



1. Project Data

Project ID
P112359

Project Name
CN-NanGuang Railway

Country
China

Practice Area(Lead)
Transport & ICT

L/C/TF Number(s)
IBRD-77220

Closing Date (Original)
31-Dec-2014

Total Project Cost (USD)
5,985,000,000.00

Bank Approval Date
24-Jun-2009

Closing Date (Actual)
30-Jun-2015

	IBRD/IDA (USD)	Grants (USD)
Original Commitment	300,000,000.00	0.00
Revised Commitment	297,540,909.94	0.00
Actual	297,540,909.94	0.00

Sector(s)
Railways(100%)

Theme(s)
Public expenditure, financial management and procurement(100%)

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2. Project Objectives and Components

a. Objectives

The project development objective as stated in the Loan Agreement (Schedule 1, page 4) and in the Project Appraisal Document (PAD, page 5) was

To provide additional transport capacity and reduce transport time between the less developed western region in Southwest China and the relatively more developed Pearl River delta region.



- b. Were the project objectives/key associated outcome targets revised during implementation?

No

- c. Components

This project was part of a wider national program of six railway projects that supported the construction of 2,660 km of rail lines during the period. There was one main component.

Railway Line Between Nanning and Guangzhou. (Estimated Cost at appraisal US\$5,948.79 million. Actual cost at closure US\$6,884.00 million). This component financed the construction of a railway network that connected the existing railway network in the western region of Southwest China with the existing railway network in the Pearl River region. The railway networks was also to be connected to other network improvements which were expected to directly contribute to optimizing the benefits to rail transport provided by this project. Activities in this component included:

1. Construction of about 400 km of double track railway lines for movement of passenger and freight between Litang West in Guangxi Zhuang Autonomous Region and New Zhaoqing in Guangdong Province, and construction of 62 km four-track railway between New Zhoging and Sanyangiao in Guangdong Province. Activities included, construction of subgrades, tunnels, bridges, culverts and buildings; acquisition of goods (including, communications, signaling and electrification equipment and maintenance vehicles) and provision of technical assistance.

2. Reconstructing the existing railway stations along the two rail lines.

3. Resettlement and rehabilitation of displaced persons.

The Bank financed only the procurement of goods (communication, signaling and electrification equipment and maintenance vehicles).

- d. Comments on Project Cost, Financing, Borrower Contribution, and Dates

Project Costs: The total estimated project cost was US\$5,984 million. The actual cost at closure was US\$6,495.65 million. Actual cost was more than estimated in US\$ terms due to the appreciation of the local currency in relation to the US\$ during the implementation phase. In local currency terms, the actual cost at closure was 2% higher than the appraisal estimate.

Project Financing: The project was financed by an IBRD loan of US\$300.00 million. At closure, US\$300.00 million had been disbursed.

Borrower Contribution; The Borrower contribution was estimated at US\$5,685 million and at closure their contribution was more than planned at US\$6,584 million.

Dates: The project had two level 2 restructurings. The first restructuring in August 2011 was intended for reflecting changes in institutional arrangements. The Nanning-Guangzhou Railway Company Limited (formed in September 2008) and the Guiyang-Guangzhou Railway Company (formed on July 2009) were endorsed to take over all the implementation responsibilities as defined in Schedule 2 of the loan agreement. These newly formed entities succeeded the institutional arrangements at appraisal when the implementation responsibilities were under the Preparation Groups of the Nanguang and Guiguang Railway companies respectively. The second restructuring extended the project closing date by six months from December 31, 2014 to June 30, 2015. According to the information provided by the Task Team, this extension was for completing an administrative requirement of completing payment process and for allowing the final accounting and certification for delivered goods.

3. Relevance of Objectives & Design

- a. Relevance of Objectives

Given the size of the country, the project development objective of increasing the capacity of railways to meet the growing demand for rail services was highly relevant, as the rail mode was more economical than the road mode for long distance movement of passenger and freight. Further, with the exception of inland waterways, railways were more energy efficient than other transport modes (roads and the air mode) and hence more conducive to the environment. And constructing railways were more economical in terms of land use than constructing highways of similar capacity.

The importance of the project development objective to the government was articulated in the following documents. In 2004, the State Council approved the Ministry of Railways' (MOR) *'Mid and Long Term Railway Development Plan (MLTRDP)* which set the annual investment needs for railways to keep pace with growing demand at US\$12-15 billion through 2020. Following the State Council



approval of the 11th Five Year Plan for the 2006-2010 period, the annual investment needs had increased significantly above the level envisaged in the plan, to US\$45 billion in 2008. At appraisal in November 2008, the Government announced an economic stimulus plan of infrastructure spending in response to the growing global financial crisis. The emphasis of this plan was to focus on those sectors which could meet the twin requirements of quick implementation and yet have significant and continuing long term benefits. The railway sector was identified as one of the sectors capable of meeting these goals.

