

Project Administration Manual

Project Number: 46040-002
November 2014

People's Republic of China: Yunnan Pu'er Regional Integrated Road Network Development Project

The project administration manual is an active document, progressively updated and revised as necessary, particularly following any changes in project costs, scope, or implementation arrangements. This document, however, may not reflect the latest project changes.

Asian Development Bank

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Project Administration Manual Purpose and Process

The project administration manual (PAM) describes the essential administrative and management requirements to implement the project on time, within budget, and in accordance with Government and Asian Development Bank (ADB) policies and procedures. The PAM should include references to all available templates and instructions either through linkages to relevant URLs or directly incorporated in the PAM.

The Pu'er Municipal Government, the executing agency (EA) and Pu'er Municipal Transport Bureau, the implementing agency (IA) are wholly responsible for the implementation of ADB-financed projects, as agreed jointly between the borrower and ADB, and in accordance with Government and ADB's policies and procedures. ADB staff is responsible to support implementation including compliance by the EA and IA of their obligations and responsibilities for project implementation in accordance with ADB's policies and procedures.

At Loan Negotiations, the borrower and ADB shall agree to the PAM and ensure consistency with the Loan Agreement. Such agreement shall be reflected in the minutes of the Loan Negotiations. In the event of any discrepancy or contradiction between the PAM and the Loan Agreement, the provisions of the Loan Agreement shall prevail.

After ADB Board approval of the project's report and recommendations of the President (RRP), changes in implementation arrangements are subject to agreement and approval pursuant to relevant Government and ADB administrative procedures (including the Project Administration Instructions) and upon such approval they will be subsequently incorporated in the PAM.

ABBREVIATIONS

ADB	=	Asian Development Bank
DSC	=	Design and Supervision Consultant
EA	=	executing agency
EIA	=	environmental impact assessment
EIRR	=	economic internal rate of return
EMDP	=	ethnic minorities development plan
EMP	=	environmental management plan
GDP	=	gross domestic product
HAHTP	=	HIV/AIDS and Human Trafficking Prevention Plan
km	=	kilometer
MOF	=	Ministry of Finance
NGO	=	nongovernment organization
PAM	=	project administration manual
PMG	=	Pu'er Municipal Government
PMO	=	project management office
PMTB	=	Pu'er Municipal Transport Bureau
PPMS	=	project performance monitoring system
PPTA	=	project preparatory technical assistance
RF	=	resettlement framework
RP	=	resettlement plan
RSAP	=	road safety action plan
YEPB	=	Yunnan Environmental Protection Bureau
YPDOT	=	Yunnan Provincial Department of Transport
YPG	=	Yunnan Provincial Government

NOTES

- (i) The fiscal year (FY) of the Government and its agencies ends on 31 December.
- (ii) In this report, "\$" refers to US dollars.

I. PROJECT DESCRIPTION

1. Yunnan province, located in southwest People's Republic of China (PRC), is one of the country's least developed provinces. Due to road network limitations the rural population suffers from lack of access to markets and economic opportunities. High transport costs limit the extent of regional trade and constrain residents' income earning potential. With better road connections, Yunnan could serve as a gateway for transport and trade with neighboring countries.

2. Pu'er is a mountainous landlocked prefecture in southern Yunnan, with a total land area of 45,385 square kilometers (km²) (12% of Yunnan total). Bordering Viet Nam, Lao People's Democratic Republic (Lao PDR), and Myanmar, it had a gross domestic product (GDP) per capita of CNY11,795 in 2011, which was 62% of the Yunnan average and about half the national average. Rural GDP per capita was one third of the prefecture average (CNY4,338). Of 2.56 million inhabitants (5% of Yunnan total), 950,000 were below the government's official poverty line¹ representing a 37.1% poverty rate, and all 9 counties are classified as national poverty counties.²

3. Road transport is the dominant transport mode for people and goods in Pu'er. It is therefore an important enabling factor in economic development and reducing poverty. In 2011, total transport in Pu'er amounted to 3.8 billion ton-km (4% of Yunnan total) and 2.8 billion passenger-km (5% of the total),³ mostly carried by road.⁴ Pu'er has 615,900 registered vehicles⁵ (7% of Yunnan total), and 73 transport service enterprises employing over 11,000 people.

4. The road network in Pu'er has a total length of 19,424 km, comprising 2,504 km of national and provincial roads (13%) and 16,291 km of county, township roads, village and special roads (87%). The proportion of unclassified roads in Pu'er (34%) is relatively high compared to the Yunnan province average (23%), and although the proportion of unpaved roads is similar to the rest of the province, a larger percentage of these are earthen roads (approximately 34% of the network in Pu'er compared to 20% for Yunnan province).

5. Yunnan Highway Administration Bureau (YHAB) is responsible for administering most of the national and provincial roads in Pu'er prefecture.⁶ Pu'er Municipal Transport Bureau (PMTB) administers just under a third of provincial roads, together with all county, township, village and special roads, accounting for about 90% of the classified road network. PMTB manages road construction and large-scale maintenance works, in part through the Pu'er Highway Maintenance and Management Company (PHMMC).⁷ County transport bureaus (CTBs), supported by staff at township and village level, maintain roads below provincial level.

¹ Defined as an annual income of below CNY2,300.

² A national poverty county designation typically involves an average rural per capita net income less than CNY2,300.

³ Pu'er Economic Statistics 2012.

⁴ Water transport in Pu'er for 2011 involved only 600,000 passengers (6% of total in Yunnan) and 160,000 tons (3% of total in Yunnan). Yunnan Statistical Yearbook 2012. In 2009, water transport formed less than 1% of total passenger-kilometers and freight ton-kilometers in Pu'er. Annals of Statistics of Pu'er City 2000–2009. There are no railways in Pu'er.

⁵ Including 64,000 passenger vehicles, 41,900 trucks and other freight vehicles, 458,900 motorcycles, and 37,900 tractors. Yunnan Statistical Yearbook 2012.

⁶ This responsibility is managed by the Simao General Section, supported by a maintenance center (heavy equipment), county-level maintenance sections (management staff), maintenance stations (maintenance workers) and equipment stations (equipment and workers).

⁷ This company is owned by PMG, but placed under the authority of PMTB.

6. Poor transport access is strongly associated with higher poverty levels in Pu'er. Agricultural trade volumes are limited as many agricultural products are perishable.⁸ This contributes to the vulnerability of farmers during periods when roads are impassable. Limited access has also led to the prevalence of monopoly transport intermediaries that suppress farm gate prices. Poor transport provision limits interaction with more advanced areas, and reduces the effectiveness of government agricultural and rural development programs. Villagers in mountain areas are less aware of the employment and service opportunities available in urban areas, which limit their tendency to migrate and contribute to rural incomes through remittances.

7. **Cross-border trade and transport.** Yunnan province is part of the Greater Mekong Subregion (GMS) grouping of countries. Kunming, the capital of Yunnan, is the northern anchor of the GMS North-South Economic Corridor (NSEC) connecting the PRC to Thailand via routes through both Lao PDR and Myanmar. It is a hub for trade between the PRC and countries in the Association of Southeast Asian Nations (ASEAN), and also India and Bangladesh. Yunnan's external trade is growing rapidly. The total value of imports and exports has risen from under \$2 billion in 2001 to \$12.3 billion in 2011, representing an average increase of 20% per annum over 10 years. In 2011, the value of imports and exports were roughly equal (a little over \$6 billion each), with imports growing substantially faster than exports.

8. Despite being the only prefecture in Yunnan bordering Myanmar, Lao PDR and Viet Nam, international trade in Pu'er was \$100 million in 2011 (less than 1% of Yunnan total). This reflects a lack of high quality border crossings and road connections. Of the prefecture's 20 existing border crossings,⁹ only three are class I crossings (one with Myanmar and two with Lao PDR). A fourth class I crossing is needed to serve the border with Viet Nam at Longfu in Jiangcheng county. This will require investment in upgrading Ning'er–Jiangcheng–Longfu road to provide a high quality connection between the border and the provincial expressway network. These improvements, together with the newly constructed Menkang crossing to Lao PDR, will place Jiangcheng county at the center of Yunnan's trade with neighboring countries, since it is equidistant from the nearest trading centers in Yunnan (Pu'er), Viet Nam (Dien Bien Phu) and Lao PDR (Phongsali).

9. In 2005, the Pu'er Government began construction of a border economic cooperation zone at Meng'a to serve trade with Myanmar's Shan State. Between 2007 and 2012 total trade through Meng'a¹⁰ increased from \$59 million to \$271 million, at an average annual growth rate of 35%. However, trade facilities and road connections to Meng'a are inadequate to service current demand and are now constraining further growth in trade volumes. To meet growing demand it is necessary to expand transit and storage facilities at Meng'a and improve onward road connections from Meng'a to the provincial highway network at Lancang via Menglian.

10. **Rural access.** About 94% of the province's land area is covered by mountains and hills, posing a great obstacle to providing basic rural road access. Pu'er's rural roads provide communities with access to (i) markets for sale and purchase of produce and agricultural inputs; (ii) collection or processing stations for the sale of cash crops; (iii) towns and cities for seasonal employment opportunities; and (iv) social services such as schools, health facilities and administrative services. Although some limited services and facilities are located in or around the administrative villages (clinic, processing stations and primary schools), most services and

⁸ Fruit, tobacco, tea, sugar cane and meat.

⁹ 17 with Myanmar, 2 with Lao PDR and 1 with Viet Nam.

¹⁰ The main imports are ore sands, rubber, timber, sugar cane and fruit. The main exports are construction plant, building materials, commodities, fuel oil, vehicles and electrical products.

facilities are located in the townships (markets, hospitals, primary and middle schools, banks, police, coffee collection stations and tea processing plants). Some services and facilities are only available at the county towns (major markets, large hospitals and secondary schools). There is substantial demand for rural transport between the villages and the nearest townships (up to 5 times a month for each household), and onwards to the county town (once or twice a month) and the prefecture capital (a few times a year).

11. PMTB is gradually expanding the rural road network. Approximately 400 km of class III and class IV roads were upgraded to class II in 2010, and approximately 100 km of unclassified roads were brought to class IV in 2011.¹¹ An additional 230 km of new roads were constructed in the period 2010–2012, distributed evenly between unclassified and class II roads. PMTB plans to upgrade 1,000 km annually with the support of Ministry of Transport (MOT) subsidies of CNY500,000/km for upgrading of roads linking administrative villages (up to 800 km annually).

12. Improved approaches to road maintenance planning and management are required to protect Yunnan's growing stock of rural road assets. Maintenance is financed from prefecture and county government allocations together with a provincial subsidy. Prefecture allocations are mainly used to finance maintenance stations at county level, purchase equipment and pay performance bonuses to county transport bureaus. Annual funding levels for the different road types vary according to the county, from CNY1,200/km for village roads to CNY11,200/km for county roads. Nearly half this funding is used for financing maintenance stations, including construction and maintenance of buildings, and equipment purchases, and approximately 32% is spent on servicing pension liabilities, leaving only 25% for actual maintenance works.

13. The lack of a consistently applied road maintenance implementation system results in underutilization of funding allocations. In some areas on the township and village road network no maintenance is organized. Local villages then assume responsibility, with households voluntarily contributing a few work days a year. In practice, the burden is carried disproportionately by women and the poor. The system has failed to improve road conditions. The voluntary nature results in low productivity, less than optimal timing, and a lack of investment in technical skills, all of which compromise maintenance quality. There is a need to introduce a community based maintenance system involving (i) remuneration to ensure timely performance, (ii) training in management and maintenance practices, and (iii) the provision of tools, safety equipment and construction materials. A practical cost effective rural road maintenance scheme could generate employment opportunities and serve to reduce poverty.

14. **Road safety.** In Yunnan the road crash fatality rate per 100,000 persons is 4.1 (3.9 in Pu'er) which is comparable to the UK and France. However, the fatality rate per 10,000 vehicles or per billion vehicle-kilometers is 3 to 5 times higher, implying that low overall fatality rates are due to the low numbers of vehicles rather than high road safety levels. Two-thirds of Yunnan's road crash fatalities are on higher class roads, mainly involving collisions between vehicles (65%) and other objects (17%). As rapid motorization continues, there is a risk of fatality rates rising unless more attention is given to road safety. A road safety emphasis therefore needs to be an integral part of the engineering design process.

15. On lower class rural roads, fatality rates are much lower due to low driving speeds, and collisions are not common. Many of the fatalities that do occur involve vehicles rolling over sharp declines (47%). Crashes resulting in multiple casualties are largely due to people using inappropriate and overloaded vehicles. This is partly because rural village based public

¹¹ PRC road classification information is provided in supplementary linked document (SLD) 21.

transport services either do not exist or are inadequate. School children are routinely transported to and from school on motorcycles or tractor-trailers which offer little protection in a crash. There is a need to establish sustainable models of safe rural public transport services.

16. **Lessons.** ADB has supported 5 road projects¹² in Yunnan since 1994. Several lessons learnt have informed the present project design most notably the need to: (i) carefully plan and monitor land acquisition and resettlement, (ii) establish a focused project performance and monitoring system, (iii) consult widely with key stakeholders during the design stage, and (iv) incorporate post-project maintenance planning.

17. **Strategic relevance.** Connecting rural villages to regional transport and trade systems is in line with the government's 12th Five-Year Plan which attaches importance to regionally balanced growth. It is also aligned with ADB's assistance to the PRC under the 2011–2015 country partnership strategy in the areas of: (i) inclusive growth and balanced development; and (ii) regional cooperation and integration. The project fits well with ADB's Sustainable Transport Initiative (STI),¹³ which identifies regional cooperation and integration, road safety and social sustainability as priorities for ADB transport operations. This project will importantly alleviate access constraints and thereby help to ensure that the benefits from the expanding regional road network extend to rural areas.

18. **Impact and Outcome.** The expected impact of the project is enhanced regional integration and trade between Yunnan Pu'er and neighboring countries. The expected outcome of the project is improved accessibility between rural and border areas and an improved regional transport network in Yunnan Pu'er.

19. **Outputs.** The proposed project will include three outputs for ADB financing: (i) regional roads development; (ii) rural access improvement; and (iii) institutional development.

- (i) **Output 1: Regional roads development.** This comprises (i) upgrading and new construction of 234 km of class III/IV/III¹⁴ highway between Ning'er–Jiangcheng–Longfu; (ii) upgrading and new construction of the 48.75 km Menglian to Meng'a section of the Lancang–Menglian–Meng'a class III/IV border road mainly to class II standard; (iii) improving the safety of these roads by introducing safety measures determined by the ChinaRAP¹⁵ road safety design decision-making tool; and (iv) development of trade facilities at the Meng'a Material Transit Centre (MTC).
- (ii) **Output 2: Rural access improvement.** This will provide all-weather access to administrative villages and links with higher level roads. It comprises (i) upgrading to class IV standard of 600 km of village earthen or gravel roads

¹² The five ADB projects include: (i) Loan 3074-PRC: Yunnan Sustainable Road Maintenance (Sector) Project; (ii) Loan 2709-PRC: Yunnan Integrated Road Network Development Project; (iii) Loan 2448-PRC: Central Yunnan Roads Development Project; (iv) Loan 2014-PRC: Western Yunnan Roads Development Project; (v) Loan 1691-PRC: Southern Yunnan Road Development Project; and (vi) Loan 1325-PRC: Yunnan Expressway Project.

¹³ ADB. 2010. *Sustainable Transport Initiative Operational Plan*. Manila.

¹⁴ Class III from Ning'er to Xuande, class IV from Xuande to Baozang, and class III from Baozang to Longfu.

¹⁵ The ChinaRAP (iRAP) road safety design methodology uses road attribute risk factors, often called crash modification factors (CMF), to relate road attributes and crash rates. These are used to assess the likelihood that a crash will occur, and the severity of those that do occur, for both existing roads and for road designs. The methodology involves an economic analysis of road safety countermeasure options, with benefits expressed in terms of the value of deaths and serious injuries prevented. More information on the methodology and examples of technical reports and findings are available at <http://www.irap.org>.

selected in accordance with the rural road assessment criteria,¹⁶ (ii) spot improvements on up to 1,200 km of connecting lower level village roads, (iii) introduction of five new village bus service routes on a pilot basis, and (iv) a gender focused rural road maintenance program.¹⁷

- (iii) **Output 3: Institutional development.** This will address the limited implementation capacity of the Pu'er Municipal Government (PMG). A project management consultant will assist the PMG to implement and monitor the project in accordance with ADB procedures. The project will finance a 3-year program of international and domestic training in financial and project management, road maintenance engineering, road maintenance practices, road safety, environmental management, social safeguards management, and human, drugs and wildlife trafficking enforcement.

¹⁶ Rural roads assessment criteria shall include: (i) road connects multiple village groups and administrative villages; (ii) road connects to a national or provincial highway or an important county road; (iii) roads will not have dead ends or stop between village groups; (iv) roads will not involve new construction or major impacts on environment and resettlement (safeguards category B or C); and (v) there will be a balance in investment between the 9 counties.

¹⁷ The project uses the implementation manual developed for the community-based routine maintenance of roads by women's groups in Dehong Yunnan Province that was financed by ADB's Gender and Development Cooperation Fund (GDGF) in 2010. The Dehong pilot provided a boost to household income and demonstrated that routine maintenance can be performed effectively by women's groups. Complementary training was provided on economic activities to improve livelihood options and the status of women within their household and community improved.

II. IMPLEMENTATION PLANS

A. Project Readiness Activities

Table 1: Project Readiness Activities

Indicative Activities	Months												Who is responsible
	2014						2015						
	Q3			Q4			Q1			Q2			
	7	8	9	10	11	12	1	2	3	4	5	6	
1. Advance contracting actions													PMG, PMTB
2. Retroactive financing actions													PMG, PMTB
3. Establish project implementation arrangements													PMG, PMTB
4. ADB Board approval													ADB
5. Loan and Project Agreement Signing													PMG, MOF
6. Government legal opinion provided													PMG
7. Government budget inclusion													PMG, MOF
8. Loan effectiveness													PMG, MOF

ADB = Asian Development Bank, MOF = Ministry of Finance, PMG = Pu'er Municipal Government, PMTB = Pu'er Municipal Transport Bureau

B. Overall Project Implementation Plan

Table 2: Overall Project Implementation Plan

ID	Task Name	2014				2015				2016				2017				2018				2019			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Regional Roads Development																								
	Ning'er-Jiangcheng-Longfu Upgrade	1	1	1																					
1.1	Procurement				4	4	4																		
1.2	Civil Works							2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
1.3	Resettlement					2	2	2	2	2	2	2													
	Menglian-Meng'a Upgrade	1	1	1																					
1.4	Procurement				4	4	4																		
1.5	Civil Works							2	2	2	2	2	2	2	2	2	2	2							
1.6	Resettlement					2	2	2	2	2	2	2													
1.7	Environmental Monitoring (NJL+MM+RR)							2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
1.8	Border Facilities												2	2	2	2	2	2	2						
2	Rural Access Improvement																								
2.1	Procurement	1	1	1	1	4	4	4	4	4															
2.2	Rural Road Improvement							2	2	2	2	2	2	2											
2.3	Rural Road Maintenance												3	3	3	3	3	3	3	3					
2.4	Village Access Spot Improvements									2	2	2	2	2	2	2									
2.5	Rural Transport Services									2	2	2	2	2	2	2	2								
3	Institutional Development																								
3.1	Consultant recruitment			4	4	4																			
3.2	Road Safety Programme									2	2	2	2	2	2										
3.3	Wildlife Trafficking									2	2	2	2	2	2	2	2	2	2	2					
3.4	Overseas Training							2	2	2	2	2	2	2	2										
3.5	Project Management Consultant							2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
3.6	ChinaRAP Consultancy Services			2	2	2	2	2																	
3.7	External Monitoring – EMDP							2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
3.8	External Monitoring –									2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	

ID	Task Name	2014				2015				2016				2017				2018				2019			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	Environment																								
3.9	Capacity Dev't – Resettlement					2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
4	Capacity Dev't – Gender									2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
4.1	Capacity Dev't – Human and Drug Trafficking									2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
4.2	Capacity Dev't – Wildlife Trafficking										2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
4.3	EMDP Implementation						2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

Source: Asian Development Bank estimates. 1 Preparation 2 Implementation 3 Maintenance 4 Design/Bid Period
 In the event that project implementation progress exceeds the above schedule, the ADB will accelerate loan disbursement in accordance with Table 7 and the Loan Disbursement Handbook.

III. PROJECT MANAGEMENT ARRANGEMENTS

A. Project Stakeholders – Roles and Responsibilities

20. The Pu'er Municipal Leading Group, headed by the Deputy Mayor will provide high-level oversight to the project. The PMG will be the executing agency (EA) of the project. The PMTB will be the implementing agency (IA) for the project. It will establish an ADB project management office (PMO), in charge of overall project coordination and liaison with ADB. The PMO will have a minimum of five qualified full-time staff including: a project coordinator, a translator, an engineer, a financial management specialist, a social/resettlement specialist and an environmental specialist.

21. The PMO will be directly in charge of the procurement and supervision of project components under PMTB's oversight. The PMO will directly coordinate the implementation of the rural access and institutional strengthening components, for which daily management responsibility will be assigned to the county transport bureaus. The PMO will be supported by a Project Management Consultant (PMC) reporting to it. The PMO will also recruit a procurement agent, and external environmental, resettlement and ethnic minorities monitors.

Table 3: Project Implementation Organizations–Roles and Responsibilities

Project Implementation organizations	Management Roles and Responsibilities
Pu'er Municipal Government (PMG), the executing agency (EA)	<ul style="list-style-type: none"> • Responsible for overall project implementation; • Signing the Relending Agreement with Pu'er Municipal Finance Bureau for the project; • Ensure project's sustainability and report to ADB on agreed development outcome and impacts; • Monitor and evaluate project activities and outputs, including periodic review, preparation of review reports reflecting issues and time-bound actions taken (or to be taken); • Provide guidance to the implementing agency (IA) on project implementation; • Prepare and ensure project budget approval; • Establish strong financial management system, review submission of withdrawal applications to ADB and conduct financial audits as per agreed timeframe and taking recommended actions; • Oversee the resettlement plan (RP) and ethnic minority development plan (EMDP) implementation including <ul style="list-style-type: none"> (i) oversee that all the land acquisition and demolition is undertaken in a timely manner and in accordance with the laws and policies outlined in the resettlement plans (ii) ensure that budgetary arrangements for implementation of RPs and EMDP are made in timely manner (iii) ensure that the IA undertakes proper coordination with other relevant line-agencies responsible of RP & EMDP implementation and wherever necessary take the leading role to establish such coordination (iv) ensure the implementation of the RP & EMDP are monitored and reported as prescribed in the plans (v) Ensure compliance with loan covenants and project agreements • Oversee the procurement activities; • Ensure involvement of beneficiaries and civil society representatives in all stages of project design and implementation;

Project Implementation organizations	Management Roles and Responsibilities
	<ul style="list-style-type: none"> • Review regular periodic progress reports, monitoring reports, project completion report, and material actions agreed and their timely submission to ADB; • Ensure compliance with the loan covenants; • Provide assistance to the IAs in: <ul style="list-style-type: none"> (i) conducting construction supervision, (ii) preparing procurement documents, (iii) preparing withdrawal applications, and (iv) providing other administrative functions as needed; • Signing the Onlending and/or Relending Agreements for the project; • Processing and submitting to ADB, through the Ministry of Finance, any request, when required, for matters pertaining to Loan or Project Agreements; • Recruit procurement agent, design institute, external monitors, project implementation consultant, and construction supervision engineer; • Responsible for evaluation of bids, award and signing of contracts; and • Monitoring of the project implementation and providing coordination and facilitation as needed.
<p>Pu'er Municipal Transport Bureau (PMTB), the implementing agency (IA)</p>	<ul style="list-style-type: none"> • Oversee day-to-day implementation activities of the Project Management Office; • Recruits the project management consultants; • Responsible for organizing the construction, maintenance and management of the municipality's highways, waterways and other transport infrastructure; • Responsible for the preparatory work of key transport infrastructure projects (including the preliminary design), project implementation and acceptance of completed works; • Finalizes the design, bidding documents, and contract awards; • Assume coordination responsibility for all safeguards implementation requirements to ensure compliance with the Project and Loan Agreements; • Responsible for the organization of emergency repairs for natural disasters that obstruct traffic, such as roads damaged by water. It participates in traffic poverty alleviation work; • Monitoring of the project implementation and providing respective coordination and facilitation as needed; • Take overall responsibility of implementation of the RPs & EMDP • Establish required coordination among various line agencies involved in implementation of RPs & EMDP • Ensure that the RPs & EMDP implementation is being undertaken in accordance with the laws and policies outlined in the plans • Ensure that the RPs & EMDP implementation is being monitored and reported in a timely manner and that the external monitoring agencies are put in place within due time • Ensure that the resettlement funds are properly managed and disbursed and no land acquisition and resettlement takes place without the affected people being compensated as per the RPs. • Ensure that the project is compliant with the project agreement and ensure that corrective action plans are prepared and approved from the ADB in case a non-compliance is identified;

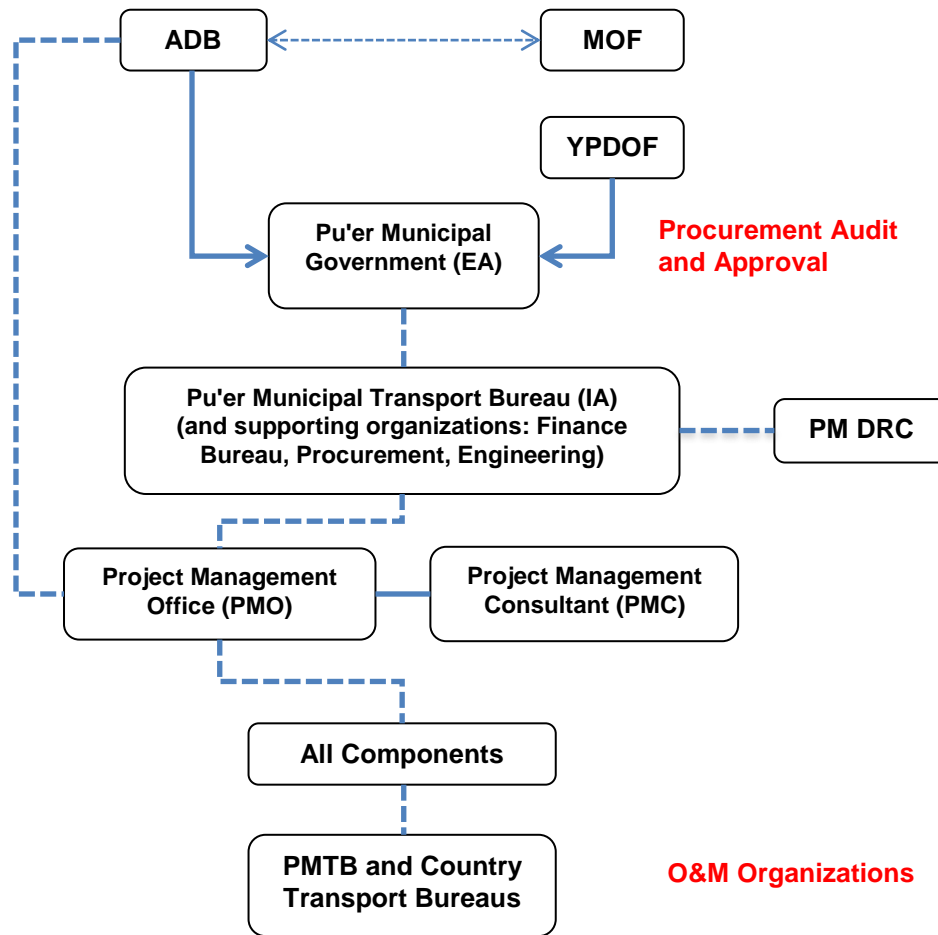
Project Implementation organizations	Management Roles and Responsibilities
	<ul style="list-style-type: none"> • Ensure the public consultation and grievance redress mechanisms are being implemented as outlined in the Plans.
Pu'er Municipal Finance Bureau	<ul style="list-style-type: none"> • Implements the government's domestic and foreign debt management guidelines and policies, regulations and management approaches; • Timely processing matters pertaining to utilizing of loan proceeds and/or Relending Agreement, and provision of agreed counterpart funds for project activities, allocating and releasing counterpart funds; • Monitoring of the project implementation and providing respective coordination and facilitation as needed; • Endorsing to ADB the authorized staff with approved signatures for disbursement of loan proceeds; and • Responsible for establishing/maintaining the imprest account. • Ensure that funds for RPs and EMDP are made available in a timely manner.
Pu'er Municipal DRC	<ul style="list-style-type: none"> • Assumes the duties of the planning of major projects and the distribution of productive forces; puts forward the total scale of the investment in fixed assets; • Arranges the municipal budget funds for construction; studies, identifies and manages major construction projects; coordinates to resolve problems in the construction of major projects; • Organizes the conduct of inspection of major construction projects; • Approves, authorizes and reviews, in accordance with the provisions of its limits, major construction projects, foreign-funded projects, and foreign investment projects. • Responsible for government investment projects in the whole municipality (except industrial and communications projects); i.e. audits Feasibility Study Reports (FSRs), preliminary designs, cost estimates and pre-inspection of completion where the projects utilize all or part of the central budget for investment, the provincial and municipal budget and extra budgetary funds, or the funds (bonds) established under state approval for construction funding, and for foreign loan projects that government has committed to repay or guarantee. • Guides the direction of private investment, and the development of the municipality's engineering consulting services.
Project Management Office	<ul style="list-style-type: none"> • Responsible for day-to-day implementation of all project components; • Strengthening the existing Project Office with five fulltime staff for coordinating and monitoring the project activities; • Ensuring achievement of the project's outputs and their sustainability; • Coordinating with concerned county agencies; • Involving beneficiaries and civil society representatives in all stages of project design and implementation; • Conducts timely financial audits as per agreed timeframe and taking recommended actions; • Preparing regular periodic progress reports, monitoring and evaluation reports, and project completion report and their timely submission to EA, IA, and ADB; • Public disclosure of project outputs; • Complying with all loan covenants; • Responsible for civil works component including <ul style="list-style-type: none"> (i) Preparing and updating the project implementation plan,

Project Implementation organizations	Management Roles and Responsibilities
	<p>procurement plans for the entire loan period and detailed procurement plan for the next 18 months; annual projections for contract awards and disbursement;</p> <p>(ii) Ensuring the approval of land acquisition and resettlement plans by the Government and ADB, and implementing them;</p> <p>(iii) Through a procurement agent, undertaking procurement actions and consultant selection including preparation and securing approval by ADB of bidding documents, bid evaluation reports and contract awards;</p> <p>(iv) Engaging construction supervision firms for construction management and validating the quantities and quality of civil works, and equipment; and</p> <p>(v) Reviewing and approving interim payment certificates, variation orders, and preparing withdrawal applications.</p> <ul style="list-style-type: none"> • Financial Division will process withdrawal applications, payments to contractors, suppliers and consultants, prepare reimbursement requests.
Project Management Consultant	<ul style="list-style-type: none"> • Responsible for assisting the IA on all aspects of project implementation and arranging training programs.
Yunnan Provincial Department of Finance (YPDOF)	<ul style="list-style-type: none"> • Entering into the onlending arrangements for the project; • Monitoring the financial aspects of project implementation and providing respective coordination and facilitation; • Timely provision of agreed counterpart funds for project activities; • Endorsing to ADB the authorized staff with approved signatures for withdrawal applications (WAs) processing; and • Processing and submitting to ADB withdrawal applications and reimbursement requests and, if required, requests for reallocating the loan proceeds.
Ministry of Finance (MOF)	<ul style="list-style-type: none"> • Borrower representative; • Signing the Loan Agreement; • Primarily responsible for supporting PMG in the implementation of the project; and • Practical training of PMG on ADB financial documentation requirements, as needed.
Asian Development Bank (ADB)	<ul style="list-style-type: none"> • Provide guidance to the EA and IA at each stage of the project for smooth implementation in accordance with the agreed implementation arrangements; • Conducting regular loan review missions, including midterm and project completion review missions; • Review and approve procurement actions; • Monitor compliance with all loan covenants including safeguards; • Timely processing of withdrawal applications and releasing eligible funds; • Review annual audit reports and follow-up on audit recommendations; • Regularly update the project performance review reports in coordination with both the EA and IA; and • Regularly update the project information documents for public disclosure at ADB website, including the safeguard documents.

B. Key Persons Involved in Implementation

Government	
Pu'er Municipal Government (PMG)	Mr. Zhang Shangqiang Deputy Mayor Tel/Fax:+86 879 2189081 Email address: Road, Pu'er, Yunnan Province People's Republic of China
Pu'er Municipal Financial Bureau (PMFB)	Mr. Huang Yong Ming Deputy Director General Fax: +86 879 2165902 Mobile: +18608791266 Email address:
Pu'er Municipal Transport Bureau (PMTB)	Mr. You Wei Director General, PMTB Fax: +86 879 2124685 Mobile: +13577929666 Email Address:
Asian Development Bank	
Transport Division, East Asia Department	Mr. Tyrrell Duncan Director Tel: +63 2 632 6383 (local)/Fax:+ 63 2 636 2426 Email address: tduncan@adb.org 6 ADB Avenue, Mandaluyong City 1550 Metro Manila, Philippines
Mission Leader	Mr. David Fay Transport Specialist Transport Division, East Asia Department Tel: +63 2 632 5063/Fax +63 2 636 2444/2426 Email address: dfay@adb.org 6 ADB Avenue, Mandaluyong City 1550 Metro Manila, Philippines

C. Project Organization Structure



ADB = Asian Development Bank, EA = executing agency, IA = implementing agency, MOF = Ministry of Finance, O&M = operation and maintenance, PM DRC = Pu'er Municipal Development Reform Commission, PMTB = Pu'er Municipal Transport Bureau, YPDOF = Yunnan Provincial Department of Finance.

