, I will provide a thorough analysis on current status of transportation in Guyuan, Ningxia Province. Given Figure 1 contains the basic means of transport in preceding area, according to [1]–[3].

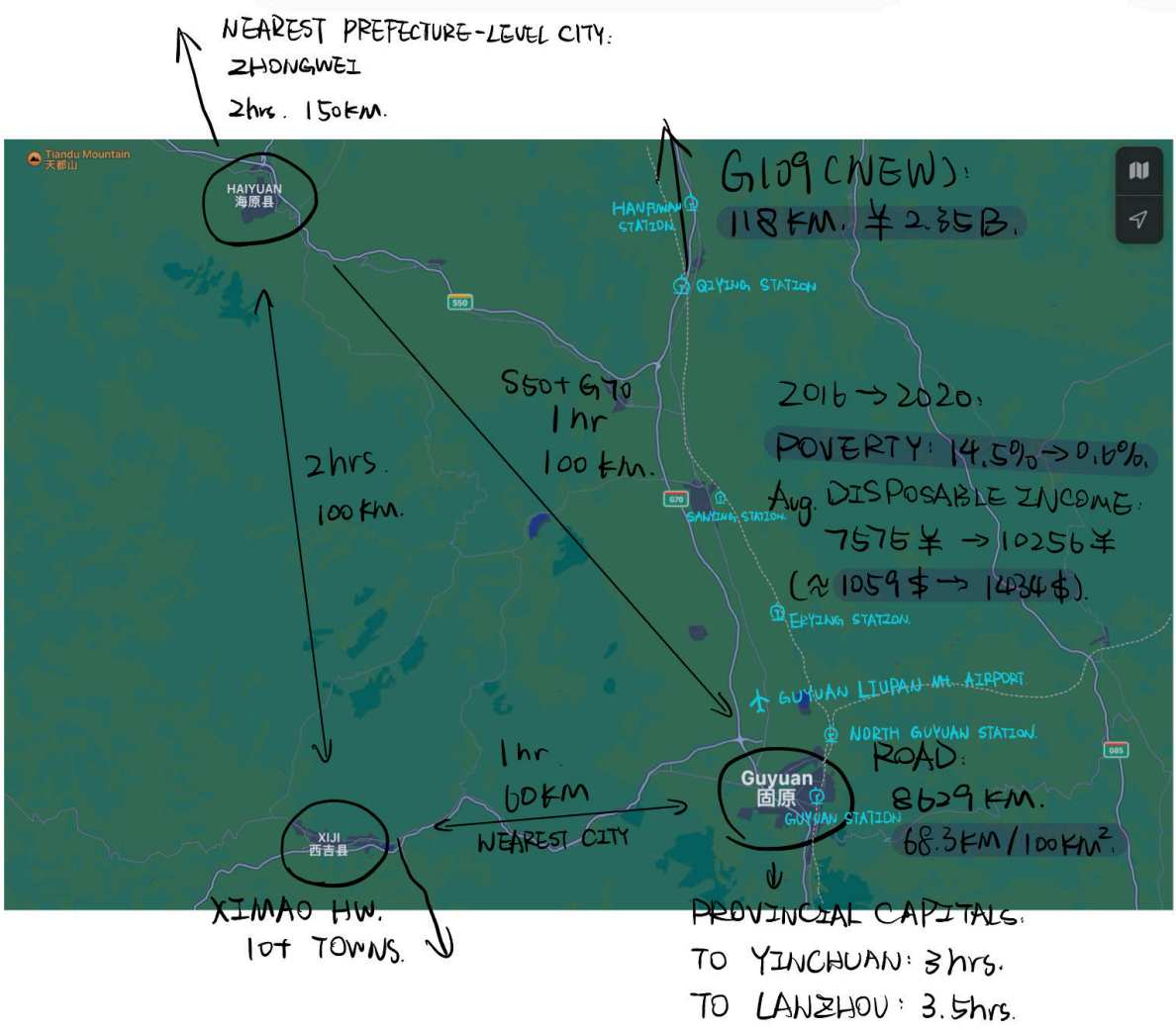


Figure 1: Current status of transportation in Liupan Mt. Area (Guyuan as an example)

## 3.1 Road Infrastructure

### 3.1.1 Evaluation

*Accessibility.* The several poverty-stricken areas are all connected to roads with a level of no less than 2, which means that they are equipped with typically 4 lanes and are capable of holding up to 7000 passing cars every day. Highways are available to most areas, providing a swift connectivity to surrounding cities.

*Efficiency.* With main railway lines and highways cutting across it, Guyuan has a fast connectivity to other provincial capitals. People in the two extremely poor county, Haiyuan and Xiji, now are both able to travel to Guyuan within an hour.