The project development objective continues to be relevant with the Bank strategy for China. At appraisal, the project contributed to the priorities set in the the Country Partnership Strategy (CPS) for the 2006-2010 period on the dimensions of: (i) Integrating China into the world economy.(ii) Reducing poverty, inequality and social exclusion with affordable transport.(ii) Reducing poverty, inequality and social exclusion with affordable transport. (iii) Managing resource scarcity and environmental challenges. And, (iv).improving public and market institutions. The project development objective continues to be relevant with the CPS for the 2013-2016 period, on the dimensions of fostering greener growth through low-carbon transport and improving transport connectivity for balanced regional economic development within the country.

Rating

High

b. Relevance of Design

The statement of the project development objective was clear and the causal links between the project activities, their outputs and final outcomes were logical. And the intended final outcomes were measurable in principle.

The construction of railway lines would increase capacity for long haul movement of passenger and freight, and this in turn can be expected to reduce transport time between the less developed western region of Southwest China and the relatively more developed Pearl River Delta Region. The outcomes could be expected to contribute to the higher level objective of integrating China into the world economy, reducing poverty and inequality within China through generating local employment, enabling access to the region by less well off workers and addressing transport-related environmental challenges facing the Chinese economy. The design also identified the exogenous effects on the environment and incorporated measures for addressing such effects.

Rating

Substantial

4. Achievement of Objectives (Efficacy)

Objective 1

Objective

To provide additional transport capacity between the less developed western region in Southwest China and the relatively more developed Pearl River Delta Region.

Rationale

Outputs

Project outputs which were common to both objectives are as follows:

- Two-track electrified line of about 400 km for freight and passenger service connecting Litang West in the Guangxi Zhuang Autonomous Region and New Zhaoqing in Guangdong Province was constructed as targeted (including construction of subgrades, tunnels, bridges, culverts and buildings). The technical parameters of this railway met international standards in respect of power supply, overhead electric system, signaling, communications, train control and dispatching system and energy conservation. The railways included safety systems, such as fencing of railway right of way, infrared hot box detectors, automatic train protection system, cab signaling, radio communication on train and systems to monitor, wind, rainfall and obstructions on tracks and suitable protection against electromagnetic interference to



communications was also provided.

- Two tracks of a new four-track electrified rail line of about 62 km connecting New Zhaoqing and Sanyanqiao was constructed to international standards, as targeted (with subgrades, tunnels, bridges, culverts and buildings).
- 94 million total man days of temporary jobs were created during the construction period. No targets were set for this indicator. The ICR (page 12) notes that during 2009-2014, most of the hired local labor was from the Guangxi Zhuang Autonomous Region rather than from the economically more advanced Guangdong Province.
- Institutional support was provided for preparing environmental impact assessment and Environmental Management Plan and for restructuring the management arrangement associated with the formation of a project company.

Outcomes

- Average number of pairs of express trains (that connected and provided faster connections to important destinations, as these trains stop in fewer locations than other express trains) for passengers between the less developed western region of Southwest China and the more developed Pearl River Delta Region, increased from seven at the baseline to 31 by project closure and as compared to the target of 20. This exceeded the target by 55%.
- Average number of pairs of freight trains between the regions indicated above did not increase from zero at the baseline to eight as targeted. While the line was built for both passenger and freight traffic, China Railway decided not to run freight trains in the short-term in high speed line, so as to meet the increasing demand for rail services by passengers, and instead ran freight trains on the conventional line, as part of current unified rail network strategy at project closure..

Overall, additional rail capacity between the regions increased and rail capacity targets were exceeded. The team clarified that there has been no policy or strategy to date and that more operational experience was required before China Railway would consider a change in freight policy.

A beneficiary survey was conducted to assess the benefits at project closure. The methodology followed was interviews with people (a sample of 504) who were using the trains. Incomes of project beneficiaries, especially rural households showed an increase alongside the project areas (The ICR does not however provide information on the number of people who could have benefited from the rail service). During the 2008-2013 period, the average increase in income was above 50% in Zhaoqing and Guigang. There were indications that land values went up in the project areas. For instance, the average value of residential area in Yunfu went up from RMB 3,000 (US\$471) in 2008 to RMB 5,300 (US\$833) per m2 2014, while the average value of an office area went up from RMB 5,500 (US\$864) per m2 in 2008 to RMB 8,600 (US\$1,352) per m2 in 2014. While it is difficult to gauge the extent to which the project directly contributed to the average increase in income or increase in land value along the project area, the project may have made a significant contribution to realizing these outcomes. It is also unclear of how much of the increases noted are due to inflation and other factors beyond the project's control - there was no counterfactual.