IV. COSTS AND FINANCING

22. The project is estimated to cost **\$589.53** million including taxes and duties (Table 4).

Table 4: Project Investment Plan (\$ million)

Item	Amount ^a
A. Base Cost^b	
1 Regional Roads Development	443.47
2 Rural Access Improvement	76.89
3 Institutional Strengthening and Capacity Building	3.34
Subtotal (A)	523.71
B. Contingencies^c	56.02
C. Financing Charges During Implementation^d	9.81
Total (A+B+C)	589.53

^a Includes taxes and duties of \$14.4 million, which will be financed by the government. ADB will finance taxes and duties applicable to consulting services.

^b In mid-2014 prices.

^c Physical contingencies are 5% of base cost. Price contingencies computed on foreign exchange costs at 1.0%, 1.4%, 1.4% and 1.4% in 2015, 2016, 2017 and 2018 respectively. Price contingencies computed on local currency costs at 3.0%, 3.0%, 3.0%, 3.0% and 3.0% in 2015, 2016, 2017 and 2018 respectively.

^d Interest during construction on ADB loan computed at 2.164%, being the sum of the five year US\$ swap rate at 3 December 2013 plus 0.5% spread and a maturity premium of 0.2%. Commitment charges computed at 0.15% of the undisbursed amount.

Source: Asian Development Bank estimates.

23. **Lending terms.** The PRC has requested a loan of \$200 million from ADB's ordinary capital resources to help finance the project. The loan will have a 25-year term, a 5-year grace period, an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility, a commitment charge of 0.15% per year, a maturity premium of 0.2% and such other terms and conditions as set forth in the draft loan and project agreements. The Government has requested that repayment follows the annuity 10% repayment option, and that the repayment dates will be 1 June and 1 December and such other terms and conditions set forth in the draft loan and project agreements.¹⁸ The Government will finance contingencies to cover any shortfall in the finances that may arise during implementation.

24. The Borrower is the PRC. The PMG will assume the foreign exchange and interest rate risks for the ADB loan. The Borrower has provided ADB with: (i) the reasons for its decision to borrow under ADB's LIBOR-based lending facility based on these terms and conditions; and (ii) assurances that these choices were its own independent decision and not made in reliance on any communication or advice from ADB.

25. The Borrower will relend the proceeds of the loan to the Yunnan Provincial Government (YPG) upon terms and conditions acceptable to ADB, and the Yunnan provincial government will make the proceeds of the loan available to the PMG pursuant to onlending arrangements on terms and conditions satisfactory to ADB, with the provision of a guarantee of the obligation to repay being issued by the PMG to the Borrower. Except as ADB may otherwise agree, the terms for such onlending arrangements shall include: (i) commitment charge and interest at the rates identical to those applied to the loan; (ii) a grace period and a principal repayment period

¹⁸ Interest includes a maturity premium of 0.20%. This is based on the above loan terms and the government's choice of repayment option and dates.

identical to those applied to the loan; and (iii) the PMG bearing the foreign exchange and interest rate variation risks.

26. The Borrower shall cause the YPG and YPG shall cause the PMG to apply the proceeds of the loan to the financing of expenditures on the project in accordance with the provisions of the Loan Agreement and the Project Agreement. The financing plan is in Table 5.

Table 5: Financing Plan

Source	Amount (\$ million)	Share of Total (%)
Asian Development Bank (OCR)	200.00	33.93
Government	389.53	66.07
Total	589.53	100.00

Source: Asian Development Bank estimates. OCR = Ordinary Capital Resources

27. Counterpart funding comes from the PMG revenues allocated to PMTB. Counterpart funds will include subsidies from the Ministry of Transport (MOT) which are available for projects which implement parts of the national road network and serve national priorities such as providing paved road access to administrative villages. MOT subsidies are expected to provide CNY1,471 million with the remainder from the PMG budget.

A. Detailed Cost Estimates by Expenditure Category

Table 6: Detailed Cost Estimates by Expenditure Category

Item	(CNY Million)			(\$ Million)			% of Total Base cost
	Foreign Currency	Local Currency	Total Cost	Foreign Currency	Local Currency	Total Cost	
A. Investment Costs ^{a,b}							
1. Regional Roads	667.52	2,037.66	2,705.18	109.43	334.04	443.47	75.2
<i>a. Ning'er-Jiangcheng-Longfu Upgrade</i>	437.62	1,021.12	1,458.75	71.74	167.40	239.14	40.6
<i>b. Menglian-Meng'a Upgrade</i>	229.90	536.43	766.32	37.69	87.94	125.63	21.3
<i>c. Design, Procurement, Supervision</i>	0.00	112.76	112.76	0.00	18.48	18.48	3.1
<i>d. Border Facilities</i>	0.00	6.10	6.10	0.00	1.00	1.00	0.2
<i>e. Resettlement Ning'er-Jiangcheng-Longfu</i>	0.00	222.53	222.53	0.00	36.48	36.48	6.2
<i>f. Resettlement Menglian-Meng'a</i>	0.00	136.02	136.02	0.00	22.30	22.30	3.8
<i>g. Environmental Monitoring</i>	0.00	2.71	2.71	0.00	0.44	0.44	0.1
2. Rural Access	125.18	343.87	469.04	20.52	56.37	76.89	13.0
<i>a. Rural Road Improvement</i>	125.18	292.08	417.26	20.52	47.88	68.40	11.6
<i>b. Rural Road Maintenance</i>	0.00	4.88	4.88	0.00	0.80	0.80	0.1
<i>c. Village Access Spot Improvements</i>	0.00	24.40	24.40	0.00	4.00	4.00	0.7
<i>d. Rural Transport Services (equipment)</i>	0.00	3.05	3.05	0.00	0.50	0.50	0.1
<i>e. Design, Procurement, Supervision</i>	0.00	10.61	1061	0.00	1.74	1.74	0.3
<i>f. Resettlement Rural Roads</i>	0.00	8.85	8.85	0.00	1.45	1.45	0.2
3. Institutional Development	12.20	8.19	20.39	2.00	1.34	3.34	0.6
<i>a. Road Safety</i>	0.00	2.44	2.44	0.00	0.40	0.40	0.1
<i>b. Overseas Training</i>	2.44	0.00	2.44	0.40	0.00	0.40	0.1
<i>c. Project Management Consultant</i>	9.76	0.00	9.76	1.60	0.00	1.60	0.3
<i>d. ChinaRAP Consultancy Services</i>	0.00	1.83	1.83	0.00	0.30	0.30	0.1
<i>e. External Monitoring – EMDP</i>	0.00	0.67	0.67	0.00	0.11	0.11	0.0
<i>f. External Monitoring – Environment</i>	0.00	0.52	0.52	0.00	0.09	0.09	0.0
<i>g. Capacity Development – Resettlement</i>	0.00	0.52	0.52	0.00	0.09	0.09	0.0
<i>h. Capacity Development – Gender</i>	0.00	0.34	0.34	0.00	0.06	0.06	0.0
<i>i. Capacity Development – Human and Drug Trafficking</i>	0.00	0.24	0.24	0.00	0.04	0.04	0.0
<i>j. Capacity Development – Wildlife Trafficking</i>	0.00	0.96	0.96	0.00	0.16	0.16	0.0
<i>k. EMDP Implementation</i>	0.00	0.67	0.67	0.00	0.11	0.11	0.0
Subtotal (A) =Total Base Cost	804.90	2,389.71	3,194.61	131.95	391.76	523.71	88.8

Item	(CNY Million)			(\$ Million)			% of Total Base cost
	Foreign Currency	Local Currency	Total Cost	Foreign Currency	Local Currency	Total Cost	
B. Contingencies							
1. Physical ^c	39.63	92.92	132.56	6.50	15.23	21.73	3.7
2. Price ^c	27.93	181.22	209.15	4.58	29.71	34.29	5.8
Subtotal (B)	67.57	274.14	341.71	11.08	44.94	56.02	10.7
C. Financing Charges during Implementation^d							
1. Interest During Implementation	56.43	0.00	56.43	9.25	0.00	9.25	1.57
2. Commitment Charges	3.41	0.00	3.41	0.56	0.00	0.56	0.09
Subtotal (C)	59.84	0.00	59.84	9.81	0.00	9.81	1.66
Total (A+B+C)	932.31	2,663.85	3,596.16	152.84	436.70	589.53	100.0

^a Includes taxes and duties of \$14.4 million, which will be financed by the Government. ADB will finance taxes and duties applicable to consulting services.

^b In mid-2014 prices.

^c Physical contingencies are 5% of base cost. Price contingencies computed on foreign exchange costs at 1.0%, 1.4%, 1.4% and 1.4% in 2015, 2016, 2017 and 2018 respectively. Price contingencies computed on local currency costs at 3.0%, 3.0%, 3.0%, 3.0% and 3.0% in 2015, 2016, 2017 and 2018 respectively.

^d Interest during construction on ADB loan computed at 2.164%, being the sum of the five year US\$ swap rate at 3 December 2013 plus 0.5% spread and a maturity premium of 0.2%. Commitment charges computed at 0.15% of the undisbursed amount.

Source: Asian Development Bank estimates.

B. Allocation and Withdrawal of Loan Proceeds

Table 7: Allocation and Withdrawal of Loan Proceeds

CATEGORY				ADB Financing
No.	Item	Total Amount Allocated for ADB Financing (US\$)		Percentage and Basis for Withdrawal from the Loan Account
		Category	Subcategory	
1	Civil Works ^a	197,665,000		
1A	Regional Road Upgrades		186,721,000	51.2% of total expenditure
1B	Rural Road Improvement		10,944,000	16% of total expenditure
2	Consulting Services and Training ^a	2,335,000		
2A	Project Management Consultant + Training		2,000,000	100% of total expenditure
2B	External Monitoring – EMDP		110,000	100% of total expenditure
2C	External Monitoring – Environment		85,000	100% of total expenditure
2D	Capacity Development - Resettlement		85,000	100% of total expenditure
2E	Capacity Development – Gender		55,000	100% of total expenditure
	Total	200,000,000		

^a Inclusive of taxes and duties imposed within the territory of the Borrower.

C. Detailed Cost Estimates by Financier

Table 8: Detailed Cost Estimates by Financier (\$ million)

Item	ADB		PMG		Total Cost
	Amount	% of Cost Category	Amount	% of Cost Category	
A. Investment Costs					
1. Civil Works					
<i>a. Regional Road Upgrading</i>	186.72	51.19	178.04	48.81	364.77
<i>b. Rural Roads Improvement</i>	10.94	16.00	57.46	84.00	68.40
<i>b. Border Facilities</i>	0.00	0.00	1.00	100.00	1.00
<i>c. Rural Road Maintenance</i>	0.00	0.00	0.80	100.00	0.80
<i>d. Village Access Spot Improvements</i>	0.00	0.00	4.00	100.00	4.00
2. Mechanical and Equipment					
<i>a. Rural Transport Services</i>	0.00	0.00	0.50	100.00	0.50
<i>b. Road Safety</i>	0.00	0.00	0.40	100.00	0.40
3. Environment and Social Mitigation					
<i>a. Resettlement Ning'er-Jiangcheng-Longfu</i>	0.00	0.00	36.48	100.00	36.48
<i>b. Resettlement Menglian-Meng'a</i>	0.00	0.00	22.30	100.00	22.30
<i>c. Resettlement Rural Roads</i>	0.00	0.00	1.45	100.00	1.45
<i>d. Environment Monitoring</i>	0.00	0.00	0.44	100.00	0.44
4. Consultants					
<i>a. Overseas Training</i>	0.40	100.00	0.00	0.00	0.40
<i>b. Project Management Consultant</i>	1.60	100.00	0.00	0.00	1.60
<i>c. Design, Procurement, Supervision</i>	0.00	0.00	20.22	100.00	20.22
<i>d. ChinaRAP Consultancy Services</i>	0.00	0.00	0.30	100.00	0.30
<i>e. External Monitoring – EMDP</i>	0.11	100.00	0.00	0.00	0.11
<i>f. External Monitoring – Environment</i>	0.09	100.00	0.00	0.00	0.09
<i>g. Capacity Development – Resettlement</i>	0.09	100.00	0.00	0.00	0.09
<i>h. Capacity Development – Gender</i>	0.06	100.00	0.00	0.00	0.06
<i>i. Capacity Development – Human and Drug Trafficking</i>	0.00	0.00	0.04	100.00	0.04
<i>j. Capacity Development – Wildlife Trafficking</i>	0.00	0.00	0.16	100.00	0.16
<i>k. EMDP Implementation</i>	0.00	0.00	0.11	100.00	0.11
B. Subtotal (A) =Total Base Cost	200.00	38.19	323.71	61.81	523.71
C. Contingencies	0.00	0.00	56.02	100.00	56.02
D. Financing Charges during Implementation	0.00	0.00	9.81	100.00	9.81
Total Project Cost (A+B+C)	200.00	33.93	389.53	66.07	589.53

^a Includes taxes and duties of \$14.4 million, which will be financed by the Government. ADB will finance taxes and duties applicable to consulting services.

^b In mid-2014 prices.

^c Physical contingencies are 5% of base cost. Price contingencies computed on foreign exchange costs at 1.0%, 1.4%, 1.4% and 1.4% in 2015, 2016, 2017 and 2018 respectively. Price contingencies computed on local currency costs at 3.0%, 3.0%, 3.0%, 3.0% and 3.0% in 2015, 2016, 2017 and 2018 respectively.

^d Interest during construction on ADB loan computed at 2.164%, being the sum of the five year US\$ swap rate at 3 December 2013 plus 0.5% spread and a maturity premium of 0.2%. Commitment charges computed at 0.15% of the undisbursed amount.

Source: Asian Development Bank estimates.

D. Detailed Cost Estimates by Outputs

Table 9: Detailed Cost Estimates by Outputs (\$ million)

Item	Total Cost	Output 1		Output 2		Output 3	
		Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category
A. Investment Costs							
1. Civil Works	438.97	365.77	83.32	73.20	16.68	0.00	0.00
2. Mechanical and Equipment							
<i>a. Rural Transport Services</i>	0.50	0.00	0.00	0.50	100.00	0.00	0.00
<i>b. Road Safety</i>	0.40	0.00	0.00	0.00	0.00	0.40	100.00
3. Environment and Social Mitigation							
<i>a. Resettlement Ning'er-Jiangcheng-Longfu</i>	36.48	36.48	100.00	0.00	0.00	0.00	0.00
<i>b. Resettlement Menglian-Meng'a</i>	22.30	22.30	100.00	0.00	0.00	0.00	0.00
<i>c. Resettlement Rural Roads</i>	1.45	0.00	0.00	1.45	100.00	0.00	0.00
<i>d. Environment Monitoring</i>	0.44	0.44	100.00	0.00	0.00	0.00	0.00
4. Consultants							
<i>a. Overseas Training</i>	0.40	0.00	0.00	0.00	0.00	0.40	100.00
<i>b. Project Management Consultant</i>	1.60	0.00	0.00	0.00	0.00	1.60	100.00
<i>c. Design, Procurement, Supervision</i>	20.22	18.48	91.40	1.74	8.60	0.00	0.00
<i>d. ChinaRAP Consultancy Services</i>	0.30	0.00	0.00	0.00	0.00	0.30	100.00
<i>e. External Monitoring – EMDP</i>	0.11	0.00	0.00	0.00	0.00	0.11	100.00
<i>f. External Monitoring – Environment</i>	0.09	0.00	0.00	0.00	0.00	0.09	100.00
<i>g. Capacity Development – Resettlement</i>	0.09	0.00	0.00	0.00	0.00	0.09	100.00
<i>h. Capacity Development – Gender</i>	0.06	0.00	0.00	0.00	0.00	0.06	100.00
<i>i. Capacity Development – Human and Drug Trafficking</i>	0.04	0.00	0.00	0.00	0.00	0.04	100.00
<i>j. Capacity Development – Wildlife Trafficking</i>	0.16	0.00	0.00	0.00	0.00	0.16	100.00
<i>k. External Monitoring Consultant</i>	0.11	0.00	0.00	0.00	0.00	0.11	100.00
Subtotal (A) =Total Base Cost	523.71	443.47	84.68	76.89	14.68	3.34	0.64
B. Contingencies							
1. Physical	21.73	18.31	84.26	3.42	15.74	0.00	0.00
2. Price	34.29	30.40	88.67	3.74	10.91	0.14	0.42
Subtotal (B)	56.02	48.71	86.96	7.16	12.78	0.14	0.26
C. Financing Charges During Implementation							
1. Interest During Implementation	9.25	8.36	90.40	0.74	8.05	0.14	1.55
2. Commitment Charges	0.56	0.54	96.76	0.01	2.52	0.00	0.72
Subtotal (C)	9.81	8.90	90.76	0.76	7.73	0.15	1.51
Total Project Cost (A+B+C)	589.53	501.09	85.00	84.81	14.39	3.63	0.62

^a Includes taxes and duties of \$14.4 million, which will be financed by the Government. ADB will finance taxes and duties applicable to consulting services.

^b In mid-2014 prices.

^c Physical contingencies are 5% of base cost. Price contingencies computed on foreign exchange costs at 1.0%, 1.4%, 1.4% and 1.4% in 2015, 2016, 2017 and 2018 respectively. Price contingencies computed on local currency costs at 3.0%, 3.0%, 3.0%, 3.0% and 3.0% in 2015, 2016, 2017 and 2018 respectively.

^d Interest during construction on ADB loan computed at 2.164%, being the sum of the five year US\$ swap rate at 3 December 2013 plus 0.5% spread and a maturity premium of 0.2%. Commitment charges computed at 0.15% of the undisbursed amount.

Source: Asian Development Bank estimates.

E. Detailed Cost Estimates by Year

Table 10: Detailed Cost Estimates by Year (\$ million)

Item	Total Cost	2014	2015	2016	2017	2018	2019
A. Investment Costs^{a,b}							
1. Regional Roads							
<i>a. Ning'er-Jiangcheng-Longfu Upgrade</i>	239.14	0.00	28.13	56.27	56.27	56.27	42.20
<i>b. Menglian-Meng'a Upgrade</i>	125.63	0.00	20.94	41.88	41.88	20.94	0.00
<i>c. Design, Procurement, Supervision</i>	18.48	0.00	10.21	2.57	2.57	2.02	1.11
<i>d. Border Facilities</i>	1.00	0.00	0.00	0.38	0.50	0.13	0.00
<i>e. Resettlement Ning'er-Jiangcheng-Longfu</i>	36.48	0.00	36.48	0.00	0.00	0.00	0.00
<i>f. Resettlement Menglian-Meng'a</i>	22.30	0.00	14.87	7.43	0.00	0.00	0.00
<i>g. Environmental Monitoring</i>	0.44	0.00	0.05	0.10	0.10	0.10	0.08
2. Rural Access							
<i>a. Rural Road Improvement</i>	68.40	0.00	0.00	34.20	34.20	0.00	0.00
<i>b. Rural Road Maintenance</i>	0.80	0.00	0.00	0.18	0.36	0.27	0.00
<i>c. Village Access Spot Improvements</i>	4.00	0.00	0.00	2.29	1.71	0.00	0.00
<i>d. Rural Transport Services (equipment)</i>	0.50	0.00	0.00	0.25	0.25	0.00	0.00
<i>e. Design, Procurement, Supervision</i>	1.74	0.00	0.98	0.60	0.15	0.00	0.00
<i>f. Resettlement Rural Roads</i>	1.45	0.00	0.41	0.83	0.21	0.00	0.00
3. Institutional Development							
<i>a. Road Safety</i>	0.40	0.00	0.06	0.23	0.11	0.00	0.00
<i>b. Overseas Training</i>	0.40	0.00	0.10	0.20	0.10	0.00	0.00
<i>c. Project Management Consultant</i>	1.60	0.00	0.63	0.48	0.37	0.12	0.00
<i>d. ChinaRAP Consultancy Services</i>	0.30	0.12	0.18	0.00	0.00	0.00	0.00
<i>e. External Monitoring – EMDP</i>	0.11	0.00	0.01	0.03	0.03	0.03	0.02
<i>f. External Monitoring – Environment</i>	0.09	0.00	0.01	0.02	0.02	0.02	0.02
<i>g. Capacity Development – Resettlement</i>	0.09	0.00	0.02	0.02	0.02	0.02	0.01
<i>h. Capacity Development – Gender</i>	0.06	0.00	0.00	0.01	0.01	0.01	0.01
<i>i. Capacity Development – Human and Drug Trafficking</i>	0.04	0.00	0.00	0.01	0.01	0.01	0.01
<i>j. Capacity Development – Wildlife Trafficking</i>	0.16	0.00	0.00	0.04	0.04	0.04	0.03
<i>k. External Monitoring Consultant</i>	0.11	0.00	0.02	0.02	0.02	0.02	0.02
Subtotal (A) =Total Base Cost	523.71	0.12	113.11	148.03	138.94	80.00	43.50
B. Contingencies^c							
1. Physical	21.73	0.00	3.43	6.89	5.43	3.87	2.11
2. Price	34.29	0.00	3.55	7.77	8.84	8.35	5.77
Subtotal (B)	56.02	0.00	6.99	14.66	14.26	12.22	7.88

Item	Total Cost	2014	2015	2016	2017	2018	2019
C. Financing Charges during Implementation^d							
1. Interest During Implementation	9.25	0.00	0.62	1.84	2.96	3.83	0.00
2. Commitment Charges	0.56	0.00	0.26	0.17	0.09	0.03	0.00
Subtotal (C)	9.81	0.00	0.88	2.01	3.05	3.86	0.00
Total (A+B+C)	589.53	0.12	111.90	113.13	80.26	55.87	28.40
	100%	0%	19%	19%	14%	9%	5%

^a Includes taxes and duties of \$14.4 million, which will be financed by the Government. ADB will finance taxes and duties applicable to consulting services.

^b In mid-2014 prices.

^c Physical contingencies are 5% of base cost. Price contingencies computed on foreign exchange costs at 1.0%, 1.4%, 1.4% and 1.4% in 2015, 2016, 2017 and 2018 respectively. Price contingencies computed on local currency costs at 3.0%, 3.0%, 3.0%, 3.0% and 3.0% in 2015, 2016, 2017 and 2018 respectively.

^d Interest during construction on ADB loan computed at 2.164%, being the sum of the five year US\$ swap rate at 3 December 2013 plus 0.5% spread and a maturity premium of 0.2%. Commitment charges computed at 0.15% of the undisbursed amount.

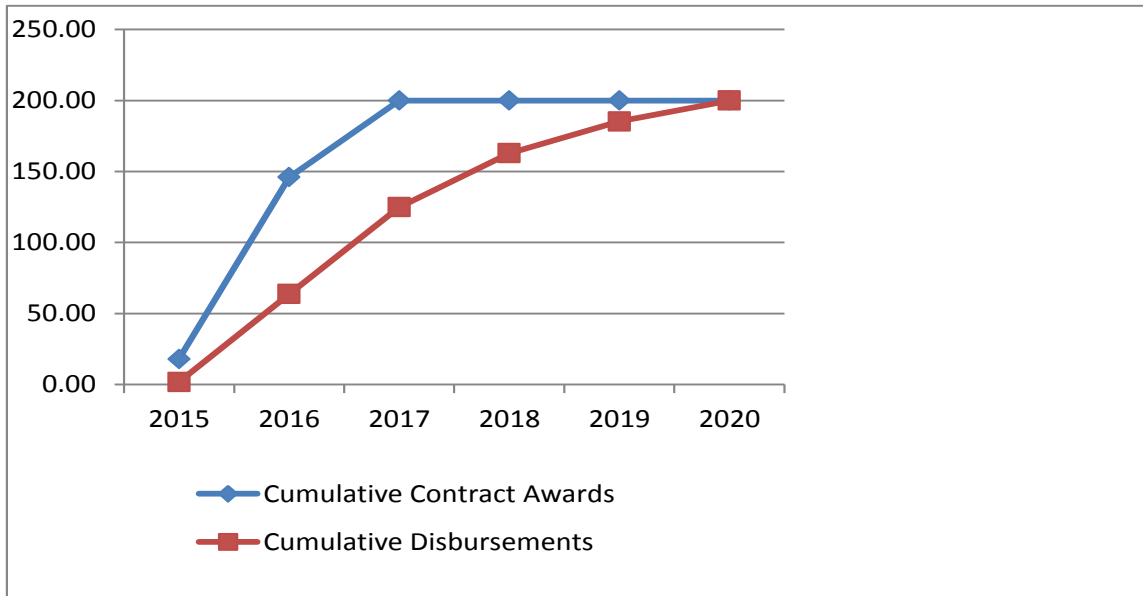
Source: Asian Development Bank estimates.

F. Contract and Disbursement S-Curve

Table 11: Project Contract Awards and Disbursements

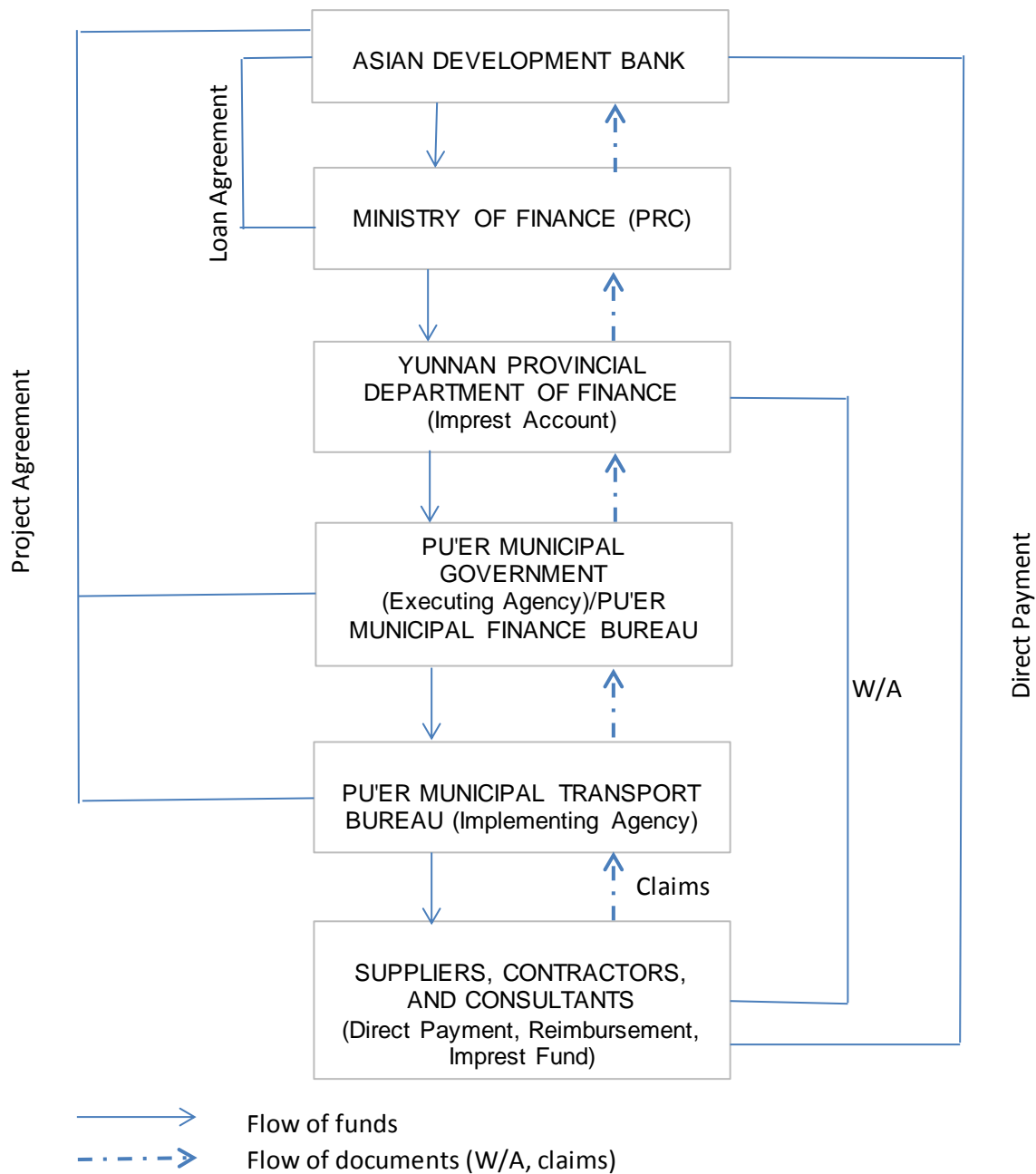
	2015	2016	2017	2018	2019	2020
Cumulative Contract Awards	18.00	146.00	200.00	200.00	200.00	200.00
Cumulative Disbursements	1.80	63.74	124.92	162.88	185.29	200.00

Figure 1: Contract and Disbursement Projections



G. Fund Flow Diagram

Figure 2: Fund Flow Diagram



V. FINANCIAL MANAGEMENT

A. Financial Management Assessment

28. A financial management assessment was undertaken for the PMTB. The PMTB satisfies the ADB financial management requirements for an IA. The PMTB's financial management arrangements are found to be adequate to (i) record required financial transactions and balances; (ii) provide regular and reliable financial statements and monitoring reports during project implementation; (iii) safeguard the financial assets; and (iv) provide the required audited financial documents acceptable to ADB. The identified capacity constraints include lack of English speaking staff and limited experience in ADB disbursement procedure. The financial management risks were assessed to be moderate.

29. Detailed financial arrangements under the project are as follows:

- (i) **Funds flow.** Under the fund transfer arrangements the PRC Government will make the loan proceeds available to Yunnan Provincial Government (YPG) and then from YPG to the PMG. PMG will transfer or onlend the loan proceeds to PMTB. The flow of the counterpart funds will follow existing government arrangements. The flow of ADB funds will follow ADB's direct payment, reimbursement, and imprest fund procedures.
- (ii) **Staffing.** The PMTB financial division handles disbursements of ADB funds. Staff will undergo training on ADB reporting and disbursement procedures to ensure maintenance of ADB standards for project accounting and financial management. The PMTB financial division needs to engage a professional translator to ensure timely and quality submissions to ADB in English language.
- (iii) **Accounting policies and procedures.** The PMTB financial division will use an automated accounting system. Subsidiary ledgers will be adequately reconciled with the general ledger. All reports and supporting documents on all transactions will be stored and retained properly. There will be a clear segregation of the accounting and management duties.
- (iv) **Budgeting system.** The PMO will prepare annual physical and financial budgets. Budgets will be prepared annually by the budget officers. The Deputy Director General of the PMTB will approve the final budget before endorsement to the PMG. Monthly and annual reports will be prepared comparing the budgeted and actual amounts showing variances in accounts.
- (v) **Payments.** Payment vouchers will be prepared for all payments. All project payments will be done by using bank transfers. The direct payment procedures will be applied for large civil works contracts.
- (vi) **Project accounts.** The PMTB financial division will maintain a separate bank account for counterpart funds. All transfers will be signed by the director and the head of financial division of the PMTB. Bank reconciliations will be prepared at the end of each month.
- (vii) **Safeguard over assets.** Sufficient controls will be established over project assets to safeguard and protect assets from fraud, waste, and abuse. The project office will maintain the record of all assets. An annual physical inventory will be done to ensure existence of all assets.
- (viii) **Internal audit.** IA maintains an internal auditing system, which is not ensured through functional department or permanent positions, but through task force. For special purposes, financial staff are recruited from inside the organization to conduct internal auditing. The results of the internal auditing are submitted to the Director of PMTB.

- (ix) **External audit.** The auditing department at the same or higher level of government audits the government department. Yunnan Provincial Audit Office will be responsible for the external audit. The audit is conducted based on the national standards on auditing issued by the central government. No major accountability issue has been found in the audit reports of the past years. The PMG and PMTB will cause the annual consolidated project financial statements to be audited in accordance with National Standards on Auditing and the Government Auditing Standards of the PRC (where these are consistent with International Standards on Auditing). The PMO and IA will submit to the ADB as required i) the annual consolidated project financial statements; ii) an audit report which includes a separate audit opinion on the use of the imprest accounts and the SOE procedures; and, iii) an audit management letter
- (x) **Reporting and monitoring.** The project financial reports will be prepared using an excel-based electronic spreadsheet on a quarterly basis. The project reports will highlight the physical and financial progress of projects being implemented. During the loan implementation period, certified copies of annual audited accounts and financial statements (in English) will be submitted within 6 months after the end of each fiscal year.
- (xi) **Information systems.** The project office will have a computerized management information system. The reporting and monitoring system will be capable of generating project reports for both external and internal use. The project staff will be trained to ensure efficient operation of the system.