### 3.1.2 Newly Built Roads

During the Chinese government's struggle of eliminating poverty in a 10-year row, considerable number of roads are newly built to ensure the wellbeing of local people. Local government spent approximately 2.35 billion CNY (about 330 million USD) on G109, a new 118 km national highway. Besides, several provincial highways are also put into use. Altogether, the average road density in this area reaches 68.3 km/100 km$^2$[2], surpassing the country's average value.

### 3.1.3 Recommendations and Future Development

Consider Figure 2. the construction of roads is greatly affected by ecological protection. Current routes avoid intersecting with ecological protection area.

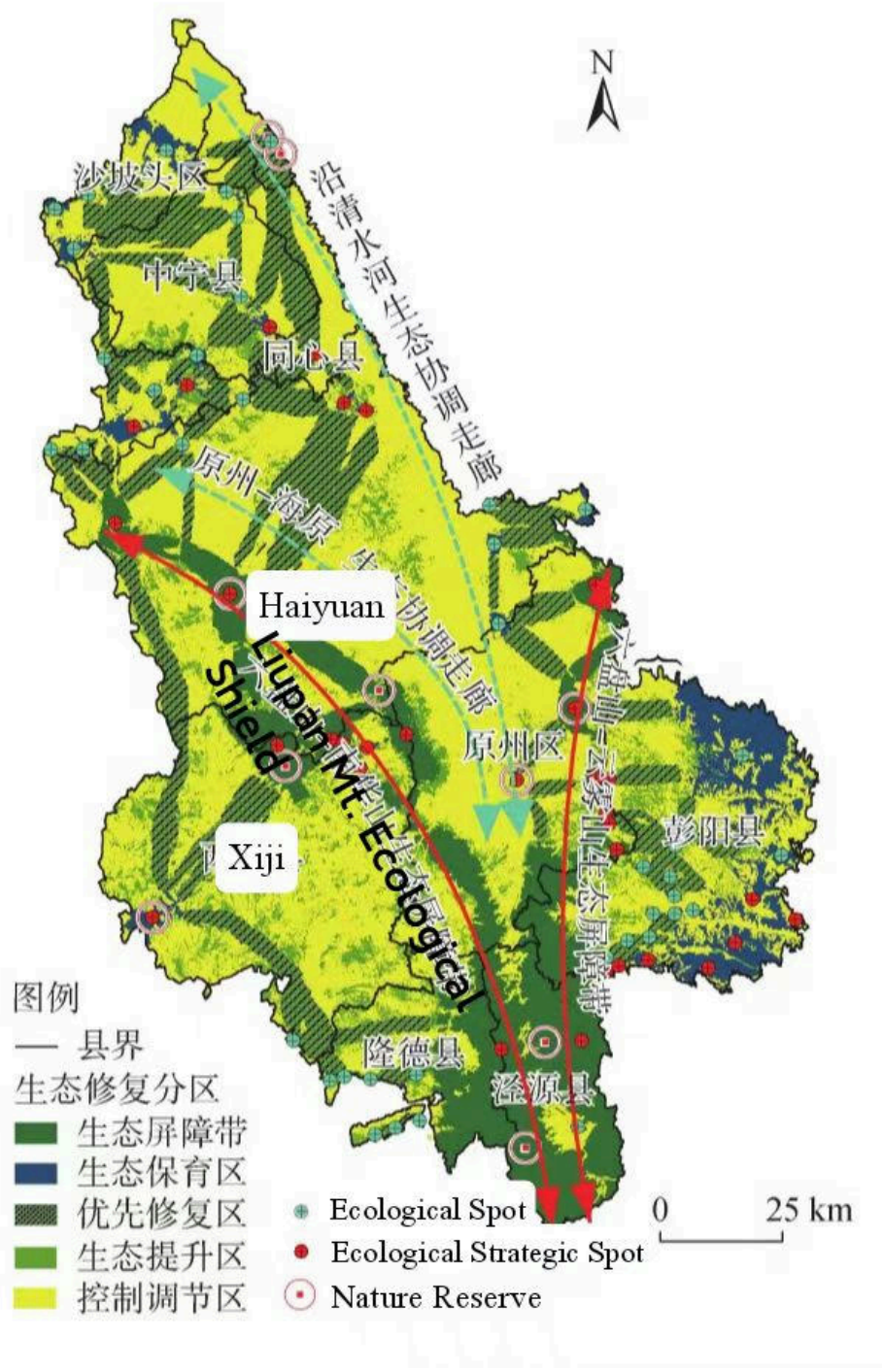


Figure 2: Ecological security pattern construction and restoration zoning [4]

From a larger scale, evident is that Xiji and Haiyuan can be connected into the road system with roads of a higher level without affecting local ecological protection. Specifically, Haiyuan and Xiji may establish roads to the West. That these roads are not built can mainly be attributed to a lack of effort put into the border area of provinces.