Rating
Substantial

Objective 2

Objective

To reduce transport time between the less developed western region in southwest China and the relatively more developed Pearl River delta region.

Rationale

Outcome

- Average travel time of express trains between the less developed western region of Southwest China and the more developed Pearl River Delta Region decreased from more than ten hours (620 minutes) at the baseline to about two and hours (156 minutes) at project closure and as compared to the target of 170 minutes. The line was shorter by 180 km, yielding efficiency gains. While data on detailed train occupancy figures was not available at the beginning of the project and were not taken as part of the results framework, a Bank mission in May 2014 found that 50% of the seats were occupied at the first station and this had increased to 75% by the second station. Figures in March 2015 indicated an average occupancy of 91% on the trains.
- A beneficiary survey was conducted between March 25 and April 14 in 2015 to assess the project benefits. The survey was based on 504 interviews and survey of eight trains along the project area. 42% of the interviewed travelers were reported to be using railways because of the short travel time. Comfort, punctuality and affordability were other reasons cited by the travelers for choosing this mode.



Over 84% of passengers reported traveling more due to the construction of the new rail line.

Rating
Substantial

5. Efficiency

Economic and Financial Analysis.

A Cost-Benefit Economic analysis was conducted for the project's single component which accounted for approximately 70% of the total project cost, both at appraisal and at closure. The project was expected to contribute to increased traffic volumes, both on account of diversion from other modes such as roads and the air mode, and through traffic diverted from the existing rail line. The project benefits were assumed to come through reduction in travel time and distance, freeing up capacity on the existing network to handle the projected increase in traffic and wider economic, social and external environmental benefits (such as reduction in road accidents and congestion, vehicle emissions and changes in greenhouse gases) and agglomeration benefits (the notion is that a transport project that leads to reduction in travel times between regional economic centers can impact on companies locational choices and agglomeration of companies in particular areas can generate positive externalities - such as knowledge spillovers between companies and greater productivity due to greater competition). The ex post Economic Rate of Return (EIRR) was 16% as compared to the ex ante EIRR of 13%.

Operational and Administrative Efficiency

The project activities were completed at lower US\$ costs. The railway lines were opened on December 2014, ahead of the original loan closing date and at project closure the loan funds were almost fully disbursed.

Efficiency Rating
Substantial

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal	✓	13.00	70.00 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	16.00	70.00 <input type="checkbox"/> Not Applicable

* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome

Relevance of objective was rated as High and relevance of design was rated as Substantial. Efficacy of the first objective– to provide additional transport capacity – was rated as Substantial. The objective was met, although with different mix of traffic (no freight traffic but passenger traffic increasing more than targeted). Efficacy of the second objective was rated as Substantial. Efficiency was rated as Substantial. The ex post EIRR exceeded the ex-ante EIRR. The project activities were completed ahead of time and at lower dollar costs and the line was open ahead of the loan closing date.



- a. Outcome Rating
Satisfactory

7. Rationale for Risk to Development Outcome Rating

Financial Risk: Although revenues were three times greater than the cost of operating the trains, at project closure, the lines were not open for moving freight. It is not clear whether the financial sustainability of the project could be ensured once the line is open for moving freight. This risk is rated as Modest.

Technical Risk: Given that similar train systems were operating with high levels of safety and reliability in China since 2007, the technical risk is rated as Low to Negligible.

Government Commitment: China has been investing in railways more than planned to keep pace with increasing demand. The Long Term Railway Development Plan of 2004 envisaged an investment of US\$12-15 billion per year through 2020. This has increased substantially to over US\$90 billion per annum since 2009. In view of this, this risk is rated as Low to Negligible.

- a. Risk to Development Outcome Rating
Negligible

8. Assessment of Bank Performance

- a. Quality-at-Entry

The project built on the lessons learnt from the six prior Bank-financed projects in the railways sector. As in the case of two prior Bank-financed Railway Projects in China (the Shizheng Railway Project and the GuiGunag Railway Project), the project design envisaged the creation of a company and transfer of assets created by the project to the company by the Ministry Of Railways (MOR), to strengthen ownership of the project for implementation and future operation. Risks were identified at the appraisal stage (including substantial risks associated with traffic volume forecasts in a greenfield project, risks associated with the modalities of transfer of project assets to a yet-to be formed company, environmental risks and risks associated with resettlement). Appropriate risk mitigation measures were incorporated at the design stage. Appropriate arrangements were incorporated for ensuring compliance with fiduciary (financial management and procurement) issues and environmental and other safeguards.