B. Disbursement

30. ADB loan proceeds will be disbursed in accordance with the procedures set out in ADB's Loan Disbursement Handbook (2012, as amended from time to time),¹⁹ and detailed arrangements agreed upon between the Government and ADB. The PMO on behalf of PMTB will be responsible for (i) collecting supporting documents and (ii) preparing and sending withdrawal applications from the PMFB to ADB.²⁰

31. To facilitate project implementation and funds flow, YPDOF, on behalf of YPG, will establish an imprest account promptly after loan effectiveness at a commercial bank acceptable to ADB. The account will be in USD.²¹ The maximum ceiling of the imprest account will not exceed 10% of the loan amount. The imprest account is to be used exclusively for ADB's share of eligible expenditures. The PMFB who established the imprest account in its name is accountable and responsible for proper use of advances to the imprest account. The PMFB, on behalf of the PMG, will establish a sub-account²² at a commercial bank acceptable to YPDOF at same time. The government may request for initial and additional advances to the imprest account based on 6 months estimated expenditures to be financed through the imprest account. The imprest account will be established, managed, and liquidated in accordance with ADB's *Loan Disbursement Handbook* and detailed arrangements agreed by the Government and ADB. ADB's *Loan Disbursement Handbook* describes which supporting documents should be submitted to ADB and which should be retained by the government for liquidation and replenishment of an imprest account.

¹⁹ Available at: <http://www.adb.org/documents/loan-disbursement-handbook>.

²⁰ Follow the format provided in Appendix 10A of the *Loan Disbursement Handbook*.

²¹ Bank charges on the imprest account will be financed from the proceeds of the loan.

²² Accounts opened in the name of the IA, unit, provincial government, village, or other entity which received advance from the imprest account, to meet project expenditures incurred by the IA. The sub-account is a separate bank account opened for the exclusive use of the project, unless otherwise approved by ADB.

32. For the domestic funds, Central Government will provide subsidy for rural roads. PMG and PMTB will submit funds application report to PMG for review and approval. PMG will allocate the designated funding for the project and monitor the provision of the funds, which will be administered by the IA and disbursed to contractors, consultants, suppliers, etc., according to project progress. The disbursement process will follow: (i) based on project progress, project implementing agency will submit a disbursement request to the PMO; and (ii) once approved, counterpart funds will be disbursed to the IA.

33. Before the submission of the first withdrawal application, the borrower should submit to ADB sufficient evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of the borrower, together with the authenticated specimen signatures of each authorized person. The minimum value per withdrawal application is \$100,000 unless otherwise approved by ADB. Individual payments below this amount should generally be paid from the imprest account or by the EA and subsequently claimed to ADB through reimbursement. ADB reserves the right not to accept WAs below the minimum amount.

34. For large contracts, direct payment procedures will be used to withdraw the loan funds. If the government funds are used first for eligible expenditures, ADB's reimbursement procedure will be used. Statement of expenditures (SOE) will be used for liquidation and replenishment of the imprest account and to reimburse eligible expenditures for any individual payment to expedite fund flows. Statement of expenditure records should be maintained and made readily available for review by ADB's disbursement and review mission or upon ADB's request for submission of supporting documents on a sampling basis, and for independent audit.²³ ADB may institute an SOE ceiling, subject to due diligence on financial management performance, including disbursement, during the project implementation.

C. Accounting

35. The PMG will maintain, or cause to be maintained, separate books and records by funding source for all expenditures incurred on the project. The PMG will prepare consolidated project financial statements in accordance with the government's accounting laws and regulations, which are consistent with international accounting principles and practices.

D. Auditing and Public Disclosure

36. The PMG, through PMTB, will cause the detailed consolidated project financial statements to be audited in accordance with International Standards on Auditing and with the Government's audit regulations, by an independent auditor acceptable to ADB. The audited project financial statements will be submitted in the English language to ADB within six months of the end of the fiscal year by the PMG.

37. The annual audit report for the project accounts will include an audit management letter and audit opinions which cover (i) whether the project financial statements present a true and fair view or are presented fairly, in all material respects, in accordance with the applicable financial reporting framework; (ii) whether loan and grant proceeds were used only for the purposes of the project or not; (iii) the level of compliance for each financial covenant contained in the legal agreements for the project; (iv) use of the imprest fund procedure; and (v) the use of the statement of expenditure procedure certifying to the eligibility of those expenditures claimed

²³ Records should be retained for at least 1 year following ADB receipt of the final audited financial statements or 2 years after the loan closing date, whichever is lower.

under SOE procedures, and proper use of the SOE and imprest procedures in accordance with ADB's Loan Disbursement Handbook and the project documents.

38. Compliance with financial reporting and auditing requirements will be monitored by review missions and during normal program supervision, and followed up regularly with all concerned, including the external auditor.

39. The Government, PMG and PMTB have been made aware of ADB's policy on delayed submission, and the requirements for satisfactory and acceptable quality of the audited project financial statements.²⁴ ADB reserves the right to require a change in the auditor (in a manner consistent with the constitution of the borrower), or for additional support to be provided to the auditor, if the audits required are not conducted in a manner satisfactory to ADB, or if the audits are substantially delayed. ADB reserves the right to verify the project's financial accounts to confirm that the share of ADB's financing is used in accordance with ADB's policies and procedures.

40. Public disclosure of the project financial statements, including the audit report on the project financial statements, will be guided by ADB's Public Communications Policy (2011).²⁵ After review, ADB will disclose the project financial statements for the project and the opinion of the auditors on the financial statements within 30 days of the date of their receipt by posting them on ADB's website. The Audit Management Letter will not be disclosed.

²⁴ ADB Policy on delayed submission of audited project financial statements:

- When audited project financial statements are not received by the due date, ADB will write to the executing agency advising that (i) the audit documents are overdue; and (ii) if they are not received within the next six months, requests for new contract awards and disbursement such as new replenishment of imprest accounts, processing of new reimbursement, and issuance of new commitment letters will not be processed.
- When audited project financial statements have not been received within 6 months after the due date, ADB will withhold processing of requests for new contract awards and disbursement such as new replenishment of imprest accounts, processing of new reimbursement, and issuance of new commitment letters. ADB will (i) inform the executing agency of ADB's actions; and (ii) advise that the loan may be suspended if the audit documents are not received within the next six months.

²⁵ Available from <http://www.adb.org/site/disclosure/public-communications-policy>.

VI. PROCUREMENT AND CONSULTING SERVICES

A. Advance Contracting and Retroactive Financing

41. The PMG has requested that advance contracting and retroactive financing be applied to the procurement of the regional roads component and the recruitment of the PMC.

42. **Regional road procurement.** Five of the ten subgrade contracts on Ning'er–Jiangcheng–Longfu road and the one pavement contract of Menglian–Meng'a will be fully government financed. The procurement of the five fully government financed subgrade contracts will be packaged together with the five ADB-financed subgrade contracts of the Ning'er–Jiangcheng–Longfu road under a single procurement exercise following ADB guidelines and will be subject to ADB no objection. The fully government financed pavement contract under Menglian–Meng'a road will be tendered as one package, and the three ADB-financed pavement contracts of Ning'er–Jiangcheng–Longfu will be tendered as one package. All of the regional road procurement will follow ADB guidelines and be subject to ADB no objection.

43. **Rural road procurement.** ADB financing and ADB procurement guidelines will be adopted for approximately 195 km of rural roads involving four packages in the counties of Menglian, Ximeng and Lancang. The ADB financed rural road packages will be designed, tendered and implemented first. The remaining 405 km will adopt the design, management, scheduling and implementation procedures used for the ADB financed rural roads, will be 100% Government funded and subject to domestic bidding procedures.

44. All advance contracting will be undertaken in conformity with ADB's *Procurement Guidelines* (2013, as amended from time to time)²⁶ and ADB's *Guidelines on the Use of Consultants* (2013, as amended from time to time).²⁷ Under advance contracting, the issuance of invitations to bid, bidding documents and bid evaluation reports will be subject to ADB no objection. ADB's approval of advance contracting will not commit ADB to subsequently approve the project or to finance the procurement costs; and ADB will not finance expenditures paid by the borrower prior to loan effectiveness, even if advance contracting is approved, unless retroactive financing has also been approved by ADB. Advance contracting will include advertisement, issuance of bidding document and evaluation of bids and up to the recommendation of contracts award. Advance contracting may apply to categories 1A (Regional Road Upgrades) and 2 (Consulting Services and Training). Retroactive financing could only apply up to the equivalent of 20% of the total ADB loan, with respect to expenditures incurred during loan effectiveness but not more than 12 months before the signing of the Loan Agreement. The contracts proposed for advance contracting and retroactive financing are shown in the procurement plan (Appendix 1).

B. Procurement of Goods, Works, and Consulting Services

45. All procurement of goods and works where there is any ADB funding will be undertaken in accordance with ADB's *Procurement Guidelines* (2013, as amended from time to time). International competitive bidding (ICB) procedures will be used for civil works contracts estimated to exceed \$10 million, and goods contracts estimated to exceed \$1 million. Contracts estimated at less than the ICB thresholds will be procured following national procedures in

²⁶ Available at: <http://www.adb.org/documents/procurement-guidelines>.

²⁷ Available at: <http://www.adb.org/documents/guidelines-use-consultants-asian-development-bank-and-its-borrowers>.

accordance with the PRC Tendering and Bidding Law (1999), subject to modifications as agreed with ADB and consigned in the NCB annex to the procurement plan (Appendix 1). Contracts for works estimated to cost less than the ICB threshold values above, but more than \$200,000 and contracts for goods estimated to cost less than the ICB threshold values above, but more than \$100,000 will be procured on the basis of national competitive bidding (NCB) procedures. Shopping will be used for contracts for procurement of works estimated at less than \$200,000 and equipment estimated at less than \$100,000.

46. Procurement under ICB procedures will use the single-stage one-envelope modality. Procurement shall use the latest ADB standard bidding documents which are found in ADB's website.²⁸

47. For procurement under NCB, the following provisions will apply (i) the advertisement may be limited to the national press, an official gazette or an open access website; (ii) bidding shall follow the standard bidding documents issued by MOF and approved by ADB; and (iii) bidding documents may be only in the Chinese language, and CNY may be used for the purpose of bidding and payment. Procurement under NCB and shopping will be subject to the provisions of the NCB annex of the procurement plan (Appendix 1).

48. All consultants will be recruited according to ADB's *Guidelines on the Use of Consultants* (2013, as amended from time to time). The outline terms of reference (TOR) for consulting services are provided in Appendix 2.

49. **Eligibility of state-owned enterprises.** Under the ADB Procurement Guidelines, bidders which are state-owned enterprises must meet related eligibility requirements of ADB's *Procurement Guidelines*. In order to establish eligibility, the state-owned enterprises or institutions shall demonstrate, *inter alia*, that they are (i) legally and financially autonomous, (ii) operate under commercial law, and (iii) are not dependent agencies of the PMG or PMTB.

C. Procurement Plan

50. An 18-month procurement plan indicating threshold and review procedures, goods, works, and consulting service contract packages and national competitive bidding guidelines is in Appendix 1.

²⁸ Available at:
<http://www.adb.org/sites/default/files/sbd-goods-users-guide.pdf>.
<http://www.adb.org/sites/default/files/sbd-works-users-guide.pdf>.
<http://www.adb.org/sites/default/files/SBDWorks-sml-UserGuide.pdf>.

VII. SAFEGUARDS

A. Safeguards

51. **Safeguards classification.** The project is classified as A for environment, A for involuntary resettlement and A for indigenous peoples.

52. **Grievance Redress Mechanism.** PMTB, through the PMO will establish a grievance redress mechanism (GRM) prior to any earthworks, land acquisition and resettlement. The GRM will be acceptable to ADB, consistent with the requirements of the ADB Safeguard Policy Statement (2009) and the project environmental impact assessment (EIA), environmental management plan (EMP), environmental assessment review framework (EARF), resettlement plans (RPs) and ethnic minority development plan (EMDP).

53. The GRM provides a clear and transparent mechanism for receiving, managing, recording and reporting on complaints. The GRM will be publicized to affected persons. The GRM process will be utilized for all project related grievances. The GRM will:

- (i) review and document eligible complaints of Project stakeholders;
- (ii) proactively address grievances;
- (iii) provide the complainants notice of the chosen mechanism/action to redress the grievance; and
- (iv) prepare periodic reports to summarize the number of complaints received and resolved, and final outcomes of the grievances and chosen actions and make these reports available to ADB upon request.

54. The PMO will have overall responsibility for implementation of the project GRM. All complaints received, handled, resolved and unresolved should be compiled on a monthly basis. The PMO will report on the GRMs in the quarterly project progress reports and semi-annual safeguard monitoring reports for ADB.

55. Pursuant to ADB's *Safeguard Policy Statement (2009) (SPS)*,²⁹ ADB funds may not be applied to the activities described on the ADB Prohibited Investment Activities List set forth at Appendix 5 of the SPS.

B. Environment

56. **Environmental impacts.** The project is classified as environment category A. The main project construction activities will be earthworks, paving, culvert and bridge installation. One of the rural roads passes through the experimental zone of the Ailao Mountain National Nature Reserve, however, works are restricted to the existing right of way. Other negative construction impacts such as noise, dust, sedimentation and erosion are short-term and localized. The road improvements will reduce dust mobilization and inefficient driving practices but overall, there will be increases in traffic noise, pollutant and greenhouse gas emissions during operation. The regional road improvements will enhance access to PRC borders with Viet Nam and Myanmar. A range of mitigation measures are proposed to address wildlife trafficking which will be implemented through the institutional development component of the project.

57. **Environmental safeguards.** An EIA, EMP and EARF were prepared and disclosed on the ADB website on 13 June 2014. These documents cover all project components and comply

²⁹ Available at: <http://www.adb.org/documents/safeguard-policy-statement>.

with the PRC regulatory requirements and ADB Safeguard Policy Statement (2009). The EIA shows that anticipated environmental impacts and risks are modest and can be limited to an acceptable level through the implementation of the EMP and compliance with loan covenants. The EMP (included Appendix 4) prescribes a set of mitigation measures to address environmental impacts of the project, implementation responsibility and monitoring measures are also identified. The implementation of the project will be monitored to ensure compliance with EMP requirements and environmental regulations of the PRC. The EARF has been prepared (included in Appendix 2 of the EIA) to guide the EA in preparing environmental assessment studies and reports for any substitute or additional rural roads.

58. **Climate Risk and Vulnerability Analyses Study.** The project was classified as being at high risk from potential future climate change impacts. A climate risk and vulnerability analyses study determined that the project area is at risk from increased intensity and frequency of heavy rainfall events, flood, landslide and debris flow risk. The study recommended that the detailed design considers adoption of higher factors of safety as the basis of design to ensure the project is resilient to projected future climate change impacts. The recommendations have been included in the EMP in Appendix 1. A summary of the report is included in the RRP Supplementary Appendix 21: Project Climate Risk Assessment and Management and the detailed report is included in Appendix 6 of the EIA.

59. **Implementation arrangements.** During project preparation, environmental institutional capacity development needs were assessed. The PMTB has committed to appointing within the PMO a suitably qualified environmental specialist. National environmental consultants will be appointed within the PMC to provide ongoing technical support for the PMO and to develop and deliver environmental training for the PMTB and their contractors. The responsibilities for environmental management and supervision are outlined in Table 12.

Table 12: Environmental Management Institutional Responsibilities

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	Engineering Detailed Design	Tendering & Pre-construction	Construction	Operation
PMG	The Executing Agency (EA) for the Project responsible for overall implementation and compliance with loan assurances and the EMP.				
PPMO	Established by the EA to be responsible for the day-to-day management of the Project. The PPMO has overall responsibility delegated by the EA for supervising the implementation of environment mitigation measures, coordinating the project level GRM and reporting to ADB				
	<ul style="list-style-type: none"> Engage design institutes on FSR, EIR, RP and SWCR 	<ul style="list-style-type: none"> Engage design institutes Review updated EMP, confirm that mitigation measures have been included in engineering detail design 	<ul style="list-style-type: none"> Appoint at least one environmental specialist on staff Incorporate EIA/EMP clauses in tender documents and contracts Prepare environmental assessments for replacement rural roads according to the EARF and submit to ADB for approval. 	<ul style="list-style-type: none"> Supervise the effective implementation of the EMP Establish and operate the project public complaints center and coordinate the project environment GRM. Prepare quarterly project progress reports and semi-annual environment monitoring reports and submit them to ADB Conduct information disclosure and public consultation Inspect implementation of mitigation measures. 	<ul style="list-style-type: none"> Instruct the IA (PMTB) and O&M units on environmental management requirements Prepare quarterly project progress reports and semi-annual environmental monitoring reports until a PCR is issued Calculate CO₂ emissions from project roads annually and report to ADB until a PCR is issued.
PMTB	The Implementing Agency (IA) for the Project to implement project components, administer and monitor contractors and suppliers, and take responsibility for construction supervision and quality control. PMTB will ensure that the EMP is implemented proactively and will respond to any adverse impact beyond those foreseen in the EIA and ensure that if there are any changes in scope the EIA/EMP will be updated, as needed. PMTB will also attend to requests from relevant agencies and ADB regarding the mitigation measures and environmental monitoring program.				
			<ul style="list-style-type: none"> Manage the procurement process Incorporate EIA/EMP clauses in tender documents and contracts 	<ul style="list-style-type: none"> Supervise contractors and ensure compliance with the EMP Approve method statements Coordinate construction 	<ul style="list-style-type: none"> Coordinate environmental monitoring according to the approved EMP until a PCR is issued

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	Engineering Detailed Design	Tendering & Pre-construction	Construction	Operation
			<ul style="list-style-type: none"> • Appoint at least one environmental specialist on staff • Engage LIEC as part of the Loan Implementation Project Management Consulting Services • Engage PEMS for environmental monitoring • Engage ESE for independent compliance monitoring 	supervision and quality control <ul style="list-style-type: none"> • Coordinate environmental monitoring according to the environmental monitoring program in the approved EMP • Act as a local entry point for the project GRM • Submit quarterly monitoring results to PPMO, PEPB. 	
Design institutes	<ul style="list-style-type: none"> • Prepare project FSRs, EIRs, RPs, SWCRs • Conduct public consultation 	<ul style="list-style-type: none"> • Incorporate mitigation measures defined in the EMP into engineering detail designs • Update the EMP in cooperation with the LIEC 			
YEPD	<ul style="list-style-type: none"> • Review and approve the project EIRs 				
PEPB/PWRB				<ul style="list-style-type: none"> • Conduct inspections of construction sites and activities to monitor compliance with PRC regulations and standards 	
PPTA consultant	<ul style="list-style-type: none"> • Provide technical assistance • Review EIRs 				

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	Engineering Detailed Design	Tendering & Pre-construction	Construction	Operation
	<ul style="list-style-type: none"> • Prepare EIA report and EMP 				
LIEC		<ul style="list-style-type: none"> • Review updated EMP, confirm that mitigation measures have been included in engineering detailed design 	<ul style="list-style-type: none"> • Review bidding documents to ensure that the EIA/EMP clauses are incorporated • Confirm project's readiness in respect of environmental management. 	<ul style="list-style-type: none"> • Advise on mitigation measures • Provide technical support to PPMO and PMTB for environmental management • Conduct environmental training • Conduct semi-annual EMP compliance review • Support PPMO in preparing quarterly project progress reports and semi-annual environmental monitoring reports. • Review domestic environmental acceptance reports • Prepare environmental completion report. 	<ul style="list-style-type: none"> • Conduct EMP compliance review • Support PPMO in instructing PMTB and O&M units on environmental management requirements • Support PPMO in preparing quarterly project progress reports and semi-annual environmental monitoring report until a PCR is issued • Coordinate environmental monitoring until a PCR is issued
Contractors			<ul style="list-style-type: none"> • Ensure sufficient funding and human resources for proper and timely implementation of required mitigation and monitoring measures in the EMP throughout the construction phase 	<ul style="list-style-type: none"> • Appoint an environment, health and safety (EHS) officer to oversee EMP implementation related to environmental, occupational health and safety on construction site • Ensure health and safety • Implement mitigation measures • Prepare method 	

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	Engineering Detailed Design	Tendering & Pre-construction	Construction	Operation
				statements on the implementation of pollution control and mitigation measures listed in Table 2, and submit to PMTB and ESE for review <ul style="list-style-type: none"> • Act as a local entry point for the project GRM 	
PEMS				<ul style="list-style-type: none"> • Undertake environmental monitoring according to the environmental monitoring program in the approved EMP (<i>contracted by PMTB</i>) • Report monitoring data to ESE and PMTB monthly 	<ul style="list-style-type: none"> • Undertake environmental monitoring until a PCR is issued (<i>contracted by PMTB</i>) • Submit monitoring results to PPMO, PMTB and, PEPB
ESE				<ul style="list-style-type: none"> • Conduct independent verification of project's environment performance and compliance with the EMP (<i>contracted by PMTB</i>) • Review monthly monitoring data submitted by PEMS and conduct compliance checking against applicable environmental standards • Provide advice to contractors for resolving on-site environmental problems when monitoring data show non-compliance. 	

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	Engineering Detailed Design	Tendering & Pre-construction	Construction	Operation
				<ul style="list-style-type: none"> • Submit quarterly compliance monitoring results to PPMO, PMTB and PEPB 	
O&M units					<ul style="list-style-type: none"> • Ensure proper operation of component facilities according to design standards • Implement mitigation measures • Conduct post-construction public consultation.
ADB	<ul style="list-style-type: none"> • Review and approve the EIA and EMP and disclose on ADB website 	<ul style="list-style-type: none"> • Approve updated EMP and disclose on ADB website 	<ul style="list-style-type: none"> • Review bidding documents • Confirm project's readiness • Review, approve and disclose environmental assessment reports for replacement rural roads 	<ul style="list-style-type: none"> • Review quarterly project progress reports, semi-annual environmental monitoring reports and project completion report • Undertake review missions • Advise on compliance issues, as required • Disclose semi-annual environmental monitoring reports on ADB website. 	<ul style="list-style-type: none"> • Review and approve environmental monitoring reports and disclose on ADB website • Undertake project completion review mission and prepare Project Completion Report for approval by Board and disclosure on ADB website.
<p>Notes: ADB = Asian Development Bank; EA = Executing Agency; EARF = Environmental Assessment and Review Framework; EHS = Environmental, Health & Safety; EIA = Environmental Impact Assessment; EIR = Environmental Impact Report; EMP = Environmental Management Plan; ESE = Environmental Supervision Engineer; FSR = Feasibility Study Report; GRM = Grievance Redress Mechanism; IA = Implementing Agency; LIEC = Loan Implementation Environmental Consultant; PCR = Project Completion Report; PEPB = Pu'er Environmental Protection Bureau PEMS = Pu'er Environmental Monitoring Station; PMG = Pu'er Municipal Government; PMTB = Pu'er Municipal Transport Bureau; PPMO = Pu'er Project Management Office; PPTA = Project Preparation Technical Assistance; PWRB = Pu'er Water Resources Bureau; O&M = operation and maintenance; RP = Resettlement Plan; SWCR = Soil and Water Conservation Report; YEPD = Yunnan Environmental Protection Department</p>					

60. **Bidding documents and contracts.** The EA and IA will ensure that all bidding documents and contracts for Works contain provisions that require contractors to: (a) comply with the measures relevant to the contractor set out in the EIA and the EMP, and; (b) any corrective or preventative actions identified in semi-annual environmental monitoring reports.

61. In particular, the IA needs to include in the bidding documents and contracts, requirements that the Contractor will be responsible for preparing of a specific environmental management plan (Contractor's Environmental Management Plan) based on the EMP outlined in the EIA, prior to the commencement of construction activities. The contract should specify that the contractor is to periodically (e.g., monthly) report on the implementation of Contractor's Environmental Management Plan.

62. **Supervision of the environmental management plan implementation.** The IA through the PMO are responsible for supervision of the implementation of the EMP. The EMP is included in Appendix 4 of the PAM and Appendix 1 of the EIA. An independent Environmental Supervision Engineer, contracted by the PMO and supported by trained environmental management staff of the PMO and the IA, will be responsible for supervision of the implementation of the EMP. An independent Loan Implementation Environmental Consultant will also be appointed under the Loan Implementation Consulting services (TOR provided in Appendix 2) to support preparation prior to construction, to carry out site audits, provide support for preparation of semi-annual environmental management and monitoring reports to be submitted to ADB and support preparation of the ADB environmental completion report.

63. **Environmental quality monitoring.** The EMP includes noise, air quality, and water quality monitoring requirements during the construction and operational phases. The Pu'er Environmental Monitoring Station will be contracted by the PMO to conduct the environmental quality monitoring program.

64. **Grievance Redress Mechanism (GRM).** The PMO will establish a GRM to deal with all safeguard related complaints, as described earlier in this section. The procedures for dealing with environmental complaints are described in detail in the EMP (Appendix 4). The PMO will be responsible for implementing the GRM in line with these requirements.

65. **Reporting.** The Environment supervision team will prepare monthly environmental reports for submission to the PMO. The Loan Implementation Environmental Consultant will be appointed to support the PMO and the Environmental Supervision Engineer in the preparation of semi-annual environmental management and monitoring reports for ADB.

66. **Change of project scope or unanticipated impacts and risks.** If there are any changes in Project scope or unanticipated environmental and/or social risks and impacts that arise during construction, implementation or operation of the project that were not considered in the EIA and the EMP, the PMO should promptly inform ADB so updates can be made and/or a corrective action plan implemented.

C. Resettlement

67. **Land acquisition and demolition impacts.** The project is linear in nature and the two regional roads are existing roads and their development will not result in significant land acquisition and resettlement (LAR) impacts. 4,265.5 mu land will be acquired permanently and 83,155 m² of housing structures will be demolished. Land acquisition and house demolition will

affect 4,598 rural households with 17,495 persons. The land acquisition and demolition impacts are shown in Table 13.

Table 13: Land Acquisition and Demolition Impacts

Item/Component Name		Unit	Ning'er Component	Menglian Component	Total	Remark
Affected county		Nos	2	1	3	
Affected township		Nos	6	1	7	
Affected village		Nos	22	6	28	
Affected enterprise		Nos	0	4	4	of which, 2 enterprises will be affected slightly, resulting from some auxiliary facilities such as back yard ground and water tank
Permanent land acquisition	Collective land	Mu	2,206.2	2,059.3	4,265.5	
	Farmland	Mu	1,810.4	1,276.1	3,086.5	farmland include rice paddy land, non-irrigated land and economic forest land
Temporary land occupation		Mu	150.0	100.0	250.0	
Housing demolition		m ²	54,001.0	29,154.0	83,155.0	
Affected persons	Affected village	Affected by LA only	HH	3,396	572	3,968
			Person	12,182	2,795	14,977
		Affected by LA and HD	HH	439	146	585
			Person	1,693	600	2,293
		Subtotal	HH	3,835	718	4,553
			Person	13,875	3,395	17,270
	Agricultural enterprise	Affected by LA only	HH	0	30	30
			Person	0	150	150
		Affected by LA and HD	HH	0	15	15
			Person	0	75	75
		Subtotal	HH	0	45	45
			Person	0	225	225
Total		HH	3,835	763	4,598	
		Person	13,875	3,620	17,495	
Resettlement Budget		0,000 Yuan	22,253.1	13,601.5	35,854.6	

Item/Component Name	Unit	Ning'er Component	Menglian Component	Total	Remark
<p>Notes: LA=Land Acquisition, HD=House Demolition, HH=household Affected Person is the same as Displaced Person. ADB Safeguard Policy Statement (2009) trigger for involuntary resettlement changed the terminology of "affected person" to "displaced person", which is defined as a person who is physically or economically displaced as a result of involuntary acquisition of land or involuntary restrictions on land use or on access to legally designated parks and protected areas. In the PRC, the resettlement plans maintain the original terminology of "affected person" and the definition is equivalent to ADB's definition of "displaced person". Since this Project is in the PRC, this Report uses the term Affected Person.</p>					

68. **Resettlement plans.** Plans have been prepared that adequately address the LAR impacts. The draft RPs and a RF were prepared in accordance of ADB's Safeguard Policy Statement (SPS) (2009), SR-2 on involuntary resettlement (IR) and relevant national and provincial/local policies of the PRC. Two full RPs have been prepared for Ning'er to Longfu road and Menglian to Meng'a road that will involve LAR. Project output 2-rural access improvement is unlikely to have any LAR impact or will only have minor LAR impacts. Accordingly, a RF and two sample RPs for two of the rural roads have been prepared. The draft plans have been endorsed by the executing agency (EA) and disclosed to the project-affected persons (APs) and on the ADB website. Compensation for lost assets and resettlement allowance will be paid to the APs prior to the land acquisition and demolition. The focus of resettlement planning is to ensure that the APs are adequately compensated, their livelihood restored and they benefit from the new employment and income generation opportunities. Households affected by permanent land acquisition will be compensated in cash. Households affected by relocation will be compensated for the losses at the replacement cost and will be resettled within their original villages. The EA through PMO will ensure that relocation of the affected households is organized within their original villages so that their social and community characteristics and networks remain functional. PMG will ensure that the plans are implemented effectively and in consultation with resettled communities.

69. **Resettlement plan finalization.** PMG will ensure that a detailed measurement survey (DMS) is conducted to finalize the draft RPs. Upon selection and agreement on the inclusion of the project rural roads, a LAR screening process will determine the roads for which RPs are to be prepared in accordance with the agreed RF. DMS will include undertaking a full census of the affected peoples and preparation of an inventory of losses. Various parties should be on site during DMS and recording, including APs, leaders of local communities, representatives of government organizations and project construction unit, supervision unit. DMS and recording should be transparent and detailed, and it should ensure that no items lost as a result of LAR are missing from the DMS records. The detailed list of loss for each household should be signed and confirmed by various parties and a copy should be kept in file by each party who signed the document. Final RPs will be submitted to ADB for review and approval, prior to commencement of any LAR activity. The finalized RPs will be disclosed to the APs and on the ADB website. PMG will ensure that no civil work is awarded prior to the finalization of the RP.

70. **Policy framework and implementation arrangements.** The resettlement principles established for the project include (i) avoid involuntary resettlement wherever possible; (ii) minimize involuntary resettlement by exploring project and design alternatives; (iii) enhance, or at least restore, the livelihoods of all displaced persons in real terms relative to pre-project levels; (iv) improve the standards of living of the displaced poor and other vulnerable groups (at least to minimum standards); (v) compensation will be based on replacement cost of lost assets; (vi) compensation and entitlements provided to APs will be adequate to improve their living standard; (vii) all APs will be provided with resettlement assistance and fair compensation; (viii) all APs will be informed of the eligibility, compensation standards, livelihood, and income restoration plans, and project schedule to ensure that they will be able to participate in the RP implementation process; (ix) no land should be acquired unless replacement land or sufficient compensation for resettlement is provided to AP; (x) the IA and an independent third party will monitor compensation and resettlement work; (xi) vulnerable groups should receive special assistance to ensure they can live a better life and the APs will benefit from the project; and (xii) the resettlement budget covers all aspects of compensation and rehabilitation assistance and is part of the overall project budget. PMG will ensure that these policy requirements are complied with through an effective implementation of the resettlement plan. Any significant changes in

project scope/design will be reported to the ADB, and the resettlement plan will be updated and submitted for ADB concurrence prior to the commencement of work on the changed scope of the project.

71. **Entitlements and compensation standards.** For people affected by the project, the resettlement objective is to achieve equal or better income and living standards in line with the PRC Land Administration Law (2004), and the ADB's Safeguard Policy Statement (2009). Any people losing land, housing, other assets or income sources will be assisted to fully restore their income and living standards. The entitlements are based on the principle of "replacement cost" for lost assets. Land compensation standards are determined by the relevant national and local policies and existing social and economic conditions of the project affected areas. The permanent land acquisition will be compensated in cash based on the multiples of average annual output value (AAOV) which are deemed to be adequate to replace income losses.

72. For rural residential houses affected by demolition the main compensation packages that will be based on 'replacement cost' and the APs right to salvage material from the demolished building free of cost. The principle of 'replacement cost' does not take into account the depreciation value. The affected people are also entitled to salvage the material from the house affected by demolition. APs will also be entitled to compensation for decoration, movement subsidies, transition subsidies, and compensation for auxiliaries. The affected enterprises and institution will also be appraised according to the market value by the qualified real-estate appraisal institute. Compensation fees will be paid directly to the proprietors and income losses arising from the project will also be included in such appraisal. In case of relocation they will be entitled for full compensation covering their business losses during the relocation period. The workers will be retained as far as possible. The workers will also be eligible for trainings and jobs created by the project.