## 3.2 Railway and Aviation

### 3.2.1 Railway Availability

According to Figure 1, the railway connections in Guyuan predominantly align along a north-south axis, with few branch railways extending to surrounding counties. Though they may not show an urge request on railway connectivity, several branch railways will absolutely improve their convenience and facilitate the transportation of local goods to external markets.

### 3.2.2 Aviation

The Guyuan Liupan Mt. Airport, lying in rural Guyuan, is the primary aviation hub in the Liupan Mt. Area. Currently meeting transportation needs, the airport provides a rapid way to transport to other cities. It is a vital link for goods and people, contributing to local economy. Recommendations include advocating for necessary infrastructure upgrades to enhance connectivity, ensuring the airport continues to play a pivotal role in supporting economic development and poverty alleviation initiatives in the Liupan Mountain region. Currently no sign of needing a thorough update can be detected.

## 3.3 Evaluation of Effects

Given Figure 3, we can see that the per capita GDP of Liupan Mountain District increased faster than that of other regions, and was close to the per capita GDP of Tibet in 2018 [5]. Although the per capita GDP of Liupan Mountain District is far higher than that of other contiguous poverty belts, it is still far less than the national average.

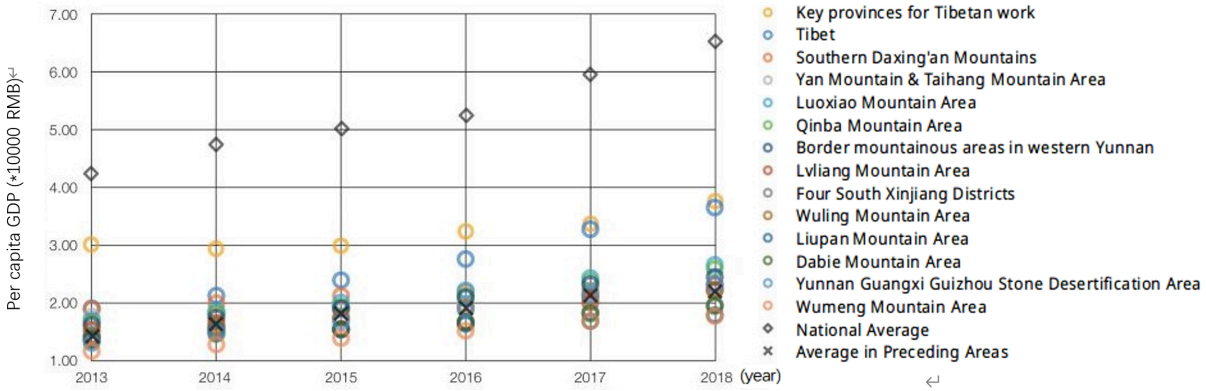


Figure 3: The change in per capita GDP in contiguous poverty-stricken areas from 2013 to 2018

# 4 Future Development Directions and Policy Recommendations

## 4.1 Technological Innovation and Digital Development

Looking forward, the Liupan Mountain region stands to benefit significantly from the infusion of advanced technologies and digital solutions into its transportation landscape. Integrating intelligent logistics systems and online traffic management tools can substantially enhance the overall efficiency and safety of transportation networks. Building upon existing infrastructure, these innovations can streamline connectivity, reduce transit times, and contribute to the region's economic growth. Moreover, leveraging digital platforms can empower local communities by providing real-time information, fostering better decision-making, and supporting the broader goals of poverty alleviation and sustainable development.

### 4.2 Policy Support and Investment

The role of government policies and investments in shaping the future of transportation in the Liupan Mountain region cannot be overstated. As evidenced by our analysis, strategic policy interventions are essential to address existing infrastructure gaps and promote inclusive development. It is recommended that the government not only amplifies financial commitments to transportation infrastructure but also adopts more flexible and adaptive policies. By encouraging private sector participation and collaboration, these policies can unlock new avenues for funding, innovation, and project implementation. Public-private partnerships are particularly crucial in catalyzing the comprehensive and timely development of transportation networks, aligning with the overarching goals of poverty reduction and sustainable economic advancement in the Liupan Mountain region.

## 5 Summary

By giving a thorough analysis over the transport in Liupan Mountain Area, we can conclude that transport has played a role that cannot be substituded in the poverty alleviation in this area. To better achieve the goal, the government has to continuously increase the effort put into the development of road infrastructure.

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