The design did not include adequate provision to assess project progress at the implementation phase through a scheduled Mid-Term Review. The team clarified that although a Mid-Term review was not scheduled, the core Bank team was located in the country office and rather than occasionally meeting the client twice a year, the team met China Railway every six weeks to follow up on the implementation of the railway program. This enabled much higher engagement than usual throughout the project implementation period.

Quality-at-Entry Rating
Satisfactory

- b. Quality of supervision

Eight Implementation Status Reports were filed over a six-year period, implying supervision missions of approximately twice a year. The supervision was diligent and included the required expertise. Although Bank financing accounted for only 5% of a \$6 billion project, there was compliance with Bank policies in matters pertaining to safeguards and fiduciary issues.

The results framework was not revised to reflect the government's decision to use the railway line exclusively for passenger traffic. The team clarified that the decision was taken by the operational planning unit of China Railway Corporation (CRC) in November 2014, after the final supervision for the project, one month before the rail line actually opened and the Bank team had no control over this decision.



Quality of Supervision Rating
Satisfactory

Overall Bank Performance Rating
Satisfactory

9. Assessment of Borrower Performance

a. Government Performance

The government's commitment to meet the growing demand for rail services through increasing capacity was evidenced by the increase in investment in the railway sector and contributing more than planned by way of counterpart funding. The government complied with loan covenants (including fiduciary and safeguards) and the Ministry of Railways delegated responsibility and provided adequate resources to the implementing units.

Government Performance Rating
Satisfactory

b. Implementing Agency Performance

The Foreign Capital Technology Import Center (FCTIC) under the Ministry of Railways (MoR) was in charge of implementing the project. The central China Railways Corporation and the Nanguang Railway Company adhered to the project implementation requirements and in conjunction with their engagement in Bank missions, contributed to the timely completion of the project. The semi-autonomous operating company was formed as envisaged and the assets of the project were transferred to the company by the Ministry of Railways. The financial reports and procurement activities were completed in a timely fashion and the performance of the implementing agency on resettlement activities and compensation payment mechanism to the displaced was satisfactory (discussed in section 11).

Implementing Agency Performance Rating
Satisfactory

Overall Borrower Performance Rating
Satisfactory

10. M&E Design, Implementation, & Utilization

a. M&E Design

The key M&E outcome indicators included, the average number of pairs of express passenger trains and freight trains operated per day and average travel time of express trains (having maximum speed of 200 km per hour) between the less developed region of Southwest China and the relatively more developed Pearl River Delta Region, and they were appropriate. The intermediate indicator to measure progress of project output "progress rate of works and procurement of goods" was not clearly defined. It is not clear whether this indicator measured progress in physical terms (that is, % km of infrastructure works completed, or in financial terms (that is, as % of total investment).

b. M&E Implementation

Data on baseline, target values and intermediate values were provided by the Ministry of Railways (MoR), through the Foreign Capital Technology Import Center (FCTIC). The key outcome indicator on number of freight trains operating was not revised during implementation. The ICR (page 6) notes that the decision to postpone the use of the new high-speed rail line for freight transport was confirmed by the government in November 2014, one month after the second project restructuring and since there were only six months for the project closing date, the Bank decided against a further restructuring to make the required changes regarding the indicators.



c. M&E Utilization

The ICR (page 6) reports that China Railway Corporation (CRC) supplemented the M&E framework with other tools to serve as a basis for evaluation and to inform decision making and resource allocation. The team clarified that the indicators are very standard and commonly used in railway operations including by China Railways.

M&E Quality Rating
Modest

11. Other Issues

a. Safeguards

The project was classified as a “Category A” under Environmental Assessment (OP/BP 4.01). Three safeguard policies were triggered: Natural Habitats (OP/BP 4.04); Physical Cultural Resources (OP/BP 4.11) and Involuntary Resettlement (OP/BP 4.11).

Environmental, National Habitats and Physical Cultural Resources Safeguards: As the NanGuang Railway Line was along a well-developed corridor (parallel to a major river) a number of environmentally-sensitive areas (such as Nature Reserve, Forest Part, Tourism Areas and cultural relics) were identified at the project site at appraisal. The main environmental issues included concerns on waste and spoils disposal, water pollution and soil erosion, and noise and safety during construction. An Environmental Impact Assessment was conducted at appraisal, with site specific analysis for natural habitats and a cultural resources survey of project sites by local archeological institutes. Following this assessment, an Environmental Management Plan (EMP) was prepared and publicly disclosed as required.