73. The compensation standards, as per the entitlement matrix of the various RPs, are provided in Table 14:

Table 14: Resettlement Entitlement Matrix

	Types	Scope	Entitled No. of AP and Households	Entitlements	Compensation Polices
1.	Permanent land acquisition	All affected land by Ning'er Jiangcheng road and the Menglian-Meng'a road project	28 Affected villages and 4,598 households with 17,495 affected persons who used land before specified deadline	<ol style="list-style-type: none"> 1. Compensation of land acquisition includes land compensation fee, resettlement subsidies and compensation for young crops. 2. All land compensation fee and resettlement subsidies will be paid to APs if the land is contracted to farmers. 3. Compensation for young crops will be paid to owners directly. 4. Preferential employment to APs for unskilled jobs generated during construction and operation 5. Skill training to Aps 	
2.	Temporary land acquisition	About 250 mu of land	The households and persons affected.	<p>All affected persons shall obtain compensations.</p> <p>The land user shall be responsible for rehabilitation of the temporarily acquired land after completion of the project construction.</p>	The compensation rate for temporary land acquisition is CNY2,000/mu.
3.	Residential housing demolition	All households affected by demolition of 83,155 m ² of house structures of various kind	600 households with about 2,368 affected persons in 28 villages, and 2 enterprises	<p>The APs may choose options such as cash compensation, economically affordable house or exchange residential buildings.</p> <p>House owners without certificate of title shall receive compensation according to the house replacement cost (excluding land price) without any depreciation.</p> <p>The village committees will provide the house plot free for the new building construction.</p> <p>House relocation subsistence allowances will be paid for the full duration of the period of disruption and re-establishment subject to agreement with each affected.</p> <p>Compensation for structures and all other lost assets is paid in full before relocation.</p> <p>Vulnerable groups will be assisted to find suitable</p>	<p>The resettlement costs are determined in accordance with the relevant regulations, with reference to the actual cost analysis of the main categories of the affected houses, and through the consultation with the local government officials and non-government organization representatives.</p> <p>Compensation for rural residential buildings shall be the replacement cost for structures plus the house site location price.</p> <p>Compensation for unlicensed buildings the project owner shall pay replacement price to the owner of unlicensed buildings without depreciation, but no house site location price shall be paid for unlicensed buildings.</p>

	Types	Scope	Entitled No. of AP and Households	Entitlements	Compensation Policies
				housing.	
4.	Ground attachments	All types of ground attachments	Property owner	All will be compensated at replacement cost in cash.	Types of ground attachments identified during field surveys and their approximate replacement cost.
5.	Public facilities (structures)	Public facilities	Property owner	All affected property owners will be provided with satisfactory relocated land on the basis of the land area of the structure to be demolished. The demolished structure will be compensated at replacement cost in cash (including compensation for loss of facilities and labor on the basis of replacement cost).	Types of ground attachments identified during field surveys and their approximate replacement cost.
6.	Income rehabilitation measures	Partial or full loss of livelihood	4,598 households with 17,485 persons in 28 villages, and 4 enterprises	The affected persons will obtain resettlement subsidy and to restore their income and living standard. The local government will provide employment assistance (i.e., training and job arrangements) for the affected persons in the local enterprises.	Non-land-adjustment income-generating options might be more appropriate to the APs. With some technical assistance from the resettlement agency and NGOs, the fund might be invested in development projects. The APs have the right to choose the income restoration options; the income restoration plan must be fully consulted with the APs and must be agreed with the APs.
		Special supporting measures for affected vulnerable groups	Affected vulnerable groups 889 HH with 2,866 persons	Low cost rented housing for families in hardship will be provided. Special fund for the vulnerable (2% of resettlement cost). Provide labor for house construction. All resettlement programs should consider the women's special needs. The women will be fully informed. The vulnerable groups especially the women have priority to obtain the project-related employment opportunities. Labor support for the vulnerable groups in the	

	Types	Scope	Entitled No. of AP and Households	Entitlements	Compensation Polices
				house reconstruction will be provided.	
			Women	<p>New houses should be registered in names of both spouses.</p> <p>Local government will promote improved sanitation in new houses.</p> <p>Skills training will be provided to 2 people (at least 1 female) in households with significant losses.</p> <p>Contractors will give preference to hire women.</p> <p>Encourage APs and women in particular to participate in monitoring and evaluation.</p> <p>Every resettlement office must hire at least one female worker to responsible for women's affairs in the process of resettlement.</p>	<p>Encourage joint bank accounts for compensation payments.</p> <p>Local government and village leaders should provide guidance to invest funds to improve household incomes, with specific options in local areas geared to women.</p>
7	Complaints and Grievances	Compensation rate, payment of compensation and relocation measures	The affected persons who lodge a complaint on land acquisition and relocation matters	<p>Various expenses related to relocation complaints putting forward by the affected persons and management expenses will be exempted.</p> <p>Every resettlement office must hire at least one female worker to responsible for women's affairs in the process of resettlement.</p>	

74. **Resettlement budget.** The cost of LAR under this project, including contingencies and related taxes and duties, is estimated to be CNY358.54 million. The cost of land acquisition and resettlement has been included in the total cost of each component. The EA will ensure that adequate counterpart funding will be made available for land acquisition and resettlement. At the implementation stage, the compensation contract will be negotiated and signed with the affected villages, affected households (HHs) and affected organizations. Therefore, the final resettlement cost may be subject to further adjustment.

75. **Resettlement and income restoration.** Losses resulting from LAR for affected villages and households have been checked in detail and negotiations on income restoration plan have been conducted with the APs. Findings and results of participation have been incorporated in the RPs. To ensure successful resettlement of APs and restore their living standards, detailed rehabilitation plans are developed and included in the RPs. For land loss impacts, rehabilitation measures include distribution of cash compensation among village groups, promotion of cash crops, offering various skill training and job introduction for APs; and offering pension program for APs who have no land or per capita farmland below 0.3 mu. During project construction, efforts will be made to provide temporary employment opportunity to APs in order to increase their income. The overall project LAR impacts are partial and with cash compensation for land loss used in improving existing crop pattern or introducing cash crops will easily restore the losses incurred as a result of land acquisition.

76. Vulnerable groups are defined as poor families, disabled people, the elderly, and woman headed the household. During the course of resettlement implementation, the project proponent will give priority support and help to rehabilitate and improve the lives of these vulnerable persons, including giving priority of employment and jobs generated by the project.

77. **Implementation arrangement and schedule.** In order to implement the RPs in a smooth and effective manner, a resettlement organizational network from higher to lower governmental levels will be established and will be responsible for detailed planning, coordination, implementation and monitoring of resettlement activities. The EA and IA will establish a social safeguards unit (SSU) at the PMO. The SSU will have overall responsibility for coordination of resettlement plan implementation. The SSU will ensure that the resettlement process is in accordance to the RPs. The staff is divided in two groups responsible for, rural house demolition and land acquisition. The staff will be responsible for coordination with various other agencies working on resettlement implementation. The SSU will require capacity building on ADB procedures and policies and a capacity building expert will be engaged under the ADB's consultancy support towards project management (ToR for Capacity Development Specialist is attached as Appendix 2).

78. The SSU will coordinate with the relevant line agencies involved in RP implementation and will be responsible for timely reporting (on a quarterly basis) of the progress of resettlement plan implementation. PMG through the PMO will ensure that the project implementation follows the implementation schedule prepared for land acquisition and resettlement activities. There will be no land acquisition and house demolition without the payment of compensation and no civil works shall commence without payment of compensation to the affected persons and signing of land acquisition agreements. An independent external monitoring agency will undertake the monitoring of the RP implementation and will report semi-annually to the PMBT and ADB.

79. **Affected persons' participation and consultation.** PMG through the PMO will ensure that the APs are informed and consulted about the project benefits, project adverse impacts, compensation and entitlements, livelihood restoration programs, and the procedures set out to

redress affected peoples' grievances and will follow consultation and participation schedule (C&P) as outlined in the RPs indicating timings, methods, objective, documentation procedures and incorporation of affected peoples' opinions on resettlement and implementation.

D. Indigenous Peoples or Ethnic Minority Development Plan

80. The poverty and social analysis (PSA) undertaken to prepare this Ethnic Minority Development Plan (EMDP) has assessed and described the circumstances of the ethnic minorities (EMs) and the anticipated poverty and socio-cultural impacts from the project. Adequate provisions to enhance the economic benefits for ethnic minorities, and the vulnerable groups including the poor and women have been integrated in the project design. Provisions for special mitigation measures relating to LAR have been included in the RPs, which will help ensure that, ethnic minorities and other vulnerable groups adversely affected by loss of land or housing will be compensated for their loss of assets. Current governmental policies and programs for ethnic minorities further help to protect and enhance project benefits to ethnic minority peoples. Most road related community needs such as rural road improvements, sub-village spot improvement, rural road maintenance, rural transport services have been included in the project rural access improvement component. Based on the PSA, the project EMDP presents (i) description of the EM communities within the project area including their distinctive cultural and social features, (ii) the project impacts on EMs, and (iii) agreed mitigation and enhancement measures to be implemented as part of this project.

81. Multiple ethnic minority groups in rural area characterize the population of Pu'er. Out of its 10 district/ and counties, except for the capital city Simao District, all nine counties are ethnic minority autonomous counties. The total non-Han ethnic minority population makes up 63.4% of the total population. Hani is the biggest group with a population of 4.68 million (or 18.3% of the total population), followed by Yi (17.5%), Lahu (12.3%), Wa (6.3%) Dai (5.9%), Yao (0.4%), Bai (0.5%), Hui (0.5%) and Miao (0.5%).

82. Pu'er Prefecture is also a poverty concentration area. Of its 10 district/s and counties, except for the capital city Simao District, all nine counties are national designated poverty counties.

83. The project potentially benefits a total population of about 405,000, including 287,000 or 71% ethnic minorities and 149,000, or 36.7% poor population. The rural road improvement component will benefit around 73,000 people in 16,280 households of 287 village groups of 110 administrative villages in 9 counties and one district of Pu'er prefecture. About 80% of them are ethnic minorities including Hani, Yi, Lahu, Wa, Dai, Yao, Bai, Hui, and Miao. The Ning'er-Jiangcheng-Longfu Road component and Menglian-Meng'a component will benefit population of 332,000, of which 260,720 or 69% are ethnic minorities. The main ethnic minority groups are Yi, Hani, Dai, Lahu, Wa, Yao and Bai.

84. The EMDP will be implemented by PMG through PMTB, and will ensure that:

- (i) The EMDP is implemented in accordance with its terms;
- (ii) Targeted ethnic minorities are consulted and given adequate opportunity to participate in EMDP implementation;
- (iii) Targeted ethnic minorities benefit from the Project at least equitably in a culturally appropriate way and in accordance with ADB's Safeguard Policy Statement (2009). The EMDP implementation status will be recorded in the quarterly progress reports;

- (iv) The Government's existing trafficking enforcement systems will be strengthened by increasing awareness and introducing educational measures;
- (v) Works contractor specifications include requirements to comply with the EMDP and priority provision for employment to ethnic minority people; include requirements to comply with the EMDP to ensure contract workers are made aware of the custom, tradition and way of life of the ethnic minority communities; minimizing risk of communicable diseases including a mandatory awareness building training on HIV/AIDS prevention to all contract workers; and minimizing disturbance to the local communities during the construction period;
- (vi) Adequate staff and resources are committed to supervising and monitoring the implementation of the EMDP and report progress to ADB quarterly;
- (vii) An independent agency acceptable to ADB is engaged to carry out investigations to monitor and evaluate progress semi-annually, and submit reports to ADB semi-annually until the completion of the Project;
- (viii) Monitoring reports include data disaggregated by ethnic group and by gender; and
- (ix) Specific measures on human and drug trafficking incorporated in the EMDP will complement the government's existing programs.

85. **Implementation arrangements for EMDP.** In order to implement the EMDP in a smooth and effective manner, an organizational network from higher to lower governmental levels will be established and will be responsible for detailed planning, coordination, implementation and monitoring of EMDP activities. PMTB as the IA for the project will assume overall responsibility on behalf of PMG for the implementation of EMDP, including planning, implementation, financing, and reporting. PMTB will establish a social safeguards unit (SSU) in the PMO that will be responsible for implementation of EMDP. PMTB will ensure that the SSU is adequately staffed and equipped with office space and required working facilities. The SSU will be headed by a focal person with adequate understanding of ADB SPS 2009 requirements and with experience in implementing IR, IP and GAP safeguards. The SSU will work closely with the county Ethnic Affairs Bureaus and other line agencies to ensure an effective implementation of the EMDP.

86. PMTB will ensure that the specific measures outlined in the EMDP and appended below are implemented and reported through the regular progress reports and internal monitoring reports.

87. There are three types of measures. First two measures are directly related to the project while the third category or secondary measures refer to the broader policies and programs being implemented by government agencies at various levels:

- (i) Measures to enhance the direct and potential benefits to EM.
- (ii) Measures to mitigate the likely adverse impacts on EM.
- (iii) Complementary measures with local government for EM economic development.

1. Enhancement Measures

88. **Transport services improvement.** As a measure to improve the transport services to the EM communities, PMG through PMTB will upgrade 33 sections of rural roads totaling 600 km. These upgraded roads will ensure all weather accessibility to the rural communities, mainly ethnic minorities. The project will also initiate a pilot 'rural transport service' to improve the transportation service to these remotely located ethnic minority communities.

89. **Employment opportunities.** As an enhancement measure, PMG through PMTB will ensure that project construction contracts include clauses to encourage local employment for construction, and special attention will be given to the EM communities to promote their employment. PMG and PMTB will ensure that employment opportunities are announced to local communities and will also ensure that contractors conform to appropriate labor laws and standards in the PRC, such as the Law of Safe Production, the Law of Labor, the Regulation on Safe Production Management for Construction Projects, and the Regulation on Working Injuries and Insurance of the PRC.

90. A 50% of available unskilled jobs will be earmarked for the local people who are ethnic minorities, women, poor and people affected by LAR.

91. PMTB will monitor the use of local labors and appropriate labor laws and standards within the first 3 months of the commencement of each construction contract and take appropriate actions to improve the employment and compliance if needed. Prior to starting civil work, the local labor bureau will organize training to construction workers on safe and healthy work, and on labor's rights and benefits. Further training will be provided by contractors when people are hired.

92. **Encouraging use of local resources.** The PMG and PMTB will ensure that the contractors use local resources such as food and beverages, meat and farm products and rental spaces. Use of small machinery such as diggers, tractors, etc. will also be encouraged. Local units of All China Women's Federation (ACWF) will help organize women to provide catering service to construction camps.

93. **Road safety.** PMG and PMTB will ensure that the project roads design includes required safety measures and these are regularly monitored during the project construction. Based on road safety requirements signage, traffic calming measures and pedestrian crossing are set up and road side communities are provided road safety awareness training. PMTB will coordinate with the local police and local units of ACWF to organize road safety training.

94. **Ethnic minority cultural protection and awareness building.** As a response to mitigate the impacts of outside influx, PMTB in collaboration with other agencies such as Ethnic Minorities Bureau, will take measures to protect culture and way of life of the ethnic minority communities. These measures will include:

- (i) Building cultural awareness and sensitivity of the construction workers during construction period.
- (ii) Avoiding disturbance to the sacred trees/relics through project design to be included in work contracts and monitored by PMTB and the external monitoring agency. Ensuring adequate public consultation based measures are taken if such avoidance is not possible due to the difficult geographic terrain in the project area.

95. PMTB will take up necessary measures to provide the EM communities technical training on cash crop plantation that is emerging as a preferred source of income generation in the project area and will coordinate with the local human resources bureaus to organize such training. PMTB will also coordinate with the local labor bureaus to provide non-farming job skills including labor laws and labor rights to the members of EM communities, who are looking for non-farm employment.

2. Mitigation measures

96. **Minimization of disturbances during construction.** Some disturbances might occur during project implementation that will affect community life. For example, the construction may cause the dust and noises. The road construction might also damage the local agricultural support network such as irrigation canals. PMTB will ensure that construction contractors enhance the on-site management measures to reduce the noises and dust and avoid night time construction activities in the vicinity of residential areas. Contractors will also ensure that any damage to the local resource base such as drinking water, irrigation, local approach roads should be avoided and if any such damage takes place temporary services are provided till the damaged resources are restored. PMTB will ensure that these provisions are included in the work contracts. The supervision engineers will monitor conditions and report any pending issues that will be reported through the PMO's quarterly reports. External monitor will undertake monitoring of such disturbances and will suggest measures where required.

97. **Prevention of HIV/AIDS spread.** The potential issues include (i) construction workforce arrival, and (ii) increased volume of traffic, especially from/to bordering countries. The following measures for the control of transmissible diseases will be funded by the local government. PMTB will ensure that the contractors include HIV/AIDS and other transmittable diseases as part of work safety program and provide training to the workers. This condition will be included in the bidding contracts. PMTB will carry out the advocacy, information and education campaigns to the communities nearby the road, and to the entertainment workers near the road by local disease control center (CDC) and the women's federations' staff. The information dissemination materials will be developed by experts from local disease control centers in culturally and linguistically appropriate manner. The posters and other related information will be also put at the public places. The contact numbers and locations of local clinics and hospitals which can provide counseling and HIV test services will be also announced to the contractors and construction workers.

98. **Minimizing risk of trafficking of human, drugs and other prohibited items.** The EMDP will develop coordination among the various responsible agencies to minimize trafficking risks. PMTB will ensure these interventions are implemented to build awareness of the ethnic minority communities, especially the vulnerable communities and the youth. Adequate educational material will be developed in a culturally and linguistically appropriate manner. PMTB in collaboration with the local police will also set up check points with surveillance equipment.

99. **Labor market impact.** Skilled and unskilled employment will be created from civil works during construction. PMTB will ensure that at least 50% of unskilled jobs generated by project are provided to the people belonging to the EM communities, affected by LAR, women and poor. PMTB will ensure that these conditions are included in the bid contracts. PMTB will collaborate with Labor and Social Security Bureau to ensure the contractors meet core labor standards as outlined in national, provincial and municipal laws and regulations specified in project assurances. PMTB shall ensure that the principle of 'equal pay for equal standard of work' is implemented and no discrimination is made on the basis of gender and ethnicity. PMTB shall also ensure that no child labor is allowed during implementation and operation of the project. Specific targets for employment have been included in the RPs, EMDP and GAP.

3. Complementary social development measures.

100. Some of the enhancement and protection measures require integration with complementary local programs for EMs. PMTB will coordinate with local governments to take measures to ensure that the concerned agencies pay specific attention to the EM.

101. **Promote non-framing employment in transport and border trade.** Local governments and their line agencies (e.g., the labor bureau), will provide technical training on transport and border trade services to diversify the income generation sources of the local ethnic minority communities. These measures will broadly include providing EM communities required skills to engage in cross-border trading and in transport services that will be on rise as a result of improvement of roads.

102. **Tourism promotion.** Tourism opportunities will be rising in the project area. Border posts, natural spots and ethnic minority culture are main tourism attractions. To ensure that the ethnic minority population benefit from these opportunities in a culturally appropriate manner, the PMTB will coordinate with the local tourism bureaus to promote tourism activities in a culturally appropriate manner.

Table 15: Ethnic Minority Development Action Plan

Proposed Actions	Target Group(s)	Agencies Involved	Timing	Funding Needs & Source (CNY)	Monitoring Indicators & Source
A. PROJECT BENEFITS AND ENHANCEMENT MEASURES					
1. Design Features: Regional roads development <ul style="list-style-type: none"> ▪ 33 sections totaling 600 km local road upgraded ▪ Rehabilitation/reconstruction of Ning'er-Jiangcheng-Longfu highway and Menglian-Meng'a roads 	Communities along the road. Around 405,000 populations including 71% of ethnic minorities,	PMG and PMTB	2015–2017	\$503.39 M in project budget	<ul style="list-style-type: none"> ▪ Section (N) and length (km) of rural roads improved and maintained ▪ Number of rural people served by improved roads, % of EM benefitted ▪ Number of village roads spots fixed; number & km of village roads maintained
2. Improved village roads and transportation services <ul style="list-style-type: none"> ▪ Village road spot improvement ▪ Piloting of rural transport services³⁰ 	Communities along the village roads connecting the rural roads	PMG and PMTB, Golden Peacock Transport Company		\$500,000 for piloting 4 million for spot improvement	<ul style="list-style-type: none"> ▪ Number of village roads improved ▪ Length of village roads improved ▪ Number of days of (42,000 days) employment generated ▪ Number of rural transport services introduced and functional

³⁰ Purchase of buses and/or minivans have been provisioned to support the establishment of five new bus routes on the project rural roads. PMC support will focus on improved transport planning, including the selection of an appropriate commercial model and the provision of transport services for school children. The assistance will work with the existing bus companies and identify opportunities to pilot township-based bus services and village-based pilot initiatives.

Proposed Actions	Target Group(s)	Agencies Involved	Timing	Funding Needs & Source (CNY)	Monitoring Indicators & Source
<p>3. Improved Road Safety³¹</p> <ul style="list-style-type: none"> ▪ Installation of road safety measures such as signage, traffic calming strips, pedestrian crossings ▪ Organizing educational and community awareness programs ▪ Establishing Accident database established 	<p>Communities along the road. Around 405, 000 populations including 71% of ethnic minorities, and % rural poor.</p>	<p>PMG and PMTB Local Police, Village communities and educational institutions along the project roads</p>	<p>2015–2017</p>	<p>\$400,000 in Project budget</p>	<ul style="list-style-type: none"> ▪ % reduction in traffic accident ▪ Number of easy-identifiable roads safety signs installed ▪ Number of effective measures taken for speed limitation. ▪ Number of local communities covered by road safety training. ▪ Number of awareness building material prepared and distributed.
<p>4. Project Economic Benefits:</p> <ul style="list-style-type: none"> ▪ 50% of unskilled jobs (estimated number of jobs 500 person year) for ethnic minorities, women, poor, project affected, and local people ▪ Use of local resources and local construction materials 	<p>Villages along road, priorities given to poor minorities, minority women, project affected people</p>	<p>PMG and PMTB and Contractors</p>	<p>2015–2016</p>	<p>Project budget</p>	<ul style="list-style-type: none"> ▪ Provisions included in the bidding documents ▪ Number of unskilled jobs provided to local people (ethnicity and sex disaggregated data) ▪ Average purchase of local products and other resources (contractor camps details) in Yuan ▪ Number of establishments (houses/space) rented ▪ Source of

³¹ A program of road safety improvements will be implemented targeting: (i) education and community programmes, (ii) enforcement, (iii) capacity building, (iv) accident database establishment, and (v) a program of equipment procurement. The PMC will provide the necessary guidance and oversight.

Proposed Actions	Target Group(s)	Agencies Involved	Timing	Funding Needs & Source (CNY)	Monitoring Indicators & Source
					construction materials—money spent and % of total procurement (interviews with contractors)
5. Capacity development measures (EM, poor, women) <ul style="list-style-type: none"> ▪ Technical training for cash crop growing³² ▪ Non-farming job skill training 	All 28 villages with APs, Priorities give to poor EM villages, total target trainees 5000 person	PMG and PMTB and Human resources bureau		CNY3 million in Project budget in RP	<ul style="list-style-type: none"> ▪ Number of training sessions held ▪ Number of EM people trained (training report)
B. MITIGATION MEASURES TO ADDRESS SOCIAL RISKS					
1. EM Cultural protection and awareness building <ul style="list-style-type: none"> ▪ Building cultural awareness and sensitivity of the construction workers during construction period ▪ Avoiding disturbance to the sacred trees/relics through project design ▪ Identification will be done by Cultural Protection Management Bureau in regard to sacred trees and relics 	Construction workers Villages with land close to the proposed road	PMG and PMTB and contractors	2015–2016	CNY30,000 in project management EMP Budget	<ul style="list-style-type: none"> ▪ Avoidance of sacred trees and relics included in contractors' bids ▪ Number of awareness building sessions and No of workers attended the sessions ▪ Number of sacred trees/relics identified and saved ▪ Number of community consultations held with EM communities on cultural issues especially sacred trees/relics
2. Minimizing risk of communicable diseases:	Contractor staff,	PMG and	2015–2016	CNY50,000	<ul style="list-style-type: none"> ▪ Contractors bids

³² Refer to training program under the resettlement plans prepared for the project (at the moment there is no such budget in the resettlement plans).

Proposed Actions	Target Group(s)	Agencies Involved	Timing	Funding Needs & Source (CNY)	Monitoring Indicators & Source
(i) HIV/AIDS and STI awareness <ul style="list-style-type: none"> ▫ Contractors provide training to all workers and managers in accordance with the provision under bid contracts (ii) Malaria Prevention and control—construction workers <ul style="list-style-type: none"> ▫ Ensure site sanitation and improved drainages ▫ Use of mosquito nets and spraying of camps ▫ Treatment of affected workers (iii) Tuberculosis prevention and control among construction workers <ul style="list-style-type: none"> ▫ Annual health screening for all workers ▫ Quarantine and treatment of affected workers ▫ Communities (CDC) 	construction workers, villagers	PMTB and contractors and County CDC		included in project management	include provision for HIV/AIDS awareness training to all workers <ul style="list-style-type: none"> ▪ Number of workers trained ▪ Number of training programs conducted for workers ▪ Number of awareness raising material produced & distributed ▪ Number of condoms distributed ▪ Number of mosquito nets provided ▪ Number of times camps sprayed ▪ Number of workers screened for TB ▪ Number of workers quarantined and treated for TB
3. Minimizing risk of Trafficking of human and drugs <ul style="list-style-type: none"> ▪ A multi-sector approach in coordination with various agencies ▪ Awareness building and information sharing with a focus on Lahu and Wa communities in coordination with local women’s federation ▪ Awareness building and education on anti-drug trafficking especially targeting youths ▪ Improved law enforcement including setting up check points and surveillance equipment ▪ Posters and pamphlets in bus stations, border points 	Villages and towns along port areas	PMG and PMTB, Police station, Customs Offices, and women’s federation	2015–2016	CNY500,000 included in project budget for awareness building and information sharing. Law enforcement costs will from government regular budget.	

Proposed Actions	Target Group(s)	Agencies Involved	Timing	Funding Needs & Source (CNY)	Monitoring Indicators & Source
<ul style="list-style-type: none"> ▪ Human and drug trafficking prevention expert appointed 					
<p>4. Minimization of disturbances during construction</p> <ul style="list-style-type: none"> ▪ Avoidance of water sources contamination ▪ Avoidance of construction work at night nearby residential areas ▪ Minimization of dusts caused by construction ▪ Site cleaning up on work completion ▪ Provide temporary service during construction and reconstruction of irrigation, drainage systems and approach roads 	Villages close to the alignment corridor	PMG and PMTB and contractors	2015–2016	Included in project budget (refer to EMP)	<ul style="list-style-type: none"> ▪ Number of complaints received and resolved ▪ Length of irrigation and drainage canals, percentage of recover ratio ▪ Clearance from village committees upon completion
C. LOCAL GOVERNMENT COMPLEMENTARY POVERTY REDUCTION MEASURES					
<p>1. Promote non-farming employment in transport, border trade and tourism service sectors.</p> <ul style="list-style-type: none"> ▪ Promote skill training on transport, border trade, tourism ▪ Provide micro-credit assistance to help establish non-farming establishments 	Minority Household and individuals	Local PRADO, EMARB, and LSSB	2015–2016 onwards	On-going government project	<ul style="list-style-type: none"> ▪ Number of EMs trained ▪ Amount of credit disbursed, ▪ Number of minority borrowers, and type of activities
<p>2. Tourism promotion</p> <ul style="list-style-type: none"> ▪ Minority cultural protection and cultural& ecotourism development ▪ Advertising of tourism sites through varies approaches 	Minority villages	LG and its tourism bureaus	2016 onwards	Government and tourism sector	<ul style="list-style-type: none"> ▪ Minority festival celebration and re-storage ▪ Number of advertisements ▪ No. of home stay tourism site in EM villages ▪ Income from tourism ▪ Jobs created for EMs
D. MONITORING AND EVALUATION					

Proposed Actions	Target Group(s)	Agencies Involved	Timing	Funding Needs & Source (CNY)	Monitoring Indicators & Source
Monitoring and Evaluation	All ten counties and districts with project components	PMG and PMTB	2015–2016	CNY600,000 as part of project consultancy budget	Report to ADB semi-annually

CDC = Center of Disease Control, DRB = Development and Reform Bureau, EMARB = Ethnic Minority Affairs and Religion Bureau, EMs =Ethnic Minorities, EMP = environmental management plan, HH = household, IPMC = Industrial Park Management Committee, LSSB = Labor and Social Security Bureau, M=million PRADO = Poverty Reduction and Development Office, PMO = project management office, RP = resettlement plan, TB = Tourism Bureau, LG =Local Government, and WF = Women’s Federation.

Sources: Pu’er Prefecture Municipal Government; PMO; County level of bureaus/office of transport, poverty alleviation, civil affairs, labor and social insurance, ethnic minority affairs and women’s federation.

103. **Social safeguards grievance redress mechanism.** PMG will ensure that an effective mechanism is established to deal with project related grievances of the affected persons prior to the commencement of project implementation. Such grievances may derive from measurement of asset losses; surveying, statistics and computation errors; compensation standards and entitlements including the methodology used for calculating these entitlements; preparedness and suitability of resettlement plots for house construction sites; and delays faced during the implementation of RP. The GRM will also be responsible for any complaints arising from the non-compliance with the Ethnic Minority Development Plan. The agreed GRM will provide a clear and transparent mechanism and will be established prior to the conduct of DMS and signing of LAR agreement and will be publicized to the affected persons. If the GRM process does not meet the requirements of APs, at any time they may take their case to the civil courts, in accordance with the Civil Procedures Act. The GRM process may be utilized for other project related grievances. PMG will ensure that records of such grievances including grievance received orally and resolved will be kept by the PMO and upon request will be made available for review to the external monitors and ADB review missions.

104. **Accountability mechanism.** The PMO staff have been introduced to ADB's Accountability Mechanism Policy and have been provided with the Chinese version of the policy. The EA understands that at any time, an affected person who has, or will, experience direct harm may submit complaints to ADB's Accountability Mechanism. The EA understands that the Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged non-compliance with ADB's operational policies and procedures. The EA and IA understand their specific roles and responsibilities in relation to the Accountability Mechanism and have agreed to cooperate to the fullest in case of complaints made. The cooperation includes providing ADB's compliance review mission access to the site, complainant and relevant information and documents.

105. **Record keeping.** PMG will ensure that the PMO keeps the relevant records of the RP and EMDP implementation process. These include records of household agreements signed on land acquisition demolition, records of compensation paid, livelihood restoration measures implemented and their impacts on affected peoples incomes, public participation and consultation records and integration of outcomes of these consultation processes, grievances received and resolved. On request these records will be made available for review to external monitor and ADB missions.

106. **Capacity building.** PMG through PMTB will ensure that an adequate number of staff is allocated with necessary office space and equipment at the PMO. A Social Safeguards Unit (SSU) will be set up at the PMO that will be responsible for overall implementation of RP, EMDP and GAP and ensuring coordination among various line agencies required to be involved in the RPs, EMDP, and GAP implementation. PMTB will ensure that the staff dealing with social safeguards issues is trained in ADB SPS 2009 social safeguard policy requirements. Under ADB's consultancy support, a consultant for social safeguards capacity building will be procured who will be responsible for providing training to SSU and other relevant line agencies on ADB's SPS (2009), safeguards requirements II (IR) and III (IP), assist in internal monitoring, ensuring compliance with relevant sections of project agreement, and preparation of reports and other document for ADB. A ToR for the capacity building specialist is included in this PAM.

107. **Monitoring and evaluation.** The plan for internal and external monitoring and evaluation (M&E) is included in the social safeguards documents—RPs and EMDP as well as in

the GAP. The PMO will be responsible for internal monitoring and supervision, and reporting to higher levels and ADB. PMO will be supported by a consultant for effective internal monitoring and reporting who will be affiliated to the SSU. The PMO will provide quarterly internal monitoring reports on progress of RPs, EMDP, and GAP implementation to the ADB. The RPs and EMDP implementation is also monitored and its effectiveness evaluated by an external monitor. PMO will engage independent external monitors in accordance with the ADB procedures. The external monitor will submit semi-annual monitoring reports on RPs and EMDP, implementation till the completion of LAR and EMDP implementation and annual evaluation reports for RPs and EMDP for two years following their implementation completion. The PMO and external monitor will also be responsible for submission of RP completion and an EMDP completion report by the end of the project. These reports will be disclosed on ADB website and made available to the APs. PMO will ensure that at the beginning of the first year of project implementation the external monitor will conduct a base line survey involving a selected sample to assess the socio-economic development indicators. The survey will be updated annually to assess the impacts of socio-economic benefits derived from the project. A TOR for the EMDP external monitor has been prepared and included in Appendix 2.³³

³³ Only EMDP external monitor is being provided under the loan. External monitoring for the RP is included under the RP budget.

VIII. GENDER AND SOCIAL DIMENSIONS

A. Gender Action Plan

108. The project incorporates distinctive gender sensitive design features to enhance women's inclusion and participation. All project outputs include features that address gender-specific transport and economic development needs of the project beneficiary population. The PSA and gender analysis indicated that 51% of women use public transport as the main mode of transportation, whilst 31% reportedly walk. Women expressed personal safety concerns when using public transport. These gender-related considerations have been addressed in the project design to ensure that women will benefit with improved road infrastructure, introduction of public transport, road safety measures and improved access to employment opportunities and non-farm income generation activities.

109. The project has been designed to meet ADB's Effective Gender Mainstreaming categorization and a project gender action plan (GAP) has been prepared. Activities outlined in the GAP focus on (i) ensuring women's equitable participation in the project including in public consultation, (ii) implementing gender-responsive features of the project, (iii) promoting employment and income generation opportunities for women, and (iv) building institutional capacity for gender mainstreaming. The GAP is a linked project document. Key GAP performance indicators are incorporated in the relevant project outputs in the project design and monitoring framework and the GAP is fully integrated into the project administration. A clause requiring full GAP implementation is part of the loan agreement assurances. PMG through PMTB will be responsible for implementation of the GAP and will make budgetary arrangements, and arrange or hire a specialist to support GAP implementation. PMTB will also seek support and coordination from local All China Women's Federation (ACWF) and other relevant line agencies for effective implementation of the GAP. The implementation of the GAP will be financed through the project budget and will be monitored through the collection of gender-disaggregated data. The GAP is provided in the Table 16.

Table 16: Gender Action Plan

Project Output	Activities and Performance Indicators/Targets	Responsibility
Output 1: Regional roads development	<ul style="list-style-type: none"> • Employ at least 20% local women in unskilled construction jobs by including employment requirements in the Works bidding documents. • Ensure equal pay for female and male workers who undertake equal value of work (monitored through contractors' payrolls). • Road safety: Community consultations and awareness building on road safety issues targeting women (50% participants) and involving local women's associations. • At least 50% women affected by land acquisition or house demolition participate on income generation skills such as cash-crop growing and non-farming skill training program (included in the resettlement plans). • Gender responsive HIV/AIDS/STI prevention consultation and awareness building (minimum of 50% female participants)—in cooperation with the local CDC units and local women's association. • Gender responsive human and drug trafficking prevention consultation and awareness building (minimum of 50% women participants)—in cooperation with the local CDC units and local women's association. • Women trainers for gender sensitive training especially on HIV/AIDS and Trafficking training—in cooperation with the local CDC units and local women's association. 	<p>PMTB will appoint a staff member (female) as focal point to implement, monitor and report on these activities.</p> <p>2015–2018 Design institute, contractors, and ACWF Gender specialist will ensure implementation and monitoring of these activities.</p>
Output 2: Rural access improvement	<ul style="list-style-type: none"> • Employ at least 20% local women in unskilled construction jobs on rural roads. • Ensure equal pay for female and male workers who undertake equal value of work (monitored through contractors' payrolls). • Road safety: Community consultations and awareness building on road safety issues targeting women (50% participants) and involving local women's associations. • Piloting public transport services: The output will pilot village bus services that will mostly benefit the village women. Gender pattern of use of public transport will be periodically monitored. 	<p>PMO gender focal staff</p> <p>2015–2018 Design institute, contractors, and ACWF EA/IA, design institute, contractors, and ACWF, gender specialist, external monitor Gender specialist will ensure implementation and monitoring of these activities.</p>

Project Output	Activities and Performance Indicators/Targets	Responsibility
	<ul style="list-style-type: none"> • Improved village transport infrastructure: Improvement of village roads by forming 'road maintenance groups' mainly consisting of women (75%). (Community road maintenance specialist to ensure formation of road maintenance groups) • 75% of the total 42,000 days of employment generated to go to women Rural Road maintenance for two years post-operation (Dehong experience). 	
Output 3: Institutional strengthening and capacity building	<ul style="list-style-type: none"> • Recruit gender specialist to support GAP implementation. • Appoint a project staff (gender focal point) responsible for gender mainstreaming and GAP implementation and reporting. • Provide GAP orientation/training to key EA/IA staff. • Gender sensitivity training for staff of project related government agencies (minimum of 50% men participants). • Collect sex-disaggregated data on project impacts. 	EA/IA, gender specialist
Gender responsive resettlement related measures	<ul style="list-style-type: none"> • Ensure at least 50% female participation in public consultation. • Include 50% women in livelihood restoration training for affected people. • Ensure that women and men are equally entitled to new house registration, and both names are reflected on titles. • Provide additional support to women headed households. 	

ACWF = All China Women's Federation, EA = executing agency, IA = implementing agency.

110. PMTB will ensure that contractors' bidding documents clearly indicate implementation requirements of the gender sensitive project design features.

111. **Gender monitoring.** GAP indicators have been incorporated into the overall PPMS for the project. The gender specialist consultant(s) will work with the PMO and social safeguards unit (SSU) staff to orient them on GAP requirements and develop a detailed implementation and monitoring plan for gender activities. The PMO will assign a staff member gender focal point to be responsible for gender mainstreaming, and GAP implementation and reporting. The gender specialist consultant(s) will provide guidance to the PMO for drafting of the first project gender plan implementation progress report, and review the subsequent reports. Updated information on the status of GAP implementation should be included in all project progress reports. ADB staff with expertise in gender and social issues will participate in the midterm review.

IX. PERFORMANCE MONITORING, EVALUATION, REPORTING, AND COMMUNICATION

A. Project Design and Monitoring Framework

112. The project design and monitoring framework for the project is shown in Table 17.

Table 17: Design and Monitoring Framework

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
<p>Impact Regional integration and trade between Yunnan Pu'er and neighboring countries is enhanced</p>	<p>Value of trade at Meng'a and Longfu border crossings increased 100% by 2023 compared with 2013 (\$340 million and \$904,000, respectively)</p> <p>Border crossings by vehicles and people between Myanmar at Meng'a (219,700 and 998,700, respectively in 2013) and PRC and between Viet Nam and PRC at Longfu^a increase 100% by 2023 compared with 2013</p> <p>Poverty rate in Pu'er declines from 37.1% in 2013 to 25% by 2023 (poverty line CNY2,300)</p>	<p>Yunnan Pu'er Statistical Yearbook</p> <p>PRC Customs Office</p> <p>Survey</p>	<p>Assumptions Supportive trade agreements established between PRC and neighboring countries</p> <p>Appropriate approvals are issued for the development of project border crossing sites</p> <p>Risks Expected economic growth fails to materialize</p>
<p>Outcome Accessibility between rural and border areas and the regional transport network in Yunnan Pu'er is improved</p>	<p>Average travel time between villages and townships decreases from 42 minutes in 2013 to 30 minutes by 2020</p> <p>Average number of trips between villages and townships for rural households increases from 5.2 trips per month in 2013 to 7 trips per month by 2023</p> <p>Travel time by car between Ning'er and Longfu border reduced from 8 hours to 5 hours by 2020</p> <p>Vehicle operating costs/km on project roads reduced</p>	<p>Before and after survey</p> <p>Before and after survey</p> <p>EA project monitoring reports</p> <p>Traffic police data</p>	<p>Assumptions Roads are maintained</p> <p>Risks Lack of long-term sustainable asset management regime</p>

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
	<p>by 20% by 2020 compared to 2013</p> <p>Crashes in project counties reduced from 11.6 per 100,000 persons in 2012 to 10 per 100,000 persons by 2020</p> <p>Fatalities in project counties reduced from 3.9 per 100,000 in 2012 to 3 per 100,000 by 2020</p>		
<p>Outputs</p> <p>1. Regional roads development</p>	<p>234.07 km of Ning'er-Longfu road upgraded to paved class III-IV standards by 2019</p> <p>48.75 km of Menglian-Meng'a road upgraded to class II-I road by 2018</p> <p>Meng'a Material Transit Centre complete by 2018</p> <p>3-star ChinaRAP rating achieved on regional roads</p> <p>At least 20% women employed for unskilled construction jobs</p> <p>At least 50% of available unskilled jobs for ethnic minorities, women, poor, and people affected by land acquisition</p> <p>Of the affected people: (i) 50% of women receive livelihood restoration training, and (ii) new house titles contain the names of both the men and women householders</p>	<p>ADB review missions and progress reports</p> <p>EA project completion report</p> <p>ADB review missions and progress reports</p> <p>ChinaRAP report</p> <p>ADB review missions and progress reports</p> <p>ADB review missions and progress reports</p>	<p>Assumptions</p> <p>Counterpart funding sufficient and available in a timely manner</p> <p>Good coordination between EA, IA and customs agency</p> <p>Risks</p> <p>Difficulties in complying with ADB procurement procedures</p>

Activities with Milestones	Inputs
<p>1. Regional roads design</p> <p>1.1 Conduct detailed design of Ning'er-Longfu road, safety audit (Q3 2014); construct civil works, pre-open safety audit (Q3 2018)</p> <p>1.2 Conduct detailed design of Menglian-Meng'a road, safety audit (Q3 2014); construct civil works, pre-open safety audit (Q3 2017)</p> <p>1.3 Update resettlement plans and the ethnic minority development plan (Q1 2015)</p> <p>1.4 Complete land acquisition and resettlement (Q1 2016)</p> <p>1.5 Complete construction phase monitoring and implementation of environmental management, resettlement and ethnic minority development plans (Q3 2018)</p> <p>1.6 Completion of Material Transit Centre at Meng'a Port (Q3 2017)</p> <p>2. Rural roads design</p> <p>2.1 Complete detailed design of rural roads, safety audit (Q2 2015)</p> <p>2.2 Complete civil works, pre-open safety audit (Q1 2017)</p> <p>2.3 Complete construction phase monitoring and implementation ethnic minority development plan and, if needed, environmental management and resettlement plans (Q1 2017)</p> <p>2.4 Implement transport services pilot, rural road maintenance and spot improvement agreed tasks (complete by Q2 2018)</p> <p>2.5 Review results of 2.4 (Q4 2018)</p> <p>3. Project management office</p> <p>3.1 Create a PMO with at least 6 full-time qualified professionals (by Q3 2014)</p> <p>3.2 Establish GRM (by Q3 2014)</p> <p>3.3 Establish contracts with capacity building consultants for safeguards, gender and trafficking (by Q4 2014)</p> <p>3.4 Provide training on specific competencies (complete by Q4 2016)</p> <p>3.5 Implement and monitor RP, EMDP, GAP (Q3 2019)</p>	<p>Loan</p> <p>ADB: \$200.0 million</p> <p>Government: \$397.7 million</p>

ADB = Asian Development Bank, CNY = Chinese Yuan, EA = executing agency, PMG = Pu'er Municipal Government, PMO = project management office, PMTB = Pu'er Municipal Transport Bureau, PRC = People's Republic of China, Q = quarter.

^a Data at the Longfu border crossing will only be captured when the crossing is reclassified to class II or class I.

Source: Asian Development Bank.

B. Monitoring

113. **Project performance monitoring.** Within 3 months of loan effectiveness, the PMTB with support of the PMC will establish a project performance monitoring system (PPMS). The PPMS will monitor three levels of information:

- (i) **Project progress.** The PMO Project Office will monitor on a yearly basis data corresponding to the indicators and targets set in the DMF. The indicators will be submitted as part of the quarterly progress reports to ADB. They will provide information necessary to update ADB's PPMS.
- (ii) **Component progress.** Information on the progress of each component under outputs 1 and 2 will be monitored by the County Transport Bureaus and reported to the ADB PMO; information includes (a) baseline social data; (b) procurement, physical and financial progress; and (c) status of implementation of EMP, RP, and EMDP. The PMO will update the information on a quarterly basis and report in the quarterly progress reports. Within 6 months after the completion of a subproject, the PMO will update social data, finalize physical and financial information, finalize information on the implementation of EMPs, RPs and EMDP, and reevaluate economic benefits based on new traffic count results.

114. **Compliance monitoring.** Status of compliance with loan covenants will be monitored and reported by the PMO through the quarterly progress reports to be submitted by the end of the next month of the following quarter. This includes commitments by the PMG and PMTB in financial, technical, managerial, safety, environment, social safeguards, and road safety areas.

115. **Safeguards and social dimension monitoring.** Status of the implementation of the EMP, RPs, EMDP and GAP will be integrated in the quarterly progress reports and reviewed during ADB's annual review missions. The information will be prepared by the PMO and reported to the PMO. The external monitors will submit semi-annual monitoring reports on EMP, RPs, EMDP, and GAP implementation.

C. Evaluation

116. ADB will visit the project at least once a year to monitor performance during implementation. Within 18 months after the effectiveness, ADB will conduct a midterm review to identify problems and constraints encountered and suggest measures to address them, including appropriateness of scope, design, implementation arrangements, schedule of activities, and compliance with safeguard and other covenants. Within 6 months of physical completion of the project, the EA will submit a project completion report to ADB.³⁴

D. Reporting

117. The EA will provide ADB with:
- (i) Quarterly progress reports in a format consistent with the template provided in Appendix 3; the reports will include updated information on the implementation of the EMP, the EMDP RPs and GAP; the first report will be due within 1 month after project effectiveness;
 - (ii) Project completion report within 6 months of physical completion of the project; and
 - (iii) Audited project accounts and financial statements, together with the associated auditor's report, by the end of June of each year of project implementation.

³⁴ Project completion report format available at <http://www.adb.org/Consulting/consultants-toolkits/PCR-Public-Sector-Landscape.rar>.

E. Stakeholder Communication Strategy

118. Within 2 months from the loan effectiveness, the PMO will commence disclosure of all key project-related information, including the scope, cost, and financial and institutional arrangements of the project, annual performance and sustainability report, and project progress such as procurement, contract award, and disbursement in a language culturally appropriate and easily understood by the project affected people.

119. Consultation is an important aspect of the project. The PMTB will ensure that local communities affected by the project are consulted before each subproject implementation under the provisions of the EIA/EMP, RP, EMDP and GAP and after subproject implementation, to assess and remedy any residual concerns. Public awareness programs to communicate the objectives of the road safety, the community based road maintenance, HIV-AIDS, and the human, drug and wildlife trafficking project components will be coordinated by the PMO.

X. ANTICORRUPTION POLICY

120. ADB reserves the right to investigate, directly or through its agents, any violations of the Anticorruption Policy relating to the project.³⁵ All contracts financed by ADB shall include provisions specifying the right of ADB to audit and examine the records and accounts of the EA and all project contractors, suppliers, consultants, and other service providers. Individuals/entities on ADB's anticorruption debarment list are ineligible to participate in ADB-financed activity and may not be awarded any contracts under the project.³⁶

121. To support these efforts, relevant provisions are included in the Loan Agreement and the bidding documents for the project. In particular, all contracts financed by ADB in connection with the project shall include provisions specifying the right of ADB to audit and examine the records and accounts of the EA and all contractors, suppliers, consultants, and other service providers as they relate to the project. In relation to the project, the EA will ensure that (i) a supervisory body is established for prevention of undue interference in business practices, and adequate resources are made available for its effective operation; (ii) a leading group of officials from the supervision division of the EA is located in offices involved in bidding, installation, and other operational activities under the project; and (iii) periodic inspections on the contractor's activities related to fund withdrawals and settlements are carried out. The EA shall also initiate liaison meetings with the Prosecutor's Office, as needed, to discuss any warnings about, or information on, alleged corrupt, fraudulent, collusive, or coercive practices relating to the project.

³⁵ Available at: <http://www.adb.org/sectors/governance/anticorruption>.

³⁶ ADB's Integrity Office web site is available at: <http://www.adb.org/site/integrity/main>.

XI. ACCOUNTABILITY MECHANISM

122. People who are, or may in the future be, adversely affected by the project may submit complaints to ADB's Accountability Mechanism. The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the Accountability Mechanism, affected people should make a good faith effort to solve their problems by working with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism.³⁷

³⁷ For further information see: <http://www.adb.org/site/accountability-mechanism/main>.

XII. RECORD OF PAM CHANGES

123. All revisions/updates during the course of implementation are retained in this Section to provide a chronological history of changes to implemented arrangements recorded in the PAM.

No.	PAM Changes/Updates	Date	Remarks
1	Initial draft	21 February 2014	First draft provided to EA during tripartite mission
2	Second draft	15 May 2014	Prior to Fact Finding Mission
3	Third draft	30 May 2014	Wrap-up meeting, Fact-Finding Mission
4	Fourth draft	31 October 2014	Loan negotiations
5	Fifth draft	8 December 2014	Board approval

Updated and confirmed by:

Mr. David Fay
Transport Specialist, EATC
East Asia Department
Asian Development Bank

PROCUREMENT PLAN

Basic Data

Project Name: Yunnan Pu'er Regional Integrated Road Network Development Project	
Project Number: 46040-002	Approval Number: TBD
Country: PEOPLE'S REPUBLIC OF CHINA	Executing Agency: Pu'er Municipal Government (PMG)
Project Financing Amount: \$589.53 million ADB Financing: \$200 million Non-ADB Financing: \$389.53 million	Implementing Agency: Pu'er Municipal Transport Bureau (PMTB)
Date of First Procurement Plan: 30 May 2014	Date of this Procurement Plan: 31 October 2014

A. Methods, Thresholds, Review and 18-Month Procurement Plan

(i) Procurement and Consulting Methods and Thresholds

1. Except as the Asian Development Bank (ADB) may otherwise agree, the following process thresholds shall apply to procurement of goods and works.

Procurement of Goods and Works		
Method	Threshold	Comments
International Competitive Bidding (ICB) for Works	\$10,000,000 or above	
International Competitive Bidding for Goods	\$1,000,000 or above	
National Competitive Bidding (NCB) for Works ²	\$200,000 or above but less than \$10,000,000	With prior review
National Competitive Bidding for Goods ²	\$100,000 or above but less than \$1,000,000	With prior review
Shopping for Works	Below \$200,000	
Shopping for Goods	Below \$100,000	

Consulting Services	
Method	Comments
Quality and Cost Based Selection (QCBS)	80:20
Individual Consultant Selection (ICS)	Various

(ii) Goods and Works Contracts Estimated to Cost \$1 Million or More

2. The following table lists goods and works contracts for which the procurement activity is either ongoing or expected to commence within the next 18 months.

Package Number ⁵	General Description	Estimated Value	Procurement Method	Review (Prior/Post)	Bidding Procedure ⁶	Advertisement Date (quarter/year)	Comments ⁷
Ning'er – Longfu (Subgrade)							
NJL-Sub1	KM0+000-18+140	19,767,679	ICB	Prior	1S1E	Q2/2015	ADB-financed, advance contracting
NJL-Sub2	KM18+140-35+000	18,669,475	ICB	Prior	1S1E	Q2/2015	
NJL-Sub3	KM35+000-K52+000	18,669,475	ICB	Prior	1S1E	Q2/2015	
NJL-Sub4	KMK52+000-72+000	18,653,205	ICB	Prior	1S1E	Q2/2015	
NJL-Sub5	KM72+000-101+000	18,872,846	ICB	Prior	1S1E	Q2/2015	
NJL-	KM101+000-	18,547,452	ICB	Prior	1S1E	Q2/2015	Gov't-

Package Number ⁵	General Description	Estimated Value	Procurement Method	Review (Prior/Post)	Bidding Procedure ⁶	Advertisement Date (quarter/year)	Comments ⁷
Sub6	129+500						Financed
NJL-Sub7	KM129+500-158+000	20,415,755	ICB	Prior	1S1E	Q2/2015	
NJL-Sub8	KM158+000-185+000	20,426,602	ICB	Prior	1S1E	Q2/2015	
NJL-Sub9	KM185+000-212+000	20,426,602	ICB	Prior	1S1E	Q2/2015	
NJL-Sub10	KM212+000-234+069.52	20,922,828	ICB	Prior	1S1E	Q2/2015	
Ning'er – Longfu (Pavement)							
NJL-Pav1	KM0+000-70+000	18,479,662	ICB	Prior	1S1E	Q1/2016	ADB-financed
NJL-Pav2	KM70+000-154+000	18,741,785	ICB	Prior	1S1E	Q1/2016	
NJL-Pav3	KM154+000-234+069.52	18,502,258	ICB	Prior	1S1E	Q1/2016	
Menglian – Meng'a (Subgrade)							
MM-Sub1	KM54+000-71+357.93	56,517,676	ICB	Prior	1S1E	Q1/2015	ADB-financed, advance contracting
MM-Sub2	KM71+357.93-102+751.42	47,643,798	ICB	Prior	1S1E	Q1/2015	
Menglian – Meng'a (Pavement)							
MM-Pav1	KM54+900-102+751.424	29,947,641	ICB	Prior	1S1E	Q2/2016	
Rural Roads (the roads and contract packaging are yet to be determined at October 2015)*							

*The ADB financed rural roads will be procured before the government financed rural roads. Rural road construction will be undertaken in 2016 and 2017 only. All rural roads will be procured using NCB. The ADB financed rural roads will be subject to prior review.

(iii) Consulting Services Contracts Estimated to Cost \$100,000 or More

3. The following table lists consulting services contracts for which the recruitment activity is either ongoing or expected to commence within the next 18 months.

General Description	Estimated Value ('000 \$)	Recruitment Method	Review (Prior / Post)	Advertisement Date (quarter/year)	Type of Proposal ⁸	Comments ⁹
Project Management and Training	2,000	QCBS (80:20)	prior	Q4/2014	FTP	<ul style="list-style-type: none"> International Assignment ADB Financed (100%), Advance Contracting
Road Safety Design and Audit Services	300	GP	N/A	N/A	N/A	<ul style="list-style-type: none"> ChinaRAP Services hired
Capacity Development –Wildlife Trafficking	157	GP	prior	Q3/2015	N/A	<ul style="list-style-type: none"> Wildlife Conservation Society (International Consulting Firm) to be hired PMG-Financed (100%),
External Monitoring-	110	ICS	prior	Q1/2015	N/A	<ul style="list-style-type: none"> National Assignment ADB Financed

General Description	Estimated Value ('000 \$)	Recruitment Method	Review (Prior / Post)	Advertisement Date (quarter/year)	Type of Proposal ⁸	Comments ⁹
EMDP						(100%), Advance Contracting

(iv) Goods and Works Contracts Estimated to Cost Less than \$1 Million and Consulting Services Contracts Less than \$100,000 (Smaller Value Contracts)

4. The following table groups smaller-value goods, works and consulting services contracts for which the activity is either ongoing or expected to commence within the next 18 months.

Goods and Works								
Package Number ⁵	General Description	Estimated Value	Number of Contracts	Procurement Method	Review (Prior / Post)	Bidding Procedure ⁶	Advertisement Date (quarter/year)	Comments ⁷

Consulting Services							
General Description	Estimated Value	Number of Contracts	Recruitment Method	Review (Prior / Post)	Advertisement Date (quarter/year)	Type of Proposal ⁸	Comments ⁹
External Monitoring – Environment	85,000	1	ICS	Prior	Q1/2015	-	• National • ADB-Financed (100%)
Capacity Development. – Social Safeguards	75,000	1	ICS	Prior	Q1/2015	-	• National • ADB-Financed (100%)
Capacity Develop. – Gender	55,000	1	ICS	Prior	Q1/2015	-	• National • ADB-Financed (100%)
Capacity Develop. - Human and Drug Trafficking	75,000	1	GP	Prior	Q1/2015	-	• National • PMG-Financed (100%)

B. Indicative List of Packages Required Under the Project

5. The following table provides an indicative list of goods, works and consulting services contracts over the life of the project, other than those mentioned in previous sections (i.e., those expected beyond the current period).

Goods and Works							
Package Number ⁵	General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Procurement Method	Review (Prior / Post)	Bidding Procedure ⁶	Comments ⁷

Consulting Services							
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Package Number	General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Recruitment Method	Review (Prior / Post)	Type of Proposal ⁸	Comments ⁹
		NOT APPLICABLE					

C. List of Awarded and On-going, and Completed Contracts

6. The following tables list the awarded and on-going contracts, and completed contracts.

(i) Awarded and Ongoing Contracts

Package Number	General Description	Estimated Value	Contract Value	Procurement Method	Advertisement Date (quarter/year)	Date of ADB Approval of Contract Award	Comments ¹⁰
		NOT APPLICABLE					

¹⁰ Indicate the Contractor's name and the contract signing date.

Package Number	General Description	Estimated Value	Contract Value	Recruitment Method	Advertisement Date (quarter/year)	Date of ADB Approval of Contract Award	Comments ¹¹
		NOT APPLICABLE					

¹¹ Indicate the Consulting Firm's name and the contract signing date.

(ii) Completed Contracts

Goods and Works								
Package Number	General Description	Estimated Value	Contract Value	Procurement Method	Advertisement Date (quarter/year)	Date of ADB Approval of Contract Award	Date of Completion	Comments
		NOT APPLICABLE						
Consulting Services								
Package Number	General Description	Estimated Value	Contract Value	Recruitment Method	Advertisement Date (quarter/year)	Date of ADB Approval of Contract Award	Date of Completion	Comments
		NOT APPLICABLE						

D. Non-ADB Financing

7. The following table lists goods, works and consulting services contracts over the life of the project, financed by Non-ADB sources.

Goods and Works				
General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Procurement Method	Comments
NOT APPLICABLE				

Consulting Services				
General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Recruitment Method	Comments
NOT APPLICABLE				

E. National Competitive Bidding

8. The Borrower's Law of Tendering and Bidding of the People's Republic of China promulgated by Order No. 21 of the President of the People's Republic of China on August 30, 1999, are subject to the following clarifications required for compliance with the Guidelines:

- (i) All invitations to prequalify or to bid shall be advertised in the national press, or official gazette, or a free and open access website in the Borrower's country. Such advertisement shall be made in sufficient time for prospective bidders to obtain prequalification or bidding documents and prepare and submit their responses. In any event, a minimum preparation period of thirty (30) days shall be given. The preparation period shall count (a) from the date of advertisement, or (b) when the documents are available for issue, whichever date is later. The advertisement and the prequalification and bidding documents shall specify the deadline for such submission.
- (ii) Qualification requirements of bidders and the method of evaluating the qualification of each bidder shall be specified in detail in the bidding documents, and in the prequalification documents if the bidding is preceded by a prequalification process.
- (iii) If bidding is preceded by a prequalification process, all bidders that meet the qualification criteria set out in the prequalification document shall be allowed to bid and there shall be no limit on the number of pre-qualified bidders.
- (iv) All bidders shall be required to provide a performance security in an amount sufficient to protect the Borrower/Project Executing Agency in case of breach of contract by the contractor, and the bidding documents shall specify the required form and amount of such performance security.
- (v) Bidders shall be allowed to submit bids by mail or by hand.
- (vi) All bids shall be opened in public; all bidders shall be afforded an opportunity to be present (either in person or through their representatives) at the time of bid opening, but bidders shall not be required to be present at the bid opening.
- (vii) All bid evaluation criteria shall be disclosed in the bidding documents and quantified in monetary terms or expressed in the form of pass/fail requirements.
- (viii) No bid may be rejected solely on the basis that the bid price falls outside any standard contract estimate, or margin or bracket of average bids established by the Borrower/Project Executing Agency.
- (ix) Each contract shall be awarded to the lowest evaluated responsive bidder, that is, the bidder who meets the appropriate standards of capability and resources and whose bid has been determined (a) to be substantially responsive to the bidding documents and (b) to offer the lowest evaluated cost. The winning bidder shall not be required, as a condition of award, to undertake responsibilities for work not stipulated in the bidding documents or otherwise to modify the bid as originally submitted.
- (x) Each contract financed with the proceeds of the Loan shall provide that the suppliers and contractors shall permit ADB, at its request, to inspect their accounts and records relating to the performance of the contract and to have said accounts and records audited by auditors appointed by ADB.
- (xi) Government owned enterprises in the Borrower's country may be permitted to bid if they can establish that they (a) are legally and financially autonomous, (b) operate under commercial law and (c) are not a dependent agency of the Borrower/Project Executing Agency.
- (xii) Re-bidding shall not be allowed solely because the number of bids is less than three (3).

CONSULTANTS' TERMS OF REFERENCE

1. International and national consultants will assist the EA and the IA in ensuring that (i) designs are carried out to the appropriate engineering and road safety standards, (ii) all activities related to implementation of the project are carried out in an environmentally and socially sound manner, (iii) all reporting requirements of ADB are carried out in accordance with the Project Administration Memorandum (PAM), (iv) preparation and implementation of all projects are carried out in accordance with the loan documentation, (v) PMG is advised on all aspects of the implementation of the Institutional Development component, and (vi) EA and IAs' personnel receive in-country and overseas training in selected areas of maintenance engineering, road safety and management. While carrying out their responsibilities, the international consultants will have as an objective to maximize technology transfer to and learning by the IAs and should take a pro-active approach to identify areas where international best practices could be applied and to advise and train IA's staff on such practices.

2. The project will finance (i) project management and training (international consulting firm (89 person-months); (ii) wildlife trafficking study (Wildlife Conservation Society), international consulting firm using single source selection; and (iii) national consultants for the external monitors and capacity development.

A. FIRM 1: PROJECT MANAGEMENT CONSULTANT (QCBS, 80:20, 30 person-months international, 56 person-months national)

3. **Objectives.** The project management consultant (PMC) will be recruited to assist the EA and IA and train domestic consultant on systems, procedures and formats to provide all relevant reports, and also assist in ensuring that:

- (i) the project civil works are carried out to appropriate engineering and road safety standards;
- (ii) all activities related to implementation of the project are carried out in an environmentally and socially sound manner;
- (iii) the rural access component is successfully implemented;
- (iv) capacity of the IA and Pu'er Traffic Police Bureau (PTPB) in road safety is raised sufficiently to ensure the safety of the project roads;
- (v) all reporting requirements of ADB are carried out in accordance with the Project Administration Memorandum (PAM); and
- (vi) EA and IA personnel receive in-country and overseas training in selected areas of highway engineering and management, and environmental and social safeguards.

4. **Scope of work.** The services of the PMC will cover:

- (i) project management support;
- (ii) coordination of the spot improvement program;
- (iii) coordination of the rural road maintenance program;
- (iv) coordination of the rural transport service improvement program;
- (v) facilitation of the pilot township-based bus services;
- (vi) strengthening of the EA and PMTB in road safety management;
- (vii) assist the EA and PMTB in the implementation and reporting requirements for the EIA and EMP; and
- (viii) organizing an overseas and domestic training program.

a.) Key Tasks

Task 1: Project Management Support

- (i) Overall management support of the loan, funding, monitoring, and reporting, with assistance provided to the ADB Project Management Office.
- (ii) Assistance and advice to the EA and IAs as Owner of the civil works to ensure that the project civil works are carried out efficiently and according to designs, including through site inspections.
- (iii) Assist the EA in implementation, supervision and monitoring of the environment, resettlement, ethnic minority and gender improvement plans.
- (iv) Develop project performance and monitoring system (PPMS) and monitor indicators.
- (v) Preparation of project progress quarterly reports (first two years) and draft completion report.
- (vi) Liaise between the EA and ADB on all project matters.

Task 2: Coordinate Implementation of the Spot Improvement Program

- (i) Assist in community consultations and participatory planning, e.g. using the methodology developed by the PPTA consultant (which is derived from the International Road Assessment Planning methodology).
- (ii) Determine the labor input required, the tools and equipment required, and the material needs and mechanisms to ensure access to these materials.
- (iii) Determine a list of applicable spot improvement types, and standard drawings and step-by-step implementation methods.
- (iv) Advise IA in determining the allocation of funding per road and/or administrative entity.
- (v) Implement existing step-by-step implementation guidelines covering design, procurement, technical, implementation, work organization, and supervision/inspection.
- (vi) Carry out a detailed cost estimate and ensure proper balance between available funding and estimated costs, preparing proposals for adjusting funding levels and/or costs where necessary and possible.
- (vii) Provide training to CTB in the guidelines and assist CTB in training village committees.
- (viii) Carry out random checks on sample spot improvement projects.

Task 3: Coordinate Implementation of the Rural Maintenance Program

- (i) Define the maintenance activities to be carried out by the road maintenance groups (RMGs) and contractors.
- (ii) Determine the labor input required, the tools and equipment required, and the material needs and mechanisms to ensure access to these materials.
- (iii) Determine the performance standards and deduction percentages to be applied.
- (iv) Prepare a contract document for direct contracting of RMGs.
- (v) Prepare a contract document for use with contractors with relevant clauses regulating the subcontracting of RMGs.
- (vi) Prepare the necessary bidding documents.
- (vii) Prepare the Inspection Report template for use by the county transport bureaus.
- (viii) Prepare the Monthly Report template for use by the contractor and RMGs.

- (ix) Assist in the selection of the maintenance workers and the formation of the RMGs.
- (x) Assist in the training of the RMGs and contractors.
- (xi) Review available maintenance funding levels and expenditure patterns.
- (xii) Carry out a detailed cost estimate and ensure proper balance between available funding and estimated costs, preparing proposals for adjusting funding levels and/or costs where necessary and possible

Task 4: Improve Rural Transport Service Planning on Project Rural Roads

- (i) Determine the most important travel patterns, review expected daily/weekly demand and occupancy rates.
- (ii) Facilitate community consultations and advise on suitable bus routes, frequencies and timings.
- (iii) Determine appropriate rates, based on calculations of actual vehicle operating costs.
- (iv) Identify opportunities for introducing low-cost commercial models for rural transport services, or other alternative commercial models, and propose introduction of such a model on some or all project roads.
- (v) Determine ways to provide affordable transport services for school children in the rural areas served by the roads.
- (vi) Assist in the preparation of the template transport plan and agreement.

Task 5: Facilitate Piloting Township-based Bus Services

- (i) Identify five townships suitable for implementing township-based rural bus services servicing administrative villages. It is expected that the townships selected are those targeted by the project-financed rural road upgrades.
- (ii) Determine commercial models to be applied, specifically considering the possibility to establish township-based transport companies, as subsidiaries of existing companies.
- (iii) Determine transport services to be provided and applicable fares.
- (iv) Review remaining inter-village transport problems.
- (v) Identify suitable approaches to ensuring a minimum level of inter-village transport services, e.g. by better regulation and promotion of use of appropriate vehicles.
- (vi) Determine set-up costs for the township-based bus services and village transport initiatives, and advise IA on use of counterpart fund earmarked for this purpose.
- (vii) Monitor and evaluate the benefits of the activities.

Task 6: Strengthen EA and PTPB Capacity for Road Safety Management

- (i) Provide logistics and organization support to, and facilitate the community consultation work involving, the separately recruited road safety consulting institute³⁸ who will undertake the following independent scope of services:
 - The development of a road safety education program to be implemented in rural communities affected by project rural roads and highways prior to their completion and at post-opening; the program should be developed in

³⁸ A Ministry of Transport subsidiary company has been engaged by the EA to assist in the development of the project road designs, and to implement the road safety project objectives.