The Environmental Management Plan was satisfactorily implemented. Most environmentally-sensitive areas (such as natural habitats and sites with cultural relics) were avoided through proper measures (such as alignment selection or crossed by tunnel or tunnel-bridge systems). Further, the Nanguang Line passed a preliminary environmental protection acceptance inspection conducted prior to the trial operation in December 2014. The inspection concluded that the required measures (such as slope protection measures and greening works) and necessary environmental facilities (such as wastewater and sanitation facilities) were installed as per design (ICR, page 7).

Involuntary Resettlement: Given that this project was a greenfield project, land acquisition (including acquisition of agricultural land) and resettlement of the displaced people (including urban households, people losing land, employees from affected factories and students from affected schools), was required. A Resettlement planning exercise was carried prior to appraisal, through an inventory survey of physical impacts, a census of the affected population within the impact area and public consultations with affected villages and households on issues, such as the selection of railway alignment, location of the railway station, compensation rates, relocation arrangements and livelihood restoration approaches. And based on the results of the planning exercise, a Resettlement Action Plan (RAP) that was consistent with local laws and regulations was prepared and the plan was publicly disclosed through a government website, local newspapers and through Bank offices’.

At closure, the implementing agency had completed land acquisition (16 km² of land was utilized at project closure as compared to the appraisal estimate of 17 km²) and paid the required compensation. A total of 2,463 households were relocated compared to the 2,029 households estimated at appraisal and total compensation paid for land acquisition and relocation was equivalent to the amount estimated at appraisal (ICR, page 8).

b. Fiduciary Compliance

The Foreign Capital and Technical Import Center (FCTIC) in the Ministry of Railways (MOR) was in charge of financial management and financed procurement.

Financial Management: The Center had managed several Bank loan projects. A financial management assessment conducted at appraisal concluded that Center had the required ability to address the financial management issues. The ICR (page 7) notes that the audits were unqualified and clean.

Procurement Management: The Center had managed several prior Bank loan projects and was implementing two ongoing projects with similar procurement arrangements. An assessment of the procurement arrangements at appraisal concluded that the Center had the required ability to



address procurement issues.

There were no procurement issues (ICR, page 7) or delays associated with procurement during implementation. Although disbursements were delayed in 2015 for finalizing contract amendments for 24 projects under the project, these issues were resolved without affecting the project timeline. The team clarified that there was no case of mis-procurement.

c. Unintended impacts (Positive or Negative)

d. Other

12. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Satisfactory	Satisfactory	---
Risk to Development Outcome	Negligible	Negligible	---
Bank Performance	Satisfactory	Satisfactory	---
Borrower Performance	Satisfactory	Satisfactory	---
Quality of ICR		Substantial	---

Note
When insufficient information is provided by the Bank for IEG to arrive at a clear rating, IEG will downgrade the relevant ratings as warranted beginning July 1, 2006.

The "Reason for Disagreement/Comments" column could cross-reference other sections of the ICR Review, as appropriate.

13. Lessons

The ICR draws the following main lessons from the experience of implementing this project.

(1) Unified control over railway program development, project design, financing and implementation can help in achieving overall success, even when the Bank contribution is relatively low. In the case of this project, the China Railway Corporation was solely responsible for planning, financing and implementing individual projects and creating delivery mechanisms. The unified control over the project enabled timely completion of activities, despite the relatively marginal financial contributions from the Bank.

(2) Although agglomeration benefits have been recognized in theory with railway projects, there are few quantitative data to assess the results. This may partly due to the longer time span required for reaping the benefits. An ex post analysis after five or ten years after the railways have been in operation can be undertaken to assess the quantitative benefits.

(3) Adequate provisions need to be made at the design stage for a Mid Term Review. An assessment through the Mid-Term review can be helpful in adapting the project to the circumstances and making changes to the relevant indicators if need be.

14. Assessment Recommended?



No

15. Comments on Quality of ICR

The ICR is concise, well-written and provides a good analysis. Given that this was classified as an Environmental "category A" project, the ICR provides a thorough description of the possible environmental impacts and the measures taken to ensure compliance. The ICR provides very little details on the tools used by the China Railways Corporation (CRC) for supplementing the M&E framework. The ICR at several places in the text mentions that the project was completed in a timely fashion, when in fact there was an extension of the closing date by six months.

- a. Quality of ICR Rating
Substantial