- collaboration with the Pu'er Traffic Police (PTP) and the Pu'er Traffic Bureau (PTB), who will together have primary responsibility for implementation;
 - The identification of adequate messages and themes, and key stakeholders, taking into account PPTA consultant recommendations;
 - Provide training with as appropriate "train-the-trainers" elements;
 - Help coordinate education program implementation with the civil works schedule;
 - Assist in program evaluation; and
 - Advise on and help coordinate the PTP and PTB road safety education and enforcement program for the two project highways.
- (ii) Advise on procurement of road safety equipment under the project, taking as a basis the list of equipment prepared by the PPTA consultant.
- (iii) Assist PTP and PTB in setting-up a road accident database system at township level
- Advise on system requirements;
 - Assist in set-up and piloting of system; and
 - Provide training in accident analysis and recording.
- (iv) Provide training to IA, PTPB and design engineers
- Provide training in modern road safety engineering concepts and techniques; a preliminary list of topics include junction design, traffic calming, overtaking management, roadside safety, bend managements, speed management and use of warning signs;
 - Provide training in blackspot analysis, and safety treatment analysis; and
 - Provide training in enforcement.
- (v) Carry out road safety audits of the project roads:
- Carry out audits at construction and post-completion stages for the two highways and on a sample basis for rural roads, following-up on PPTA consultant safety engineering recommendations as appropriate; and
 - Follow-up on safety audit recommendations.

Task 7: Environmental Monitoring

- (i) **Training.** Develop and deliver training on implementation, compliance monitoring and reporting requirements of the EIA and EMP to contractors, PMO environmental staff, environmental supervision personnel, and Pu'er Municipal and county level Environmental Protection Bureau staff prior to the commencement of each construction package. Training will focus on the preparation and implementation of contractor's EMP implementation plan, programme, method statements, environmental audit and reporting.
- (ii) **Monitoring and reporting.** Support the PMO and Environmental Supervision Engineer in the preparation of the semi-annual environmental management and monitoring reports for ADB and verify the information presented. Visit the site once every six months to audit the Project site and review and incorporate the environmental quality monitoring results into the report.
- (iii) **Compliance review.** Undertake the following compliance review tasks:
- Review environmental impact assessment of replacement rural roads prepared by the EA according to the environmental assessment and review framework (EARF);

- Review monthly and quarterly environmental supervision and environmental quality monitoring reports to identify progress with implementation of EMP, key issues and actions and compliance performance over six month period;
- Identify non-compliance issues and focal areas for site audit, develop a standardized audit form to document results;
- Undertake site audit with PMO and Supervision Engineer's environmental personnel and environmental quality monitor, as required;
- Document results and maintain a photographic record of key issues identified and actions and timescales agreed for resolution;
- Review compliance with EMP, highlight areas of good practice and make recommendations on areas where performance can be improved;
- Prepare semi-annual environmental management and monitoring report in accordance with ADB requirements; and
- Prepare draft environmental project completion report in accordance with ADB requirements.

Task 8: Organize Overseas and Domestic Training Program

- Prepare detailed overseas and domestic training programs.
- Coordinate training program preparation and delivery. Securing domestic approvals related to overseas training applications will remain the responsibility of the EA.
- Preliminary list of topics to be considered for inclusion in the program include: road maintenance engineering, road safety, environmental and social management, road materials technology, procurement, road construction project management and quality assurance, workers health and safety, value engineering and life-cycle analysis.
- For all training programs, optimize cost-efficiency in delivery, proposing local delivery by international trainers whenever this is found more cost-efficient.

b.) Team Requirement and Specific Tasks

Table 1: Team Requirement

Position Title	Type of Consultant		No. of person-months	
	International	National	International	National
Team Leader/Highway Engineer	1	0	18	0
Rural Roads Specialist	1	0	5	0
Rural Transport Specialist	1	1	4	12
Environment Specialist	1	0	3	0
Social Safeguards Specialist	0	1	0	10
Rural Roads Engineer	0	1	0	12
Environmental Monitoring Specialist	0	1	0	10
Community Development Specialist	0	1	0	12
TOTAL	4	5	30	56

5. **Highway Engineer/Team Leader (1 international, 18 person-months).** The consultant will (i) facilitate the implementation of the project; (ii) assist and provide advice to the EA and IA as Owner of the civil works; (iii) assist EA with reporting to, and liaising with ADB; (iv) develop

and implement a project performance monitoring system; and (v) coordinate the delivery of the overseas training program.

6. **Rural Roads Specialist (1 international, 5 person-months).** The consultant will (i) lead the due diligence³⁹ investigations on the proposed rural roads, (ii) review and suggest improvement to the rural road design consistent with the ChinaRAP road safety recommendations, (iii) coordinate implementation of the spot improvement program, and (iii) coordinate implementation of the rural road maintenance program.

7. **Rural Transport Specialist (1 international at 4 person-months, 1 national at 12 person-months).** The international consultant will (i) coordinate implementation of the rural transport services program, and (ii) coordinate implementation of the township-based bus services pilots. The national consultant will provide assistance in the implementation of rural transport services activities.

8. **Environment Specialist (1 international, 3 person-months).** The consultant will (i) monitor and advise on the implementation of the environmental management plans, and (ii) conduct training as needed to the EA and consultants in ADB procedures.

9. **Social Safeguard Specialist (1 national, 10 person-months).** The consultant will (i) assist the PMO with monitoring and provide advice on the implementation of the resettlement plans, ethnic minority development plan and gender action plan, (ii) conduct training as needed to the EA and consultants in ADB procedures.

10. **Rural Roads Engineer (1 national, 12 person-months).** The consultant will provide assistance in the implementation of rural roads, spot improvement, and maintenance activities.

11. **Environmental Monitoring Specialist (1 national, 10 person-months).** The consultant will (i) provide training to project stakeholders in the implementation of the EIA and the EMP, and (ii) assist in the monitoring task and prepare all SPS (2009) environmental reporting submissions.

12. **Community Development Specialist (1 national, 12 person-months).** The consultant will (i) facilitate consultations with communities in the preparation and implementation of the rural access component, (ii) facilitate implementation of the community road safety education program, and (iii) provide assistance in monitoring and reporting of resettlement, ethnic minority development, and gender development plans.

13. **Cost estimates and financing.** The estimated cost of the PMC contract is \$2 million, which will be fully financed under the ADB loan. The assignment will require 30 person-months international consultant and 56 person-months local consultant.

Table 2: Cost Estimates

Item	Cost (\$ 000)
1. Consultants	
(i) Remuneration and Per Diem	
a.) International Consultants	872.0
b.) National Consultants	294.0
(ii) International Travel	56.0

³⁹ Collect information on the rural roads to demonstrate compliance with the agreed rural road selection criteria.

Item	Cost (\$ 000)
(iii) National Travel	15.0
(iv) Reports and Communications	10.0
(v) Office operations and translation	30.0
2. Workshops, Training / Seminars & Conferences	400.0
3. Surveys	15.0
4. Equipment	10.0
5. Contingencies	298.0
Total	2,000.0

c.) Implementation Arrangements

14. **Recruitment.** The PMC will be recruited by the transport bureau following ADB consultant recruitment procedures, i.e. using the quality and cost based selection method (QCBS), with an 80:20 quality to cost ratio.

15. **Implementation.** The PMC will report to the head of the project management office set up in the transport bureau. The PMC team leader will act as deputy team leader of the project management office.

16. **Scheduling.** The overall consultancy shall be provided throughout the project implementation period, which is anticipated to last until end 2018. Most of the project management assistance should be concentrated over the first 2 years of the project, in anticipation that the EA will gradually be able to carry out the project management tasks without consultant support. Assistance for the rural roads construction and maintenance, spot improvements and rural transport services should match as appropriate the schedule of the rural road works. Overseas training will be provided throughout the project implementation period.

17. **Reporting.** The consultant will help prepare a project inception, quarterly progress reports during the first two years of the assignment (the responsibility then shifting to the EA), and a project completion report (PCR) that confirms the status of the project for discussion with ADB at related review missions. The reports should also include an assessment on the Consultants progress against program, an indication of any key outstanding issues, and an updated development program for key project activities. Six copies of each report will be submitted in print and electronic version to the IA in English and Chinese, and two copies in English language to ADB. The list of documents to be provided is in Table 3.

Table 3: List of Reports for Submission

Report	Timing
Inception Report	Within 1 month
Project Performance Monitoring System	Within 6 months
Environmental Monitoring Reports	As per EMP
Quarterly Reports	Quarterly during first two years
Completion report	Draft 6 month before project completion

18. **Services and facilities provided to the consultant.** The executing agency and implementing agency will make the following available to the international consultants: Suitable office accommodation, and secretarial and clerical support; and local transportation, including a driver, at the various project sites. Counterpart staff and the number of vehicles will be agreed with EA's prior to the commencement of the services.

- (i) Suitably qualified translation services with sufficient technical vocabulary to service the project demands.
- (ii) Providing the complete, serviced and clear offices with the access to the tap water, telephone, broadband connection, facsimile and copy machine; the staff from Project Administration Office of the employer (PAO) will assist the consultants in procuring or leasing the necessary, adequate and suitable equipment which will be at the consultant' own costs. Such equipment may include the fax machine, computer, software, printer, scanner and etc. The maintenance and service charge such as communication fees and printing cost will also be borne by the consultant.
- (iii) The eligible liaison officials with proficient English & Chinese skills to provide the coordination and support to the consultants for convenient implementation of the services.
- (iv) Necessary assistance in applying the entry visa, residential and work permits and other possible certificate for the smooth implementation of the consulting services. The costs of all such government approvals will be reimbursed to the consultant at cost.
- (v) Authorization to access to the available data, documents, reports, finance reports, drawings, maps and related offices and facilities.

B. FIRM 2: WILDLIFE TRAFFICKING CONSULTANT (Single Source Selection, Wildlife Conservation Society, International Consulting Firm)

19. **Objectives.** The wildlife trafficking consultant (WTC) will build capacity of wildlife law enforcement officers from customs, police, and the army at the major ports in Jiangcheng and Menglian County in Pu'er bordering Viet Nam, Lao PDR and Myanmar. The illegal import of CITES species including newly uplisted rosewood species and freshwater turtle species, as well as the smuggling of these species into Pu'er city, may increase as a result of increased trade activity. This risk requires the delivery of training and awareness building to enhance the understanding of CITES laws, species identification and to encourage enforcement.

20. **Single Source Selection.** The Wildlife Conservation Society (WCS) has extensive experience in the promotion of CITES laws, has undertaken related works in neighboring provinces, and is uniquely qualified and experienced in the delivery of the capacity assessment and training initiatives central to the trafficking intervention. The Wildlife Conservation Society has trained around 1,000 customs, forest police, SFA, I&C and fisheries officers at provincial levels in wildlife crime prevention skills including species/product ID, and the analysis of wildlife crime dynamics in collaboration with Chinese and International experts and central government agencies. In accordance with paragraph 2.30(iv) of the "Guidelines on the Use of Consultants by ADB and Its Borrowers", WCS is considered the only firm with relevant province experience that is suitably qualified in the delivery of these niche professional services.

a.) Key Tasks

Task 1: Undertake a Capacity Assessment and Complete Training Needs Analysis

- (i) Undertake a field trip (10 days) and conduct interviews with stakeholders to identify basic knowledge, awareness and the law enforcement skills of officers from customs (1-2 ports), forestry bureaus (city level, and county level), forestry police (from city level to county level) and the border army branches in Jiangcheng and Menglian. Collect comments from Yunnan provincial forestry bureau and customs officials.

Task 2: Training Program in Wildlife Crime Prevention

- (i) Training course one will take two days and introduce (i) the importance of wildlife conservation; (ii) CITES; (iii) major national and provincial laws/regulations/rules on wildlife trafficking; and (iv) major investigation skills and best practices from other provinces.
- (ii) Training course two will take three days and introduce identification skills on major trade species and their products (bird, amphibians, reptiles, mammal, rosewood) and best practices from other provinces. Introduce the WCS and the State Chinese Wildlife Conservation Association mobile phone application to support field enforcement officers in the identification of species/products. A questionnaire on the training impact is to be sent to trainees three months after the course to monitor the use of knowledge and skills.

Task 3: Facilitate Formal Dialogue

- (i) Conduct one formal meeting at provincial level between forestry bureau, customs and traffic bureaus to discuss/review annual plans to improve coordination on combatting transnational wildlife trafficking and develop provincial agreements for joint checking in key traffic check-points.

Task 4: Conduct Awareness Meetings and Produce Education Materials.

- (i) Conduct meetings with local transportation authorities and Pu'er city authorities to discuss awareness and develop education materials for those stakeholders.
- (ii) Organize two training workshop for senior managers from stakeholder organizations on related laws/regulations.
- (iii) Produce a guideline for drivers detailing wildlife protection law and regulations.

21. **Cost estimates and financing.** The estimated cost of the WTC contract is \$157,000, which will be fully financed under the ADB loan.

Table 4: Preliminary Cost Estimates

Item	Cost (\$)
1. Training Needs and Capacity Assessment	7,600.0
2. Training program in wildlife crime prevention	65,500.0
3. Facilitate formal dialogue and one formal meeting at provincial level	12,000.0
4. Awareness meeting / production education materials	46,900.0
5. Co-operation with CDTA47289 in bilateral dialogue between PRC, Myanmar, Viet Nam and Lao PDR	25,000.0
Total	157,000.0

b.) Implementation Arrangements

22. **Recruitment.** The WTC will be recruited by the transport bureau following ADB single source selection recruitment procedures.

C. INDIVIDUAL CONSULTANTS

No	Title	National person months	Financing source
1	External Monitor - EMDP	10	ADB loan
2	External monitor - Environment	10	ADB loan
3.	Capacity Development – Social Safeguards for IR and IP	10	ADB loan
4	Capacity Development - Gender	8	ADB loan
5	Capacity Development – Human and Drug Trafficking	10	PMG budget

(i) External Monitor – Ethnic Minority Development Plan (1 national, 10 person-months)

23. **Purpose of the M & E.** According to ADB's policy requirements, the EMDP implementation of the Project will be subject to external M&E. The EMDP implementation will be tracked and evaluated by checking the progress, funds and management, and making an assessment of the effectiveness of measures included in the EMDP Action Plan, as well as consultation with and participation of EM. Monitoring reports are to be submitted to ADB and IMDT (twice a year until project completion); information and suggestions will also be provided as a reference for decision-making by the implementing agencies. Through external M&E, ADB and the government agencies can fully understand if EMDP implementation is implemented with satisfactory quality standard to meet the objectives of the EMDP; where deficiencies as

identified, the external monitor should point out existing issues, and propose suggestions for improvement by the IAs.

24. **Scope of work.** The scope of work includes:

- (i) Investigate, verify and report on EMDP Action Plan implementation progress.
- (ii) Availability and utilization of funds including adequacy of funding and staff resources to implement the Action Plan.
- (iii) Assess the standard of living of the adversely affected EM households.
- (iv) Assess the quality and effectiveness of consultation and participation among all stakeholders.
- (v) Assessment of complaints and appeals, and effectiveness of handling.

25. **Organization of M&E.** The PMO shall entrust the external monitor to take charge of the survey, data collection and computational analysis for M&E, and to review the corresponding findings. The external monitor shall set up an M&E Team, whose task is to monitor and evaluate the implementation process, prepare the M&E outline, select monitoring sites, take charge of field surveys, monitoring and in-house analysis, and prepare M&E reports. During the field monitoring and survey by the M&E team, PMO shall offer assistance in staffing and transport.

26. **Methods of M&E.** A combination of field survey, computational analysis and comprehensive expert evaluation shall apply to M&E. The surveys (baseline, periodic and tracer) shall be conducted comprehensively. The progress, funds, organization and management of implementation shall be surveyed in all aspects. The survey shall be based on systematic and stratified sampling of townships, villages and households. A representative sample size will be developed and discussed with the ADB prior to the conduct of the surveys. The complete survey shall be conducted in the methods of structured survey (questionnaire survey), discussion and literature search, etc. Tracer surveys, using the baseline survey questionnaire, will be applied to assess the change in living standard, livelihoods and income. Written materials, photos, audio and video records, real objects shall also be collected to demonstrate results.

27. **Monitoring indicators.** The baseline survey, as well as the follow up monitoring and post-project evaluation, will cover and not be limited to the following socioeconomic indicators of targeted households:

- (i) Level of education of adults by gender,
- (ii) House type (quality),
- (iii) Housing area,
- (iv) Occupations of household members and incomes by source,
- (v) Expenditure by type,
- (vi) Major assets ownership,
- (vii) Frequency of visits to county seats,
- (viii) Cropping area and structure and changes in cropping pattern over the year (especially cash crops),
- (ix) Project impacts including employment in project construction,
- (x) Effectiveness of mitigation measures, and
- (xi) Perceptions on the Project and EMDP.

28. **Reporting.** The external monitor shall submit an EMDP monitoring report to the IMDT and ADB semiannually until project completion. The last report should evaluate the outcomes of the EMDP and Project related impacts on EM.

29. **Monitoring budget.** A total of US\$ 85,000 are budgeted for external M&E under the ADB consultancy services support.

30. **M&E plan.** Upon mobilization and prior to field investigations, the appointed external monitor should prepare a detailed M&E plan for the EMDP M&E for PMO and ADB review and approval.

31. **Qualification.** The external monitor should be independent from PMO and the relevant government agencies responsible for implementing the actions. The monitor is expected to be able to demonstrate the following skills/experiences: having sufficient experience with the Project monitoring and evaluation on ADB project, especially the ability of data collection from the wide range of stakeholders.

(ii) External Monitor – Environment (1 national, 10 person-months)

32. The consultant will (i) provide training to project stakeholders in the implementation of the EIA and the EMP, and (ii) assist in the monitoring task and prepare all SPS (2009) environmental reporting submissions.

(iii) Capacity Development – Social Safeguards for IR and IP (1 national, 10 person-months)

33. The consultant will:

- (i) Assist the IA in updating and implementing the RPs and EMDP as endorsed by the EA and disclosed to the affected peoples;
- (ii) Provide training to the IA resettlement staff on ADB's involuntary resettlement policy requirements and indigenous peoples requirements especially those related to the implementation of the RPs and EMDP Action Plan;
- (iii) Assist the IA to enhance the consultation and participation of APs including timely information disclosure on various resettlement and indigenous peoples related issues and policies;
- (iv) Provide guidance to the IA in internal monitoring of the RP and EMDP implementation and preparation of quarterly monitoring and completion reports;
- (v) Provide guidance to the IA in coordinating with various other agencies involved in the implementation of the RPs and EMDP;
- (vi) Provide assistance to the IA in strengthening its organizational arrangements to effectively implement the RPs and EMDP;
- (vii) Assist the IA to identify gaps in RP and EMDP implementation and suggest appropriate solutions in a timely manner;
- (viii) Assist the IA on managing grievance redress mechanism, its publicity amongst the affected people and in record keeping of related grievances and redress measures taken;
- (ix) Provide guidance on enhancing the effectiveness of the livelihood restoration program implementation;
- (x) Assist the IA on assessing needs of vulnerable group of APs and those APs who are significantly affected by land acquisition and relocation and help develop and implement additional mitigation measures to ensure that they do not fall below the pre-project level; and
- (xi) Assist the IA in developing coordination amongst various agencies responsible for implementation of RP and EMDP.
- (xii) Collaborate with the RP and EMDP external monitors.

34. **Consultant specifications.** She/he shall have at least 10 years working experience, including at least 5 years as a social safeguards (IR and IP) specialist in similar project assignments in the PRC or other countries in the region, as well as formal qualifications in social sciences (sociology, anthropology, international development) or closely related fields. She/he shall fully understand ADB's SPS 2009, safeguard requirement II (IR) and safeguards requirement III (IP), as well as the PRC policy and legislative commitments on these areas of social safeguards. She/he will have good English written and oral skills. Experience of working as safeguards specialist (IR & IP) for similar projects funded by ADB or other development partners is preferable.

(iv) Capacity Development – Gender (1 national, 8 person-months)

35. Implementation of the project components offers significant opportunities for promoting gender equality and women's empowerment. Therefore, in order to maximize positive gender impacts of the project, it was designed to meet an ADB effective gender mainstreaming (EGM) categorization, and a project gender action plan (GAP) was prepared, informed by a gender analysis carried out during project preparation and consultation with key stakeholders.

36. GAP features include a focus on ensuring women's equitable participation in project-related public consultation; incorporating gender-responsive physical design features in the design of urban transport infrastructure; promoting increased employment opportunities for women; and building EA/IA institutional capacity for gender mainstreaming. Negative gender impacts, such as lost livelihoods for female farmers from LAR, will also need to be mitigated.

37. Implementation of the GAP will be financed as a core part of the project budget. The GAP will be implemented over the life of the project and GAP M&E will be incorporated into the overall project M&E plan. The PMO is responsible for coordinating implementation of the GAP and will appoint a staff gender focal point responsible for gender mainstreaming and GAP implementation and reporting.

38. The national gender specialist will be positioned in the IA to provide guidance and technical assistance to the assigned staff gender focal point for implementation, monitoring, and reporting on the GAP. This will include, but not be limited to, the key tasks below.

39. Key tasks for GAP implementation, monitoring, and reporting are as follows:
- (i) Provide GAP orientation training to key EA/IA staff to brief them on GAP requirements;
 - (ii) Coach, guide, and train the assigned staff gender focal point on how to effectively manage implementation, monitoring, and reporting on GAP implementation;
 - (iii) Provide guidance and assist delivery of GAP orientation training to contractors to ensure understanding on employment targets for female unskilled labor and reporting requirements;
 - (iv) Provide guidance and assist delivery of awareness training for municipal bus company, BRT drivers, and conductors on women's safety needs;
 - (v) Develop a detailed implementation and monitoring plan for gender activities, including a standard template for monitoring and reporting GAP results;
 - (vi) Assist PMO on how to ensure adequate consultation and participation of women;
 - (vii) Ensure the collection of sex-disaggregated statistics for all project activities and guide IAs on how to collect and report with disaggregated data;
 - (viii) Continually track and record GAP progress and gender equality results from the project in a systematic and easily accessible form, linked to overall project results;

- (ix) Guide the drafting of the first gender plan implementation progress report, and review the subsequent reports prepared by the staff gender focal point, drawing from information provided by IAs;
- (x) Incorporate GAP performance targets/indicators into regular project monitoring tools/formats, and ensure collection of gender-related data for reporting against gender performance indicators/targets in the overall project design and monitoring framework;
- (xi) Ensure that updated information on the status of GAP implementation is included in all project progress reports;
- (xii) Ensure that all project review missions include consideration of GAP progress, involve consultation with women and men beneficiaries, and include GAP reporting in mission reports, by providing technical support to mission teams and PMO. In particular, support and guide a detailed review of GAP as part of project midterm review;
- (xiii) Assess and draw attention to any inadequacy of GAP provisions and identify remedial actions to revise or strengthen the GAP if required;
- (xiv) Liaise with wider consultant team to ensure that relevant GAP actions are integrated into their respective areas of responsibility;
- (xv) Provide technical advice to the implementation of gender-specific resettlement mitigation measures (e.g., livelihood restoration support for displaced women farmers); and
- (xvi) Work in close coordination with Social Safeguards and Social Development Specialist and External Monitor for resettlement plan.

40. **Consultant specifications and inputs.** She/he shall have at least 10 years working experience, including at least 5 years as a gender specialist in similar project assignments in the PRC or other countries in the region, as well as formal qualifications in gender and development or closely related fields. She/he shall fully understand ADB's Gender Policy, gender and development theory and approaches, as well as the PRC policy and legislative commitments to gender equality and women's empowerment. She/he will have good English written and oral skills. Experience with gender mainstreaming in similar projects funded by ADB or other development partners is preferable.

41. The gender specialist will be recruited at the commencement of the project, and her/his inputs spread intermittently over the life of the project for a total of 8 months.

(v) Capacity Development – Human and Drug Trafficking (1 national, 10 person-months)

42. The main tasks of the consultant is to:
- (i) Assist the PMO to effectively implement the activities related to prevention of Human and drug trafficking within the project area;
 - (ii) Undertake stakeholder consultation through rapid appraisal methods and develop effective measures to address the issues relating to human and drug trafficking;
 - (iii) Ensure that these activities adequately focus on the 'vulnerable' groups (some already identified under the PPTA);
 - (iv) Develop coordination with other line agencies and seek support of the Pu'er Municipal Government (PMG) where necessary for such coordination;
 - (v) Provide training and awareness building sessions for the vulnerable groups within the project area;

- (vi) Collect data (gender and ethnicity segregated) on the impacts of these activities and prepare reports submitted to the PMO and ADB; and
- (vii) Prepare semi-annual reports and submit it to the review and approval of the PMO and the ADB.

D. GOVERNMENT-FINANCED CONSULTANCY SERVICES (Road Safety – ChinaRAP)

(i) Background

43. The Government of the People's Republic of China (PRC) has requested Asian Development Bank (ADB) financing for a project to rehabilitate and upgrade provincial and rural roads and to improve road safety.

44. The Pu'er project focuses on the development and improvement of road safety and efficiency for the general public in Pu'er. The ChinaRAP design tool will be used to allocate financial resources subject to economic viability considerations.

45. The project includes the following three road components:

- (i) Ninger to Longfu Highway (261 km)
- (ii) Menglian to Meng'a Highway (44.8 km)
- (iii) Rural roads (about 600 km)

46. Safety inspections of roads in Pu'er are underway as part of the China Road Assessment Program (ChinaRAP), a collaboration between the Ministry of Transport's Research Institute of Highway (RIOH), the International Road Assessment Program (iRAP) and Asian Development Bank (ADB) and the World Bank Global Road Safety Facility (GRSF) through support from the Bloomberg Philanthropies. The objective of the project is to prevent traffic crash deaths and serious injuries in Pu'er, Yunnan Province, by helping guide the design of planned multi-million dollar road infrastructure upgrades.

(ii) Scope of Work

47. The Road Safety Specialist scope of services involves two phases. Phase 1 involves all design development activities up to final approval of the detailed design drawings. Phase 2 works involve services to be provided during project implementation.

(iii) Phase 1: Design Services

48. Existing road and early road design risk assessment:

- An initial assessment of the existing designs (taking in account previous independent consultant design advice) for the three road components which have been completed already.
- An assessment of all existing roads (including highways and rural roads).
- Survey the Pu'er road network (up to 1,000 km) in accordance with the ChinaRAP Specifications.
- Secure traffic volume data, typical countermeasure costs and economics and demographics data relevant to the road network in accordance with ChinaRAP Specifications.
- Code the survey and speed data in accordance with the ChinaRAP Specifications.
- Use coded data to produce ChinaRAP risk scores, detailed condition reports, Star Ratings and Safer Road Investment Plans and economic analysis.

49. Assist designers by 'star rating designs':

- Collect and analyze road crash data and identify key black spot locations and design deficiencies that should be corrected as part of the ensuing loan project. Characterize and assess the social and economic cost of road crashes in the project area and Yunnan Province as a whole.
 - Work with the highway designers to ensure that the two project highway road components achieve at least 3-stars according to the ChinaRAP method for all road users where it is economically feasible. This will involve preparation of a detailed program of road safety engineering enhancements. The enhancements will address problems identified during the ChinaRAP review, specify the location, type and design of the proposed improvement, assess its effectiveness on reducing road crashes, fatalities, injuries and property damage.
 - Work with local designers to ensure that rural road risk ratings improve, and particular sections achieve at least 3-stars according to the ChinaRAP method for all road users where it is economically feasible. This will involve preparation of a set of design principles that draw on experience on similar roads in the Shaanxi Mountain Roads Safety Demonstration Project, and more detailed advice based on the ChinaRAP review. The types of safety design features that will be considered are: (i) frequent intervisible passing bays located according to a set of design rules, (ii) pilot trials of dotted edge line with no centerline markings on 6.5m wide subgrade sections on the periphery of villages, (iii) bend treatment including short two lane sections, sightline widening and use of mirrors, (iv) intersections to be simple, orthogonal with signs and markings where appropriate, (v) roadside safety based on forgiving shoulder surface with additional shoulders and crashworthy safety barriers at high risk sites, and (vi) traffic calming through villages emphasizing a different appearance of the road, rumble strips, speed tables, gateways and 20-30 km / h speed limit.
 - Assist the economic analysis consultant (recruited separately by ADB) to incorporate the economic costs and benefits of the road safety improvements into the economic analysis of the project.
 - Support the ADB and EA project teams during policy dialogue and missions and work to build consensus with the provincial government on the scope, cost, and implementation arrangement of all road safety aspects of proposed project.
50. Capacity and capability building:
- Training on how to use ChinaRAP and engineering safety design.
 - Pilot usage of ChinaRAP software in Yunan.
- (iv) Phase 2: Strengthen EA, IA and PTPB Capacity for Road Safety Management**
51. Facilitate road safety community education program:
- Investigate the development of road safety education and awareness programs in China and collect the available education media. Collect information and sample media on international practices, compare the education strategies and provide options and recommendations on culturally appropriate education strategies aimed to protect all road users.
 - Study the possibility to include safety education in design such as some propaganda boards at bus stop.
 - Develop road safety education program to be implemented in rural communities affected by project rural roads and highways prior to their completion and at post-

- opening; the program should be developed in collaboration with the PTPB, which will have primary responsibility for implementing it.
- Help coordinate education program implementation with civil works schedule.
 - Advise on and help coordinate PTPB's road safety education and enforcement program for the two project highways.
52. Road safety equipment advice:
- Advise on procurement of road safety equipment under the project, taking as a basis the list of equipment prepared by the PPTA consultant.
53. Assist IA in setting-up of a road traffic safety database system at county level:
- The system will include road infrastructure, traffic volume and composition, and other safety information, and it can be used for county level which includes project roads and other roads.
 - Advise on system requirements.
 - Set-up and pilot of system.
 - Provide training in safety analysis and recording, particularly on project roads.
54. Provide training to IA, PTPB and design engineers:
- Provide training in modern road safety engineering concepts and techniques; a preliminary list of topics include junction design, traffic calming, overtaking management, roadside safety, bend managements, speed management and use of warning signs.
 - Provide training in blackspot analysis, and safety treatment analysis.
 - Provide training in enforcement.
55. Carry out post construction safety assessment of the project roads:
- Carry out assessments of the two highways and rural roads to ensure that they have achieved 3-stars and risk rates have improved as appropriate.
 - Provide advice on countermeasures required should the targets not be reached.
 - Follow-up on post construction assessment recommendations.

(v) Timeline and Funding

56. Government procedures will be used to appoint design agencies, procurement agencies, and supervision consultants for each project contract. The designers will be provided with the road safety requirements from the road safety assessment. They will also be provided the Environmental Management Plan (EMP) and social safeguard mitigation, which they are to incorporate into the design process and bid documentation.

57. The Design and Supervision Consultant (DSC) will be an independent consultant funded by the government and working from a Project Management Office. The DSC consultant will receive full bid documentation, EMP, road safety requirements, and social safeguards plans. The DSC will ensure that the Contractor carries out all requirements of road safety, environmental and social mitigation plans, and will report compliance with these plans to the ADB Project Office in the PMTB on a monthly basis.

Table 5: Timeline and Funding

Phase and Activity		Time	Cost (USD)
Phase 1: Design Services			
2.1.1 Existing road and early road design risk assessment	1. Initial assessment of the existing designs	May to Jun 2014	80,000

Phase and Activity		Time	Cost (USD)	
	2. Existing road survey	May to Jun 2014		
	3. Supporting data collection	Jun 2014		
	4. Existing road coding	Jul 2014		
	5. Existing road assessment and report	Jul to Aug 2014		
2.1.2 Assist designers by 'star rating designs'	1. Collect and analyze road crash data	May to Jun 2014	50,000	
	2. Two highway interactive design	Jun to Sep 2014		
	3. Rural roads interactive design	Sep to Dec 2014		
	4 and 5	Project period		
2.1.3 Capacity and capability building	1 and 2	Nov to Dec 2014	30,000	
Phase 1 Total			160,000	
Phase 2: Strengthen EA, IA and PTPB Capacity for Road Safety Management				
2.2.1 Facilitate road safety community education program		May to Dec 2014	20,000	
2.2.2 Road safety equipment advice		May to Dec 2014	5,000	
2.2.3 Assist IA in setting-up of a road traffic safety database system at county level		Jan to Dec 2015	50,000	
2.2.4 Provide training to IA, PTPB and design engineers		Sep 2015	15,000	
2.2.5 Carry out post construction safety assessment of the project roads		Sep 2016	45,000	
Phase 2 Total			135,000	

OUTLINE OF QUARTERLY PROGRESS MONITORING REPORT

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ATTACHMENT TO ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

ENVIRONMENTAL MANAGEMENT PLAN (EMP)

For the proposed Yunnan Pu'er Regional Integrated Road Network Development Project,
People's Republic of China.

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A. Introduction

1. This Environmental Management Plan (EMP) has been developed for the Yunnan Pu'er Regional Integrated Road Network Development Project (the Project). This EMP outlines mitigation and monitoring requirements designed to avoid or reduce environmental impacts to acceptable levels, to maximize environmental benefits and achieve compliance with the PRC environmental laws and regulations and ADB's Safeguard Policy Statement (2009). The EMP draws on the findings from the project EIA, the domestic EIRs, PPTA and ADB review mission discussions and agreements with the relevant government agencies. It includes the following components:

- (i) Institutional responsibilities for EMP implementation
- (ii) Environmental mitigation
- (iii) Environmental monitoring program
- (iv) Independent compliance monitoring
- (v) Institutional capacity building and training
- (vi) Public consultation plan
- (vii) Estimated budget requirements
- (viii) Reporting requirements
- (ix) Project specific grievance redress mechanism (GRM)

2. The EMP will be reviewed and updated at the end of the detailed design in order to be consistent with the final technical design. The updated EMP will be disclosed on the ADB project website and included in the Project Administration Manual (PAM). The updated EMP will also be included as a separate annex in all bidding and contract documents. The contractors will be made aware of their obligations to implement the EMP and to budget EMP implementation costs in their proposals.

3. Environmental monitoring results will be used to evaluate (i) the extent and severity of actual environmental impacts against the predicted impacts, (ii) the performance of the environmental protection measures and compliance with regulations, (iii) overall effectiveness of the project EMP, and (iv) need for adjustment of the project EMP.

B. Institutional Responsibilities for EMP Implementation

4. Table 1 shows the institutional responsibilities for EMP implementation covering activities across the project stages from project preparation to operation. Key points are summarized below.

- (i) The Pu'er Municipal Government is the Executing Agency (EA) who has overall responsibility for project implementation and compliance with loan assurances and the EIA/EMP. The EA has established the Pu'er Project Management Office (PPMO) for this project, who has been delegated overall responsibility for day-to-day management of the Project, supervising the implementation of the EMP, coordinating the project environmental grievance redress mechanism and reporting to ADB. The PPMO will submit quarterly project progress reports to ADB and semi-annual environmental monitoring reports.
- (ii) The Pu'er Municipal Transport Bureau is the Implementing Agency (IA) responsible for implementing project components, administering and monitoring contractors and suppliers, construction supervision, quality control and EMP implementation. The IA will prepare bid documents and ensure that bids are

responsive to environmental requirements and budgets and contracts include environmental clauses covering major items in the EIA, and the full EMP.

- (iii) The PPMO and the IA will both be required to assign at least one environmental staff to manage, coordinate, oversee and verify EMP implementation.
- (iv) Some mitigation measures (for example, road alignment avoiding sensitive or protected areas) need to be built into the detailed design by the Design Institutes.
- (v) The IA, PMTB, will contract the Pu'er Environmental Monitoring Station (PEMS) to conduct an environmental monitoring program as set out in this EMP during the construction and operational stages.
- (vi) The IA, PMTB, will also contract an independent Environmental Supervision Engineer (ESE), who could be a qualified individual or a company, to undertake compliance monitoring for third-party verification of compliance with EMP implementation.
- (vii) A Loan Implementation Environmental Consultant (LIEC) will be appointed through the Loan Implementation Project Management Consulting Services. They will assist the PPMO and the IA with EMP implementation including environmental training and reporting.
- (viii) Contractors will be responsible for implementing the mitigation measures during construction under the supervision of PPMO through the ESE and LIEC. In their bids, contractors will be required to respond to the environmental management and monitoring requirements defined in the EMP. Each contractor will be required to develop site specific EMPs and will assign a person responsible for environment, health and safety. After project completion, environmental management responsibilities will be handed over to Operation and Maintenance (O&M) units.

Table 1: Environmental Responsibility

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	Engineering Detailed Design	Tendering & Pre-construction	Construction	Operation
PMG	The Executing Agency (EA) for the Project responsible for overall implementation and compliance with loan assurances and the EMP.				
PPMO	Established by the EA to be responsible for the day-to-day management of the Project. The PPMO has overall responsibility delegated by the EA for supervising the implementation of environment mitigation measures, coordinating the project level GRM and reporting to ADB				
	<ul style="list-style-type: none"> Engage design institutes on FSR, EIR, RP and SWCR 	<ul style="list-style-type: none"> Engage design institutes Review updated EMP, confirm that mitigation measures have been included in engineering detail design 	<ul style="list-style-type: none"> Appoint at least one environmental specialist on staff Incorporate EIA/EMP clauses in tender documents and contracts Prepare environmental assessments for replacement rural roads according to the EARF and submit to ADB for approval. 	<ul style="list-style-type: none"> Supervise the effective implementation of the EMP Establish and operate the project public complaints center and coordinate the project environment GRM. Prepare quarterly project progress reports and semi-annual environment monitoring reports and submit them to ADB Conduct information disclosure and public consultation Inspect implementation of mitigation measures. 	<ul style="list-style-type: none"> Instruct the IA (PMTB) and O&M units on environmental management requirements Prepare quarterly project progress reports and semi-annual environmental monitoring reports until a PCR is issued Calculate CO₂ emissions from project roads annually and report to ADB until a PCR is issued.
PMTB	The Implementing Agency (IA) for the Project to implement project components, administer and monitor contractors and suppliers, and take responsibility for construction supervision and quality control. PMTB will ensure that the EMP is implemented proactively and will respond to any adverse impact beyond those foreseen in the EIA and ensure that if there are any changes in scope the EIA/EMP will be updated, as needed. PMTB will also attend to requests from relevant agencies and ADB regarding the mitigation measures and environmental monitoring program.				
			<ul style="list-style-type: none"> Manage the procurement process Incorporate EIA/EMP clauses in tender documents and contracts Appoint at least 	<ul style="list-style-type: none"> Supervise contractors and ensure compliance with the EMP Approve method statements Coordinate construction supervision and 	<ul style="list-style-type: none"> Coordinate environmental monitoring according to the approved EMP until a PCR is issued

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	Engineering Detailed Design	Tendering & Pre-construction	Construction	Operation
			one environmental specialist on staff • Engage LIEC as part of the Loan Implementation Project Management Consulting Services • Engage PEMS for environmental monitoring • Engage ESE for independent compliance monitoring	quality control • Coordinate environmental monitoring according to the environmental monitoring program in the approved EMP • Act as a local entry point for the project GRM • Submit quarterly monitoring results to PPMO, PEPB.	
Design institutes	• Prepare project FSRs, EIRs, RPs, SWCRs • Conduct public consultation	• Incorporate mitigation measures defined in the EMP into engineering detail designs • Update the EMP in cooperation with the LIEC			
YEPD	• Review and approve the project EIRs				
PEPB/PWRB				• Conduct inspections of construction sites and activities to monitor compliance with PRC regulations and standards	
PPTA consultant	• Provide technical assistance • Review EIRs				

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	Engineering Detailed Design	Tendering & Pre-construction	Construction	Operation
	<ul style="list-style-type: none"> • Prepare EIA report and EMP 				
LIEC		<ul style="list-style-type: none"> • Review updated EMP, confirm that mitigation measures have been included in engineering detailed design 	<ul style="list-style-type: none"> • Review bidding documents to ensure that the EIA/EMP clauses are incorporated • Confirm project's readiness in respect of environmental management. 	<ul style="list-style-type: none"> • Advise on mitigation measures • Provide technical support to PPMO and PMTB for environmental management • Conduct environmental training • Conduct semi-annual EMP compliance review • Support PPMO in preparing quarterly project progress reports and semi-annual environmental monitoring reports. • Review domestic environmental acceptance reports • Prepare environmental completion report. 	<ul style="list-style-type: none"> • Conduct EMP compliance review • Support PPMO in instructing PMTB and O&M units on environmental management requirements • Support PPMO in preparing quarterly project progress reports and semi-annual environmental monitoring report until a PCR is issued • Coordinate environmental monitoring until a PCR is issued
Contractors			<ul style="list-style-type: none"> • Ensure sufficient funding and human resources for proper and timely implementation of required mitigation and monitoring measures in the EMP throughout the construction phase 	<ul style="list-style-type: none"> • Appoint an environment, health and safety (EHS) officer to oversee EMP implementation related to environmental, occupational health and safety on construction site • Ensure health and safety • Implement mitigation measures • Prepare method statements on the 	

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	Engineering Detailed Design	Tendering & Pre-construction	Construction	Operation
				implementation of pollution control and mitigation measures listed in Table 2, and submit to PMTB and ESE for review • Act as a local entry point for the project GRM	
PEMS				• Undertake environmental monitoring according to the environmental monitoring program in the approved EMP (<i>contracted by PMTB</i>) • Report monitoring data to ESE and PMTB monthly	• Undertake environmental monitoring until a PCR is issued (<i>contracted by PMTB</i>) • Submit monitoring results to PPMO, PMTB and, PEPB
ESE				• Conduct independent verification of project's environment performance and compliance with the EMP (<i>contracted by PMTB</i>) • Review monthly monitoring data submitted by PEMS and conduct compliance checking against applicable environmental standards • Provide advice to contractors for resolving on-site environmental problems when monitoring data show non-compliance.	

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	Engineering Detailed Design	Tendering & Pre-construction	Construction	Operation
				<ul style="list-style-type: none"> • Submit quarterly compliance monitoring results to PPMO, PMTB and PEPB 	
O&M units					<ul style="list-style-type: none"> • Ensure proper operation of component facilities according to design standards • Implement mitigation measures • Conduct post-construction public consultation.
ADB	<ul style="list-style-type: none"> • Review and approve the EIA and EMP and disclose on ADB website 	<ul style="list-style-type: none"> • Approve updated EMP and disclose on ADB website 	<ul style="list-style-type: none"> • Review bidding documents • Confirm project's readiness • Review, approve and disclose environmental assessment reports for replacement rural roads 	<ul style="list-style-type: none"> • Review quarterly project progress reports, semi-annual environmental monitoring reports and project completion report • Undertake review missions • Advise on compliance issues, as required • Disclose semi-annual environmental monitoring reports on ADB website. 	<ul style="list-style-type: none"> • Review and approve environmental monitoring reports and disclose on ADB website • Undertake project completion review mission and prepare Project Completion Report for approval by Board and disclosure on ADB website.

Notes:

ADB = Asian Development Bank; **EA** = Executing Agency; **EARF** = Environmental Assessment and Review Framework; **EHS** = Environmental, Health & Safety; **EIA** = Environmental Impact Assessment; **EIR** = Environmental Impact Report; **EMP** = Environmental Management Plan; **ESE** = Environmental Supervision Engineer; **FSR** = Feasibility Study Report; **GRM** = Grievance Redress Mechanism; **IA** = Implementing Agency; **LIEC** = Loan Implementation Environmental Consultant; **PCR** = Project Completion Report; **PEPB** = Pu'er Environmental Protection Bureau **PEMS** = Pu'er Environmental Monitoring Station; **PMG** = Pu'er Municipal Government; **PMTB** = Pu'er Municipal Transport Bureau; **PPMO** = Pu'er Project Management Office; **PPTA** = Project Preparation Technical Assistance; **PWRB** – Pu'er Water Resources Bureau; **O&M** = Operation and Maintenance; **RP** = Resettlement Plan; **SWCR** = Soil and Water Conservation Report; **YEPD** = Yunnan Environmental Protection Department

C. Summary of Potential Impacts and Mitigation Measures

5. Potential environmental issues and risks and corresponding mitigation measures designed to minimize the impacts as identified in the EIA during the pre-construction, construction and operation phases are summarized in Table 2.

6. Mitigation and safeguard measures that will permanently become part of the infrastructure such as landscape planting, road signage and markings and road side noise barriers should all be included within the main civil works contract costs and not double-counted as part of the EMP costs.

7. Those that are temporary measures particularly during the construction stage, such as dust suppression by watering and wheel washing, the use of quiet / low noise powered mechanical equipment, flocculants used to facilitate sedimentation of suspended solids in construction site runoff, etc. These will need to be included in the tender documents for the contractor to include as a separate item in the bill of quantities. Guideline costs for implementing these measures are included in the EMP.

8. The mitigation measures defined in the EMP will be (i) checked and where necessary updated by the design institutes; (ii) incorporated into tender documents (where appropriate), construction contracts, construction and operational management plans; and (iii) implemented by contractors, PMTB or PPMO, as relevant. The effectiveness of these measures will be evaluated based on the EMP compliance verification conducted by the ESE and LIEC and the environmental quality monitoring conducted by PEMS.

Table 2: Potential Impacts and Mitigation Measures

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
A. Potential impacts and mitigation measures common to Ning'er-Jiangcheng-Longfu Road, Menglian-Meng'a Road and rural roads					
Detailed Design Stage					
Conservation of soil and land resources	Soil resources	Loss of land and topsoil and increased risk of erosion	<ul style="list-style-type: none"> Minimize permanent and temporary land take for both highways, especially cultivated land and basic farmland. Retain/incorporate landscape features of interest in design. Optimize balance between cut and fill and avoid deep cuts and high embankments to minimize earthworks. Maximize reuse of spoil within the construction or adjacent construction works. Agree borrow and spoil disposal sites, management and rehabilitation plan with PEPB if these sites are different from those specified in the Soil and Water Conservation Report. Remove and store topsoil (10-30cm) for restoration works prior to main earthworks. Specify landscape species that serve a specific bioengineering function, are in keeping with natural habitats and landscape and of local provenance. Design appropriate retention and drainage systems for slopes to reduce soil erosion. 	Design Institute	PPMO; PMTB
Design of road alignment, road pavement, subgrade, slopes, drainage and bridges/culverts	Extreme weather events due to climate change	Flooding, landslide and debris flow due to heavy rainfall	<ul style="list-style-type: none"> Bridge designs should be reviewed to determine if there is a need to adopt a higher factor of safety as basis of design to increase climate resilience. For any drainage components that would be difficult to replace or repair it is recommended that a higher factor of safety is adopted as the basis for design to increase climate resilience. More and higher flood discharge may 	Design Institute	PPMO; PMTB

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			increase risk of damage of road infrastructure. Additional protection of slopes and subgrade may be needed in high risk areas. Adopt appropriate slope protection measures such as vegetation cover, geotextiles, settling basins, permeable paving, infiltration ditches, stepped slopes, riprap, crib walls, retaining walls and intercepting ditches to reduce the speed of surface run-off.		
	Water quality	Bridge construction across water bodies	<ul style="list-style-type: none"> All construction staging areas, construction camps, fuel and materials storage, re-fuelling and maintenance areas to be located at least 500m from watercourses. Design of these construction staging areas and construction camps must ensure proper collection and treatment of wastewater and site runoff. 	Design Institute	PPMO; PMTB
	Health and safety	Promotion of pedestrian safety, protection of vulnerable road users	<ul style="list-style-type: none"> Design must ensure public health and safety. Design must ensure safety of pedestrians and agricultural traffic. Adopt universal design principles for where appropriate. 	Design Institute	PPMO; PMTB
	Air emissions	Construction transport emissions	Specify local materials from licensed providers that minimize transport distance.	Design Institute	PPMO; PMTB
	GHG emissions	Energy efficiency	Consider energy efficient machinery and operational equipment	Design Institute	PPMO; PMTB
	Wildlife	Collisions with traffic	Consult with expert organisations within Yunnan to identify locations where warning signs and/or other measures are needed in relation to elephant and other wildlife crossing points.	Design Institute	PPMO, PMTB
Pre-construction Stage					
Institutional strengthening	-	Lack of environment management capacity within PPMO	<ul style="list-style-type: none"> Appoint qualified environment specialist to PPMO staff. Include LIEC in loan implementation project management consulting services. 	PPMO, LIEC, PEPB	ADB

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			<ul style="list-style-type: none"> LIEC to conduct environment management training for PPMO staff and environmental specialist. 		
	-	Lack of environment management and monitoring capacity within PMTB	<ul style="list-style-type: none"> Appoint qualified environmental specialist to PMTB staff. Contract PEMS to conduct environment monitoring Contract qualified ESE to conduct external compliance monitoring and verification of EMP implementation LIEC to conduct environment management training for PMTB staff and their environmental specialist. 	PMTB, LIEC, PEPB	PPMO, ADB
EMP update	-	-	<ul style="list-style-type: none"> Review mitigation measures defined in this EMP and update as required to reflect detailed design. Submit to ADB/PPMO for approval and disclose updated EMP on ADB website. Prepare a revised environmental compliance monitoring plan as required to meet the environmental requirements in the updated EIA and EMP. 	PMTB, LIEC	PPMO, ADB
Environmental assessment reports for replacement rural roads			<ul style="list-style-type: none"> Prepare environmental assessment reports for replacement rural roads according to the EARF and submit to ADB for approval. 	PPMO	ADB
Tender documents	Air quality	Dust (TSP) impact to sensitive receptors	<p>Put into tender documents dust suppression measures:</p> <ul style="list-style-type: none"> Frequent watering of unpaved areas, backfill areas and haul roads to suppress dust; Erect hoarding around dusty activities to contain emissions; Manage stockpile areas with frequent watering or covering with tarpaulin; Minimize the storage time of construction and demolition wastes on site by regularly removing them off site; 	Design Institute	PPMO; PMTB

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			<ul style="list-style-type: none"> • Do not overload trucks when transporting earth materials to avoid spilling dusty materials onto public roads; • Equip trucks for transporting earth materials with covers or tarpaulin to cover up the earthy materials during transport; • Install wheel washing equipment or conduct wheel washing manually at each exit of each works area to prevent trucks from carrying muddy or dusty substance onto public roads; • Immediately cleanup all muddy or dusty materials on public roads outside the exits of the works areas; • Sensibly plan the transport routes and time to avoid busy traffic and heavily populated areas when transporting earthy materials; and • Immediately plant vegetation in all temporary land take areas upon completion of construction to prevent dust and soil erosion. 		
		Fumes and particulate matter from asphalt mixing plant and concrete batching plant	Put into tender documents that <ul style="list-style-type: none"> • These plants must be enclosed and equipped with bag house filter or similar air pollution control equipment. • Locate asphalt mixing plants and concrete batching plants at least 300m downwind from residential areas and other sensitive receptors. 	Design Institute	PPMO; PMTB
		Power mechanical equipment noise impact to sensitive receptors	Put into tender documents the following noise mitigation measures: <ul style="list-style-type: none"> • Use quiet equipment; • Adopt good O&M of machinery; • Use temporary hoardings or noise barriers to shield off noise sources; • Avoid night time construction between 2200 and 0600 hours; 	Design Institute	PPMO; PMTB

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			<ul style="list-style-type: none"> • If night time construction needed, consult nearby residents beforehand for their consensus; • If night time construction needed, avoid using noisy equipment; and • Maintain continual communication with the schools along the road alignments to avoid noisy activities near the schools during examination periods. 		
	Water quality	Construction site wastewater impact on water bodies	<p>Put into tender documents the following measures to treat wastewater and runoff from construction sites and to prevent pollution to nearby water channels::</p> <ul style="list-style-type: none"> • All construction camps, fuel and materials storage, re-fuelling and maintenance areas to be located at least 500m from watercourses • Provide portable toilets and small package WWTPs for workers and canteens; and • Install sedimentation tanks on-site to treat process water and muddy runoff. 	Design Institute	PPMO; PMTB
	Ecology	Protection of flora and fauna	<p>Put into tender documents:</p> <ul style="list-style-type: none"> • All project personnel, including construction workers, are prohibited from catching or trading in flora or fauna • Project personnel will immediately report to the PMTB and ESE any fauna found trapped within project sites e.g. in ditches or pits 	Design Institute	PPMO; PMTB
	Solid waste	Disposal or storage of excavated spoil	Specify in tender documents the spoil disposal or storage sites and that only these sites could be used.	Design Institute	PPMO; PMTB
	Health & safety	Occupational health & safety of workers	Specify in tender documents the provision of personal safety and protective equipment such as safety hats and shoes, eye goggles, respiratory masks, etc. to all construction workers;	Design Institute	PPMO; PMTB

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
Grievance redress mechanism (GRM)	Social and environmental	Handling and resolving complaints received during project implementation	<ul style="list-style-type: none"> • PPMO to establish a project Complaint Center with hotline • PPMO to publicize local access points (contractors, PMTB) for the GRM • PPMO to establish grievance redress mechanism procedures for resolving, documenting and reporting complaints according to the EMP 	PPMO	ADB
Construction traffic	Traffic	Construction vehicles causing traffic congestion	Plan transport routes for construction vehicles and specify in tender documents to forbid vehicles from using other roads during peak traffic hours.	Design Institute, Local traffic police	PPMO; PMTB
Estimated cost for Design and Pre-construction stage: costs are included in the detailed design fee					
Construction Stage					

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
Construction site good practice	Soil resources	Spoil disposal	<ul style="list-style-type: none"> • Strip and store topsoil in a stockpile for reuse in restoration. • Use spoil disposal sites approved by PEPB and manage in accordance with approved plan. • Avoid side casting of spoil on slopes. • Co-ordinate with water resources bureau monitoring station on effectiveness of soil erosion prevention measures and any need for remedial action. • Rehabilitate and restore spoil disposal sites in accordance with agreed plan. • Conduct project completion audit to confirm that spoil disposal site rehabilitation meets required standard, contractor liable in case of non-compliance. 	Contractor	PMTB; ESE; LIEC

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
		Soil erosion	<ul style="list-style-type: none"> • Implement soil erosion protection measures as defined in the Soil and Water Conservation Report • Confirm location of the borrow pits and spoil storage and disposal sites; if these are different from those specified in the Soil and Water Conservation Report. • Construct intercepting ditches and drains to prevent runoff entering construction sites, and diverting runoff from sites to existing drainage; • Construct hoardings and sedimentation ponds to contain soil loss and runoff from the construction sites • Limit construction and material handling during periods of rains and high winds; • Stabilize all cut slopes, embankments, and other erosion-prone working areas while works are ongoing; • Stockpiles shall be short-term, placed in sheltered and guarded areas near the actual construction sites, covered with clean tarpaulins when not in use, and sprayed with water during dry and windy weather conditions; • All cut areas shall be stabilized with thatch cover within 30 days after earthworks have ceased at the sites; • Immediately restore and landscape temporarily occupied land upon completion of construction works. • Unauthorized extraction or disposal at other sites would be subject to penalties. 	Contractor	PMTB; ESE; LIEC

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
		Soil contamination	<ul style="list-style-type: none"> • Properly store petroleum products, hazardous materials and wastes on an impervious surface. • Develop spill response plan. Keep a stock of absorbent materials (e.g. sand, earth or commercial products) on site to deal with spillages and train staff in their use. • If there is a spill take immediate action to prevent entering drains, watercourses, unmade ground or porous surfaces. Do not hose the spillage down or use any detergents. Use oil absorbent materials and dispose at a licensed waste management facility. • Record any spill events and actions taken in environmental monitoring logs and report to LIEC. • Properly store petroleum products, hazardous materials and waste in clearly labeled containers on an impermeable surface in secure and covered areas, preferably with bund and/or containment tray for any leaks. • Remove all construction waste from the site to approved waste disposal sites. 	Contractor	PMTB; ESE; LIEC

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
	Air quality	Dust (TSP) during construction	<ul style="list-style-type: none"> • Frequent watering of unpaved areas, backfill areas and haul roads to suppress dust. • Pave frequently used haul roads • Limit the speed of vehicles travelling on unpaved areas and haul roads • Pay particular attention to dust suppression near sensitive receptors such as schools, hospitals, residential areas and natural areas. • Erect hoarding/screens around dusty activities such as demolition. • Manage stockpile areas to avoid mobilization of fine material, cover with tarpaulin and/or spray with water. • Do not overload trucks transporting earth materials. • Equip trucks transporting earth materials with covers or tarpaulin to cover loads during transport. • Install wheel washing equipment or conduct wheel washing manually at each exit of each works area to prevent trucks from carrying muddy or dusty substance onto public roads. • Immediately cleanup all muddy or dusty materials on public roads outside the exits of the works areas. • Plan the transport routes and time to avoid busy traffic and heavily populated areas when transporting earthy materials. • Immediately plant vegetation in all temporary land take areas upon completion of construction to prevent dust and soil erosion. 	Contractor	PMTB; ESE; LIEC

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
		Fumes and particulate matter from asphalt mixing plant, concrete batching plant and other equipment and machinery	<ul style="list-style-type: none"> • Locate asphalt mixing plants and concrete batching plants at least 300m downwind from residential areas and other sensitive receptors. • Enclose these plants and equip them with bag house filter or similar air pollution control equipment. • Regularly inspect and certify vehicle and equipment emissions and maintain to a high standard. 	Contractor	PMTB; ESE; LIEC
	Noise	Noise from power mechanical equipment and vehicles	<ul style="list-style-type: none"> • Sensibly schedule construction activities, avoid noisy equipment working concurrently. • Select advanced quiet equipment and construction method, and tightly control the use of self-provided generators. • Comply with local requirements in areas with sensitive receptors very close by, • Avoid construction works, particularly noisy activities such as piling and compaction from 22:00 to 06:00 hr. • If night time construction needed, consult nearby residents beforehand for their consensus. • If night time construction needed, avoid using noisy equipment • If necessary, set up temporary noise barriers. • Control speed of bulldozer, excavator, crusher and other transport vehicles travelling on site. • Specify equipment and machinery that conforms to PRC noise standard GB12523-90 and ensure regular maintenance. • Adopt noise reduction devices and measures for works in proximity to sensitive noise receptors to ensure 	Contractor	PMTB; ESE; LIEC

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			<p>required standards are maintained.</p> <ul style="list-style-type: none"> • Locate sites for rock crushing, concrete mixing and other noisy activities at least 1km away from sensitive noise receptors. • Limit the speed of vehicles travelling on site and on haul roads (less than 8 km/hr). • Minimize the use of whistles and horns. • Maintain continual communication with schools along the road alignments to avoid noisy activities near the schools during examination periods and other noise-sensitive activities. 		
	Water quality	Management of works in and adjacent to watercourses	<ul style="list-style-type: none"> • If possible, carry out bridge pier construction during the dry season. • Erect berms or sandbags during bridge foundation works if necessary to contain runoff polluting the rivers. • Maintain adequate flood flow during the rainy season. • All construction camps, fuel and materials storage, refueling and maintenance areas to be located at least 500m from watercourses. • Take all necessary measures to prevent construction materials and waste from entering drains and water bodies. 	Contractor	PMTB; ESE; LIEC
	Water quality	Construction site wastewater discharge	<ul style="list-style-type: none"> • All construction wastewater to be treated to appropriate PRC standard prior to discharge. • Ensure timely cleanup of scattered materials on site, stockpiles must adopt measures to prevent being washed into water bodies by rain water. • Reuse equipment and wheel wash wastewater for dust suppression. 	Contractor	PMTB; ESE; LIEC
	Solid waste	Construction site refuse	<ul style="list-style-type: none"> • Prepare a waste management plan optimising waste minimization, re-use and recycling. 	Contractor	PMTB; ESE; LIEC

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			<ul style="list-style-type: none"> • Prepare a spill management plan for hazardous materials on construction sites • Set up centralized domestic waste collection point and transport offsite for disposal at licensed municipal waste facility; • Prohibit burning of waste. 		
	Ecology	Protection of vegetation and fauna, and restoration of disturbed areas	<ul style="list-style-type: none"> • Demarcate the construction working area to prevent encroachment and damage to adjacent areas. • Ensure sufficient aftercare for landscape planting to maximize survival. • Agree compensation planting for any forestry losses in line with PRC forestry laws. • All project personnel, including construction workers, are prohibited from catching or trading in flora or fauna • Project personnel will immediately report to the PMTB and ESE any fauna found trapped within project sites e.g. in ditches or pits 	Contractor	PMTB; ESE; LIEC
		Wildlife trafficking	Hire specialist firm to implement wildlife trafficking enforcement capacity development program as described in Project Administration Manual, Consultants' Terms of Reference, Appendix 2.	PMG/PMTB	PMG/PMTB
	Physical cultural resources	Destruction of cultural relics in river bed and soil	Contractor must comply with PRC's Cultural Relics Protection Law and Cultural Relics Protection Law Implementation Regulations if such relics are discovered, stop work immediately and notify the relevant authorities, adopt protection measures and notify the local Cultural Bureau to protect the site.	Contractor	Cultural Relics Bureau; PMTB; ESE; LIEC

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
Health and Safety	Occupational health and safety	Construction site sanitation	<ul style="list-style-type: none"> • Effectively clean and disinfect the site. • During site formation, spray with phenolated water for disinfection. • Disinfect toilets and refuse piles and ensure timely removal of solid waste; • Exterminate rodents on site at least once every 3 months, and exterminate mosquitoes and flies at least twice each year; • Provide public toilets in accordance with the requirements of labor management and sanitation departments in the living areas on construction site, • Appoint designated staff responsible for cleaning and disinfection. 	Contractor	PMTB; ESE; LIEC
		Occupational safety	<ul style="list-style-type: none"> • Appoint Environment, Health and Safety Officer to develop and implement environmental, health and safety management plan, maintain records concerning health, safety and welfare and regularly report on accidents, incidents and near misses. • Train all construction workers in general health and safety matters and on emergency preparedness and response procedures. • Provide personal protective equipment (hard hats, shoes and high visibility vests) to all construction workers and enforce their use. • Provide goggles and respiratory masks to workers doing asphalt road paving. • Provide ear plugs to workers working near noisy powered mechanical equipment (PME), especially during piling of bridge foundations. • Ensure safe handling, transport, storage and application of explosives for tunnel 	Contractor	PMTB; ESE; LIEC

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			construction. <ul style="list-style-type: none"> • Implement special measures to ensure worker safety in confined spaces during tunnel construction. • Provide a clean and sufficient supply of fresh, potable water for all camps and work sites. • Provide an adequate number of latrines and other sanitary arrangements at the site and work areas and ensure that they are cleaned and maintained in a hygienic state. • Provide adequate waste receptacles and ensure regular collection and disposal. • Ensure that Contractors have adequate worker and third party insurance cover. • No children (less than 14 years of age) to work on any contract. 		
		Food safety	<ul style="list-style-type: none"> • Inspect and supervise food hygiene in cafeteria on site regularly. • Cafeteria workers must have valid health permits. • Once food poisoning is discovered, implement effective control measures immediately to prevent it from spreading 	Contractor	PMTB; ESE; LIEC
		Disease prevention and safety awareness	<ul style="list-style-type: none"> • Construction workers must have physical examination before start working on site. • If infectious disease is found, the patient must be isolated for treatment to prevent the disease from spreading. • From the second year onwards, conduct physical examination on 20% of the workers every year. • Establish health clinic at location where workers are concentrated, which should be equipped with common medical supplies and medication for simple treatment and emergency treatment for accidents. • Specify the person responsible for health 	Contractor	PMTB; ESE; LIEC

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			<p>and epidemic prevention responsible for the education and propaganda on food hygiene and disease prevention to raise the awareness of workers.</p> <ul style="list-style-type: none"> Regularly inspect works to ensure there are no areas of stagnant water that could provide breeding grounds for malaria, encephalitis and dengue fever mosquitoes. 		
	Community health and safety	Temporary traffic management	<ul style="list-style-type: none"> A traffic control and operation plan will be prepared together with the local traffic management authority prior to any construction. The plan shall include provisions for diverting or scheduling construction traffic to avoid morning and afternoon peak traffic hours, regulating traffic at road crossings with an emphasis on ensuring public safety through clear signs, controls and planning in advance. As much as possible, schedule delivery of construction materials and equipment during non-peak hours. 	Contractor, local traffic police	PMTB; ESE; LIEC
		Information disclosure	Residents and businesses will be informed in advance through publicity about the construction activities and provided with the dates and duration of expected disruption and alternative routes, as required.	Contractor, PMTB	PPMO, LIEC
		Access to construction sites	<ul style="list-style-type: none"> Clear signs will be placed at construction sites in view of the public, warning people of potential dangers such as moving vehicles, hazardous materials, excavations and raising awareness on safety issues. All sites will be made secure, discouraging access by members of the public through fencing or security personnel, as appropriate. 	Contractor	PMTB; ESE; LIEC

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
		Utility services interruptions	<ul style="list-style-type: none"> Assess construction locations in advance for potential disruption to services and identify risks before starting construction. If temporary disruption is unavoidable, develop a plan to minimize the disruption in collaboration with relevant local authorities such as power company, water supply company and communication company. Communicate the dates and duration in advance to all affected people. 	Contractor, local service providers	PMTB; ESE; LIEC
Grievance redress mechanism	Social & environmental	Handling and resolving complaints	<ul style="list-style-type: none"> Appoint a GRM coordinator within PPMO. Brief and provide training on GRM access points (PMTB, contractors). Disclose GRM to affected people before construction begins at the main entrance to each construction site. Maintain and update a Complaints Register to document all complaints and their resolution. Report on GRM in quarterly project progress reports and semi-annual environmental monitoring reports.. 	PPMO, PMTB, Contractor	ADB
Estimated cost for the Construction Stage: \$256,000					
(this amount does not include \$9,450,000 for soil erosion mitigation according to the Soil and Water Conservation Reports for the two regional roads)					
Operational Stage					
CO ₂ emissions	Traffic	Emissions	Annually monitor traffic volume, assess associated emissions according to approved IPPC methodology and report to ADB.	O&M units	PPMO/PMG
Road condition and safety, wildlife trafficking	Traffic	Road condition	Regularly inspect and maintain the road surface, drains and verges.	O&M units	PPMO
		Road safety and traffic accidents	Strictly enforce traffic law to improve road safety and reduce traffic accidents.	Pu'er Traffic Police	PMG
		Collisions with wildlife	Monitor incidence and type of wildlife fatality and install warning signs or other preventative measures, as required.	O&M units	PPMO/PMG
	Wildlife trafficking and	Lack of capacity for enforcement	Border staff to participate in training to improve capacity to enforce CITES and disease	Pu'er Customs Bureau	PMG

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
	vector-borne diseases		prevention.		
		Illegal wildlife trafficking	Conduct regular inspections and strictly enforce CITES and disease controls.		
Estimated cost for the Operational Stage: costs are included in the O&M budget					
B. Specific potential impacts and mitigation measures for Ning'er-Jiangcheng-Longfu Road					
Detailed Design Stage					
Design of road alignment and drainage system	Drinking water source – Wenquan Reservoir	Alignment near the reservoir at section K25+200 to K45+200.	<ul style="list-style-type: none"> Alignment design of road section K25+200 to K45+200 must not traverse through Protection Zone 1 of the Wenquan Reservoir Drainage design of road section K25+200 to K45+200 traversing through Protection Zone 2 of the Wenquan Reservoir must have collection, containment and treatment systems for the road runoff. 	Design Institute	PPMO; PMTB
	Social, environmental health	Traffic noise impact to sensitive receptors	<ul style="list-style-type: none"> Design road side noise barriers at the following 6 locations as indicated in the domestic EIR: <ul style="list-style-type: none"> Banhai Village – 2.5 m high x 100 m long Manlian Village – 2.5 m high x 90 m long Sanjia Village – 2.5 m high x 50 m long Longtangba – 2.5 m high x 50 m long Xishitou Village – 2.5 m high x 100 m long Baozang Township – 2.5 m high x 250 m long 	Design Institute	PPMO; PMTB
Pre-construction Stage					
Ecology	Trees native to Yunnan	Damage to protected tree species native to Yunnan by construction workers and machinery	<p>Trees at the following locations shall be tagged, conspicuously marked and fenced off prior to commencement of construction activities</p> <ul style="list-style-type: none"> <i>Panax zingiberensis</i> 姜状三七: 20 trees in Liming Township along chainage K80 to K85 <i>Phoebe nanmu</i> 滇楠: 3 trees in Liming Township approximately 200 m to the right of road center line at chainage K85+100 	PMTB environmental specialist	PPMO

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			<p>and in Qushui Township approximately 55 m to the right of road center line at chainage K200+800</p> <ul style="list-style-type: none"> • <i>Dalbergia retusa</i> 黑黄檀: 1 tree in Mengxian Township approximately 100 m to the left of road center line at chainage K48+800. • <i>Aesculus wangii</i> 云南七叶树: 5 trees in Qushui Township approximately 50 m to the right of road center line at chainage K215+800. 		
Estimated cost for Detailed Design and Pre-construction Stages of the Ning'er-Jiangcheng-Longfu Road: costs are included in the detailed design fee and the PMTB operating budget					
C. Specific potential impacts and mitigation measures for Menglian-Meng'a Road					
Detailed Design Stage					
Design of road alignment	Social, environmental health	Traffic noise impact to sensitive receptors	Design road side barrier at the following one location as indicated in the domestic EIR: Menghai Primary School – 3 m high x 200 m long	Design Institute	PPMO; PMTB
	Landscape	Preservation of trees and woodlands	Permanent and temporary land-take to avoid intact woodlands at sections K0+500-K5+500、K55+200-K65+500、K70+100-K72+300、K75+300-K77+200	Design Institute	PPMO; PMTB
Design of bridges	Climate change	Increased flood risk	The detailed design of the Nanlei River bridge and any other bridges at risk from climate change impacts should consider whether a higher flood height should be adopted as the basis of design to increase climate resilience.	Design Institute	PPMO; PMTB
Estimated cost for Detailed Design Stage of the Menglian-Meng'a Road: costs are included in the detailed design fee					
Operational Stage					
Traffic	Social, environmental health	Traffic noise impact to sensitive receptors	<p>Install 140 m² of double-glazed windows on first row of non-commercial buildings facing the road at the following 3 locations as indicated in the domestic EIR (CNY1,000/m²). Total cost = \$23,000</p> <ul style="list-style-type: none"> • Mengma Township at K79+800 • Manglang at K95+200 	PPMO	PMG, PEPB

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			<ul style="list-style-type: none"> Anma at K97+350 		
Estimated cost for the Operational Stage: \$23,000 for provision of double-glazed windows.					
D. Specific potential impacts and mitigation measures for the rural roads					
Pre-construction Stage					
Tender documents	Protected area	Impact on the Experimental Zone of the Ailao Mountain National Nature Reserve during construction of rural road no. 11 from chainage K21 to K24+459	<p>Specify in the tender documents that</p> <ul style="list-style-type: none"> The contractor shall demarcate on rural road no. 11 the boundary of the Ailao Mountain National Nature Reserve at chainage K21 in Bangqing Village There will be no tree felling within chainage K21 to K24+459 on rural road no. 11 No asphalt mixing plant or concrete batching plant will be allowed within chainage K21 to K24+459 on rural road no. 11 Opportunities to improve drainage and stabilise slopes should be considered to increase climate resilience. 	Design Institute	PPMO; PMTB
Estimated cost for the Detailed Design Stage: costs are included in the detailed design fee					
Construction Stage					
Ecology	Protected area	Impact on the Experimental Zone of the Ailao Mountain National Nature Reserve during construction of rural road no. 11 from chainage K21 to K24+459	<ul style="list-style-type: none"> The contractor shall demarcate on rural road no. 11 the boundary of the Ailao Mountain National Nature Reserve at chainage K21 in Bangqing Village There will be no tree felling within chainage K21 to K24+459 on rural road no. 11 No asphalt mixing plant or concrete batching plant will be allowed within chainage K21 to K24+459 on rural road no. 11 The contractor shall maintain close liaison with the Ailao Mountain Jingdong Management Bureau throughout the construction of this section of rural road no. 11 	Contractor	PMTB; ESE; LIEC

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
Estimated cost for the Construction Stage: \$10,000					
<p>Notes: ADB = Asian Development Bank; EIR = Environmental Impact Report; ESE = Environmental Supervision Engineer; LIEC = Loan Implementation Environmental Consultant; O&M = operation & maintenance; PEPB = Pu'er Environmental Protection Bureau PMG = Pu'er Municipal Government; PMTB = Pu'er Municipal Transport Bureau; PPMO = Pu'er Project Management Office.</p>					

9. The costs for implementing the construction phase mitigation measures is \$289,000. These costs do not include \$9,450,000 provided in the Soil and Water Conservation Reports (SWCR) for implementing soil erosion prevention measures. Table 3 shows the breakdown for the implementation of mitigation measures listed in Table 2. The costs were based on information provided in the two EIRs, Ning'er-Jiangcheng-Longfu Highway and the Menglian-Meng'a Highway respectively, with adjustments by the PPTA consultant for the rural roads and where appropriate. For the Menglian-Meng'a Highway, the costs were pro-rata for the section that will be funded by ADB. Permanent works such as road-side barriers and landscaping, road signage for no horn zones were not included as these costs should be included in the civil engineering costs.

Table 3: Cost Breakdown of Environmental Mitigation Measures

Stage	Mitigation Measures	Highway			Project Total
		Ning'er – Jiangcheng – Longfu	Menglian – Meng'a	Rural Roads	
Detailed design	Included in the design contracts	0	0	0	0
Pre-construction	Included in the tender preparation for main works contracts	0	0	0	0
Construction	Noise	\$20,000	\$18,000	\$38,000	\$76,000
	Water quality	\$15,000	\$18,000	\$33,000	\$66,000
	Dust suppression	\$20,000	\$15,000	\$35,000	\$70,000
	Solid waste	\$12,000	\$10,000	\$22,000	\$44,000
	<i>Construction Stage subtotal</i>	<i>\$67,000</i>	<i>\$61,000</i>	<i>\$128,000</i>	<i>\$266,000</i>
Operation	Noise – provision of double glazed windows	0	\$23,000	0	\$23,000
	<i>Operation stage subtotal</i>	<i>0</i>	<i>\$2,3000</i>	<i>0</i>	<i>\$23,000</i>
Total:		\$67,000	\$84,000	\$128,000	\$279,000

Sources: EIRs and SWCRs.

D. Environmental Monitoring and Reporting

10. The project monitoring program focuses on the environment within the project's area of influence. Monitoring will include project readiness monitoring, environmental monitoring and compliance monitoring described below.

11. **Project readiness monitoring.** Before construction, the LIEC will assess the project's readiness in terms of environmental management based on a set of indicators (Table 4) and report it to ADB and the PPMO. This assessment will demonstrate that environmental commitments are being carried out and environmental management systems are in place before construction starts, or suggest corrective actions to ensure that all requirements are met.

Table 4: Project Readiness Monitoring Indicators

Indicator	Criteria	Assessment	
EIA approval	• The EIA has been approved by ADB and relevant PRC environmental authority	Yes	No
EMP update	• The EMP was updated after technical detailed design and approved by ADB	Yes	No
Compliance with loan covenants	• The borrower complies with loan covenants related to project design and environmental management planning	Yes	No
Public involvement effectiveness	• Meaningful consultation during project design	Yes	No
	• GRM established with entry points	Yes	No
Environmental Supervision in place	• LIEC is in place	Yes	No
	• Environment specialist appointed by PPMO	Yes	No
	• Environment specialists appointed by PMTB	Yes	No
	• Environmental supervision engineer appointed by PMTB	Yes	No
	• Environment monitoring station contracted by PMTB	Yes	No

Indicator	Criteria	Assessment	
Bidding documents and contracts with environmental safeguards	• Bidding documents and contracts incorporating the environmental activities and safeguards listed as loan assurances	Yes	No
	• Bidding documents and contracts incorporating the impact mitigation and environmental management provisions of the EMP	Yes	No
	• Environmental requirements of EMP included in contract documents for construction contracts	Yes	No
EMP financial support	• The required funds have been set aside to support the EMP implementation	Yes	No

12. **Environmental monitoring.** Table 5 shows the environmental monitoring program specifically designed for this project, defining the requirements, including scope, location, parameter, duration and frequency of monitoring during the construction and operational stages. The Pu'er Environmental Monitoring Station (PEMS), an approved entity to conduct such monitoring, will be contracted by PMTB to carry out monitoring of air and water quality and noise during construction and operation. Since CO₂ emissions from the project roads have been estimated to exceed the ADB threshold of 100,000 t/a, the PPMO is required to conduct traffic counts and calculate CO₂ emissions on the project roads annually during operation until a project completion report (PCR) for the road(s) is issued.

13. The costs for environmental monitoring have been estimated at \$444,000, comprising of \$136,000 for the Menglian-Meng'a Highway, \$228,000 for the Ning'er-Jiangcheng-Longfu Highway, and \$80,000 for the 33 rural roads. The SWCR estimated that soil erosion monitoring would cost \$261,000, comprising of \$51,000 for the Menglian-Meng'a Highway, \$210,000 for the Ning'er-Jiangcheng-Longfu Highway.

14. The PPMO, PMTB, the contractor and the LIEC will, at the outset of project implementation, prepare more detailed environmental monitoring programs for construction and operational phases if necessary. The monitoring program and budgets will be included in the project tendering documents and budgets, as well as the construction and operation contracts.

15. Environmental monitoring consists of air and water quality and noise during the construction stage, and air quality and noise during the operational stage. Monitoring locations for air quality and noise were selected based on their proximities to the road alignments (all were within 20 m from the road alignments), the number of units facing the road, and sensitivity to noise nuisance (e.g. schools). Water quality monitoring is applicable to river-crossing bridge construction. The approach is to monitor only when there is bridge construction activity, with a running control station concept. At each bridge construction site, two water quality monitoring stations will be established. One station will be set up at 50 m upstream of the bridge alignment, which will act as the "control station". Another station will be set up 100 m downstream of the bridge alignment, which will act as the "impact station". If water quality data (e.g. suspended solids levels) at the downstream impact station is 130% higher than the upstream control station (for dissolved oxygen, it would be 130% lower than the control station), it is indicative of elevated SS levels caused by the construction activities and mitigation measures such as changing the construction method or slowing down construction activities would need to be considered.

16. For the 33 rural roads, air quality and noise monitoring locations during the construction stage were selected based on the distances from the roads (< 50 m), the potentially affected

population (>800) and the noise sensitive nature of the location (e.g. schools). One water quality monitoring location was selected at the road crossing at Bangqing River in Rural Road No. 11, where it is within the Ailao Mountain Nature Reserve.

17. The environmental monitoring results will be compared with relevant PRC performance standards (Table 6), and non-compliance with these standards will be highlighted in the monitoring reports. Monitoring results will be submitted by the PEMS to the ESE, PPMO and the PMTB on a monthly basis, and will be reported in the quarterly project progress reports and semi-annual environmental monitoring reports by the PPMO (with the support of the LIEC, see reporting plan in Table 7).

Table 5: Environmental Monitoring Program

Item	Monitoring Parameter	Monitoring Location	Monitoring Frequency & Duration	Implementing Entity	Supervising Entity
Menglian-Meng'a Highway					<i>Estimated cost: \$136,000</i>
Construction Stage					
Air quality	TSP; (SO ₂ & NO ₂ only if there is asphalt mixing within 500 m)	10 locations that are within 20 m of the alignment: 1. Hegelaozhai (K76+460) 2. Hegexinzhai (K77+060) 3. Mengma Primary School (K79+900) 4. Hehaxinzhai (K82+500) 5. Manghai Primary School (K89+060) 6. Nanma Electric Station Dormitory (K89+800) 7. Guangsan (K90+650) 8. Bingsuo (K91+800) 9. Manglang (K95+350) 10. Anma (K97+350)	1 day (24-hr) per month (Monitor only when road section has construction activities within 500 m)	PEMS	PMTB, ESE
Noise	L _{Aeq}	10 locations that are within 20 m of the alignment: 1. Hegelaozhai (K76+460) 2. Hegexinzhai (K77+060) 3. Mengma Primary School (K79+900) 4. Hehaxinzhai (K82+500) 5. Manghai Primary School (K89+060) 6. Nanma Electric Station Dormitory (K89+800) 7. Guangsan (K90+650) 8. Bingsuo (K91+800) 9. Manglang (K95+350) 10. Anma (K97+350) [Note: night time monitoring not needed at the school locations]	2 times per day (day time and night time); 1 day per month (Monitor only when road section has construction activities within 500 m)	PEMS	PMTB, ESE
Water quality	DO, SS, TPH	3 locations in Nanma River during bridge construction at the following road sections: 1. K64+200 2. K77+800	1 time per day; 1 day per month during bridge construction	PEMS	PMTB, ESE

Item	Monitoring Parameter	Monitoring Location	Monitoring Frequency & Duration	Implementing Entity	Supervising Entity
		3. K99+200 <u>Set up 2 stations for water quality monitoring at each of the 3 locations as follows:</u> 1. Control station: 50 m upstream of the bridge alignment 2. Impact station 100m downstream of the bridge alignment (Note: if downstream impact station data > 130% of upstream control station data (DO <130%), mitigation measures are needed)			
Operational Stage (until a PCR is issued)					
Air quality	PM ₁₀ , NO ₂	<u>4 locations:</u> 1. Mengma Primary School (K79+900) 2. Manghai Primary School (K89+060) 3. Manglang (K95+200) 4. Anma (K97+350)	7 consecutive days every 3 months	PEMS	PPMO, ESE
Noise	L _{Aeq}	<u>4 locations:</u> 1. Mengma Primary School (K79+900) 2. Manghai Primary School (K89+060) 3. Manglang (K95+200) 4. Anma (K97+350) [Note: no night time needed at school locations]	2 times per day (day time and night time), 2 consecutive days every 3 months	PEMS	PPMO, ESE
GHG	CO ₂	<u>Conduct traffic counts and calculate CO₂ emission</u>	Once per year	PPMO	ADB
Ning'er-Jiangcheng-Longfu Highway				Estimated cost : \$228,000	
Construction Stage					
Air quality	TSP; (SO ₂ & NO ₂ only if there is asphalt mixing within 500 m)	<u>11 locations that are within 20 m of the alignment</u> 1. Banhai Primary School (K4+100) 2. Manlian Primary School (K7+100) 3. Xishitou Village (K20+200) 4. Mengxian Middle School (K56+900) 5. An'ning Village (K63+800) 6. Xuan'de Village (K69+800) 7. Xianren Village (K106+500) 8. Liming Village (K123+350) 9. Baozang Village (K156+500) 10. Qiyiqiao (K174+600) 11. Niuluohu Village (NK1+200)	1 day (24-hr) per month (Monitor only when road section has construction activities within 500 m)	PEMS	PMTB, ESE
Noise	L _{Aeq}	<u>11 locations that are within 20 m of the alignment</u>	2 times per day (day time and	PEMS	PMTB, ESE

Item	Monitoring Parameter	Monitoring Location	Monitoring Frequency & Duration	Implementing Entity	Supervising Entity
		<ol style="list-style-type: none"> 1. Banhai Primary School (K4+100) 2. Manlian Primary School (K7+100) 3. Xishitou Village (K20+200) 4. Mengxian Middle School (K56+900) 5. An'ning Village (K63+800) 6. Xuan'de Village (K69+800) 7. Xianren Village (K106+500) 8. Liming Village (K123+350) 9. Baozang Village (K156+500) 10. Qiyiqiao (K174+600) 11. Niuluohe Village (NK1+200) <p>[Note: night time monitoring not needed at the school locations]</p>	night time); 1 day per month (Monitor only when road section has construction activities within 500 m)		
Water quality	DO, SS, TPH	<p>7 rivers during bridge construction at the following road sections:</p> <ol style="list-style-type: none"> 1. Mengxian River (K68+160) 2. Manxian River (K101+983) 3. Manbangtian River (K126+353) 4. Mengyejiang (K153+643) 5. Lahu River (K207+253) 6. Longtong River (K234+283) 7. Shili River (K238+173) <p><u>Set up 2 stations for water quality monitoring at each of the 7 rivers as follows::</u></p> <ol style="list-style-type: none"> 1. Control station: 50 m upstream of the bridge alignment 2. Impact station 100m downstream of the bridge alignment <p>(Note: if downstream impact station data > 130% of upstream control station data (DO <130%), mitigation measures are needed)</p>	1 time per day; 1 day per month during bridge construction	PEMS	PMTB, ESE
Operational Stage (until a PCR is issued)					
Air quality	PM ₁₀ , NO ₂	<p><u>11 locations that are within 20 m of the alignment</u></p> <ol style="list-style-type: none"> 1. Banhai Primary School (K4+100) 2. Manlian Primary School (K7+100) 3. Xishitou Village (K20+200) 4. Mengxian Middle School (K56+900) 5. An'ning Village (K63+800) 6. Xuan'de Village (K69+800) 7. Xianren Village (K106+500) 8. Liming Village (K123+350) 9. Baozang Village (K156+500) 10. Qiyiqiao (K174+600) 11. Niuluohe Village (NK1+200) 	7 consecutive days every 3 months	PEMS	PMTB, ESE

Item	Monitoring Parameter	Monitoring Location	Monitoring Frequency & Duration	Implementing Entity	Supervising Entity
Noise	L _{Aeq}	<p>11 locations that are within 20 m of the alignment</p> <ol style="list-style-type: none"> 1. Banhai Primary School (K4+100) 2. Manlian Primary School (K7+100) 3. Xishitou Village (K20+200) 4. Mengxian Middle School (K56+900) 5. An'ning Village (K63+800) 6. Xuan'de Village (K69+800) 7. Xianren Village (K106+500) 8. Liming Village (K123+350) 9. Baozang Village (K156+500) 10. Qiyiqiao (K174+600) 11. Niuluohe Village (NK1+200) <p>[Note: night time monitoring not needed at the school locations]</p>	2 times per day (day time and night time); 2 consecutive days every 3 months	PEMS	PMTB, ESE
GHG	CO ₂	Conduct traffic counts and calculate CO ₂ emissions	Once per year	PPMO	ADB
Rural Roads				Estimated cost: \$80,000	
Construction Stage					
Air quality	TSP	<p>Locations on the following rural roads (RR):</p> <ol style="list-style-type: none"> 1. RR2: Tuanshan Village Committee 2. RR8: Huazhuqing 3. RR9: Xingping Jianxing Village 4. RR10: Nan'an Primary School 5. RR11: Bangqing Village Committee 6. RR11: Bangqingyuan Primary School 7. RR13: Xungang 8. RR13: Xungang Primary School 9. RR14: Keli 10. RR15: Tuzaichang 11. RR15: Guihai Village Primary School 12. RR16: Zhetie Village Committee 13. RR16: Zhetie Village Primary School 14. RR17: Banghai Village Committee 15. RR22: Moyang 16. RR22: Manru Primary School 17. RR23: Gongji Primary School 18. RR24: Hui'e Group #1 19. RR25: Manglang 20. RR32: Lianhua Village 21. RR32: Namotian Village 22. RR33: Tuanshan Village 23. RR35: Nadong Village 	1 day (24-hr) per month (Monitor only when road section has construction activities within 500 m)	PEMS	PMTB, ESE

Item	Monitoring Parameter	Monitoring Location	Monitoring Frequency & Duration	Implementing Entity	Supervising Entity
Noise	L _{Aeq}	<p><u>Locations on the following rural roads (RR):</u></p> <ol style="list-style-type: none"> 1. RR2: Tuanshan Village Committee 2. RR8: Huazhuqing 3. RR9: Xingping Jianxing Village 4. RR10: Nan'an Primary School 5. RR11: Bangqing Village Committee 6. RR11: Bangqingyuan Primary School 7. RR13: Xungang 8. RR13: Xungang Primary School 9. RR14: Keli 10. RR15: Tuzaichang 11. RR15: Guihai Village Primary School 12. RR16: Zhetie Village Committee 13. RR16: Zhetie Village Primary School 14. RR17: Banghai Village Committee 15. RR22: Moyang 16. RR22: Manru Primary School 17. RR23: Gongji Primary School 18. RR24: Hui'e Group #1 19. RR25: Manglang 20. RR32: Lianhua Village 21. RR32: Namotian Village 22. RR33: Tuanshan Village 23. RR35: Nadong Village 	2 times per day (day time and night time); 1 day per month (Monitor only when road section has construction activities within 500 m)	PEMS	PMTB, ESE
Water quality	DO, SS, TPH	<p>1 location on the Bangqing River where Rural Road 11 crosses the river</p> <p>1 location on the Pu'er River where Rural Road 32 crosses the river</p> <p><u>Set up 2 stations for water quality monitoring at each of the river crossings as follows:</u></p> <ol style="list-style-type: none"> 1. Control station: 50 m upstream of the river crossing 2. Impact station 100m downstream of the river crossing <p>(Note: if downstream impact station data > 130% of upstream control station data (DO <130%), mitigation measures are needed)</p>	1 time per day; 1 day per month when road construction activity is within 500 m of the river	PEMS	PMTB, ESE
Operational Stage (until a PCR is issued)					
GHG	CO ₂	<u>Conduct traffic counts and calculate CO₂ emissions</u>	Once per year	PPMO	ADB

Item	Monitoring Parameter	Monitoring Location	Monitoring Frequency & Duration	Implementing Entity	Supervising Entity
Total estimated cost: \$444,000					
<p>Notes: ESE = Environmental Supervision Engineer; PCR = Project Completion Report; PEMS = Pu'er Environmental Monitoring Station; PMTB = Pu'er Municipal Transport Bureau ; PPMO = Pu'er Project Management Office.; TSP = total suspended particulates; PM₁₀ = particulate matter with diameter ≥10 micron; SO₂ = sulfur dioxide; NO₂ = nitrogen dioxide; L_{Aeq} = A-weight equivalent sound pressure level; DO = dissolved oxygen, SS = suspended solids; TPH = total petroleum hydrocarbon; GHG = greenhouse gas; CO₂ = carbon dioxide</p>					

Table 6: Monitoring Indicators and Applicable PRC Standards

Period	Indicator	Standard
Construction	TSP	Class II Ambient Air Quality Standard (GB 3095-1996)
	Fume from asphalt mixing plant (SO ₂ , NO ₂)	Air Pollutant Integrated Emission Standard (GB 16297-1996)
	Noise limits of PME at boundary of construction site	Emission Standard of Environmental Noise for Boundary of Construction Site (GB 12523-2011)
	Discharge of wastewater from construction sites	Class I standard of Integrated Wastewater Discharge Standard (GB 8978-1996)
	DO, SS and TPH levels in river during bridge construction works	SS and TPH at downstream impact station <130% of the upstream control station. DO at downstream impact station >70% of the upstream control station and must not be < 2mg/L
Operation	Traffic noise at sensitive receptor within 35 m of road red line	Noise standard for Category 4a Functional Area in Environmental Quality Standard for Noise (GB 3096-2008)
	Traffic noise at sensitive receptor beyond 35 m of road red line	Noise standard for Category 1 and Category 2 Functional Areas in Environmental Quality Standard for Noise (GB 3096-2008)

18. **Compliance monitoring.** External and independent EMP compliance monitoring will be undertaken by the ESE contracted by the PMTB. The ESE could be a qualified individual or a company. The ESE will report to PMTB and PPMO the project's adherence to the EMP, information on project implementation, environmental performance of the contractors, and environmental compliance. PPMO in turn and with support of the LIEC, will report these items to ADB through the quarterly project progress reports and semi-annual environmental monitoring reports (Table 7). The estimated cost for compliance monitoring by the ESE is \$485,000, comprising of \$370,000 for the Ning'er-Jiangcheng- Longfu Highway, \$75,000 for the Menglian-Meng'a Highway and \$40,000 for the rural roads, based on information provided in the EIRs with estimate from the PPTA consultant for the rural roads. The SWCR also estimated supervision of soil erosion mitigation and monitoring would total \$226,200, comprising of \$163,200 for the Ning'er-Jiangcheng- Longfu Highway, \$63,000 for the Menglian-Meng'a Highway.

Table 7: Reporting Plan

Reports		From	To	Reporting Frequency
Construction Phase				
Internal environmental progress reports by contractors	Internal environmental progress report by construction contractors	Contractors	PMTB	Monthly
Environmental monitoring	Environmental quality monitoring report	PEMS	PEPB, ESE, PPMO, PMTB	Monthly
Environmental Compliance monitoring	Environmental compliance monitoring report	ESE	PMTB, PPMO	Quarterly
Reports to ADB	Project progress report (including section on EMP implementation and monitoring)	PPMO	ADB	Quarterly
	Environmental monitoring	PPMO	ADB	Semi-annual

	Reports	From	To	Reporting Frequency
	reports			
Acceptance report	Environmental acceptance monitoring and audit report	Licensed institute	PEPB	Once, not later than one year after completion of physical works
Completion report	Environmental completion report for ADB	LIEC	ADB	Once, one year after completion of physical works
Operational Phase				
Environmental monitoring	Environmental monitoring report	PEMS	PEPB, PPMO, PMTB	Quarterly
Compliance monitoring	Compliance monitoring report	ESE	PPMO, PMTB	Quarterly
Reports to ADB	Project progress report (including section on EMP implementation and monitoring)	PPMO	ADB	Quarterly
	EMP progress and monitoring report	PPMO	ADB	Once (after first year of operation)
Notes: ADB = Asian Development Bank; ESE = environmental supervision engineer; LIEC = loan implementation environmental consultant; PEMS = Pu'er Environment Monitoring Station; PEPB = Pu'er Environmental Protection Bureau; PPMO = Pu'er Project Management Office; PMTB = Pu'er Municipal Transport Bureau.				

19. Quarterly progress reports by the PPMO to ADB will include a summary of EMP implementation progress and compliance. The LIEC will support the PPMO in developing the semi-annual environmental monitoring reports. The reports should confirm the project's compliance with the EMP, local legislation such as PRC EIA requirements, and identify any environment related implementation issues and necessary corrective actions, and reflect these in a corrective action plan. The performance of the contractors in respect of environmental compliance will also be reported. The operation and performance of the project GRM, environmental institutional strengthening and training, and compliance with all covenants under the project will also be included in the report.

20. Within three months after completion, or no later than one year with permission of the PEPB, environmental acceptance reports shall be prepared by a licensed institute in accordance with the PRC Regulation on Project Completion Environmental Audit (MEP, 2001) and approved by the relevant environmental authority, and finally reported to ADB (Table 7). The environmental acceptance report will indicate the timing, extent, effectiveness of completed mitigation and of maintenance, and the need for additional mitigation measures and agreed monitoring during operation. These environmental acceptance reports will be provided to the LIEC who is responsible for preparing an environmental completion report and inputs for the Project Completion Report for ADB.

21. **Monitoring by ADB.** Besides reviewing the quarterly project progress reports and the semi-annual environment monitoring reports from the PPMO and the verification reports from the LIEC, ADB missions will inspect the project progress and implementation on site at least once a year. For environmental issues, inspections will focus mainly on (i) monitoring data; (ii) the implementation status of project performance indicators specified in the loan documents for the environment, environmental compliance, implementation of the EMP, and environmental institutional strengthening and training; (iii) the environmental performance of contractors, LIEC, PMTB and PPMO; and (iv) operation and performance of the project GRM. The performance of

the contractors in respect of environmental compliance will be recorded and will be considered in the next bid evaluations.

22. **Project design and monitoring framework.** At the outset of project implementation, the PPMO and PMTB will finalize: (i) comprehensive project design and monitoring framework (DMF) procedures to systematically generate data on inputs and outputs of the project components; and (ii) detailed environmental and related social economic indicators to measure project impacts. The DMF indicators for the project include (i) percentage of population in counties with access to paved rural roads; (ii) average vehicle operating costs per vehicle-kilometer on trunk roads; and (iii) increase or decrease in road accident fatalities. Under the DMF, baseline and progress data will be reported at the requisite time intervals by PMTB. PMTB and Traffic Police will be responsible for analyzing and consolidating the data through their management information system. The DMF will be designed to permit adequate flexibility to adopt remedial actions in relation to project design, schedules, activities, and development impacts. The PPMO and PMTB will refine the DMF, confirm achievable goals, firm up monitoring and recording arrangements, and establish systems and procedures no later than six months after loan effectiveness.

E. Institutional Capacity Building and Training

23. The capacity of the PPMO, PMTB and contractors' staff responsible for EMP implementation and supervision will be strengthened. All parties involved in implementing and supervising the EMP must have an understanding of the goals, methods, and practices of project environmental management. The project will address the lack of capacities and expertise in environmental management through (i) institutional capacity building, and (ii) training.

24. **Institutional strengthening.** The capacities of the PPMO and PMTB to coordinate environmental management will be strengthened through a set of measures:

- (i) The appointment of at least one qualified environment specialist within the PPMO in charge of EMP coordination, including GRM;
- (ii) The appointment of at least one qualified environmental specialist within PMTB to conduct regular site inspections and coordinate environmental monitoring
- (iii) The appointment of a LIEC under the loan implementation project management consulting services to guide PPMO and PMTB in implementing the EMP and ensure compliance with ADB's SPS 2009.

25. **Training.** The PPMO, PMTB, contractors and O&M units will receive training in EMP implementation, supervision, and reporting, and on the Grievance Redress Mechanism (Table 8). Training will be facilitated by the LIEC with support of other experts (e.g. the ESE) under the loan implementation project management consulting services. The estimated budget is \$12,000.

26. The institutional strengthening component of the project will involve training by loan implementation project management consultant in operation and maintenance of the completed facilities. Part of this training will focus on teaching staff how to use a set of indicators to monitor performance of the completed facilities. These indicators will be designed by the loan implementation project management consultant prior to operation start-up.

Table 8: Training Program

Training	Attendees	Contents	No. of Times	Period (days)	No. of persons	Cost (\$/person /day)	Total Cost
EMP adjustment and implementation	PPMO, PMTB, contractors	Development and adjustment of the EMP, roles and responsibilities, monitoring, supervision and reporting procedures, review of experience (after 12 months)	Twice - Once prior to, and once after one year of project implementation	2	15	100	\$6,000
Grievance Redress Mechanism	PPMO, PMTB, contractors, PEPB	Roles and responsibilities, procedures, review of experience (after 12 months)	Twice - Once prior to, and once after one year of project implementation	1	10	100	\$1,000
Environmental technologies and processes	PPMO, PMTB, contractors, O&M units	Engineering and pollution control technologies, equipment selection and procurements,	Once (during project implementation)	2	10	100	\$2,000
Environmental quality monitoring	PPMO, PMTB, contractors, O&M units	Monitoring methods, data collection and processing, reporting systems	Once (at beginning of project construction)	1	10	100	\$1,000
Roads and traffic	PMTB, O&M units	Traffic management and traffic safety	Once (during project implementation)	1	10	100	\$1,000
	Customs Bureau	Wildlife trafficking	Once (during project implementation)	1	10	100	\$1,000
Total estimated cost:							\$12,000
Notes: PEPB = Pu'er Environmental Protection Bureau; PPMO = Pu'er Project Management Office; PMTB = Pu'er Municipal Transport Bureau; O&M = operation and maintenance							

F. Consultation, Participation and Information Disclosure

27. **Consultation during project preparation.** Section VII of the report has described the public participation and consultation implemented during project preparation.

28. **Future public consultation plan.** Plans for public involvement during construction and operation stages have been developed during project preparation. These plans include public participation in (i) monitoring impacts and mitigation measures during the construction and operation stages; (ii) evaluating environmental and economic benefits and social impacts; and (iii) interviewing the public after the project is completed. These plans will include several types of public involvement, including site visits, workshops, investigation of specific issues,

interviews, and public hearings, as indicated in Table 9. The budget for public consultation is estimated at approximately \$10,000.

Table 9: Public Consultation Plan

Organizer	Format	No. of Times	Subject	Attendees	Budget
Construction Stage					
PPMO	Public consultation & site visit	4 times: 1 time before construction commences and 1 time each year during construction	Adjusting of mitigation measures, if necessary; construction impact; comments and suggestions	Residents adjacent to project sites, representatives of social sectors	\$5,000
PPMO, PMTB	Expert workshop or press conference	As needed based on public consultation	Comments and suggestions on mitigation measures, public opinions	Experts of various sectors, media	\$2,000
Operational Stage					
PMTB, O&M units	Public consultation and site visits	Once in the first year	Effectiveness of mitigation measures, impacts of operation, comments and suggestions	Residents adjacent to project sites, representatives of residents and representatives of social sectors	\$1,500
PMTB, O&M units	Expert workshop or press conference	As needed based on public consultation	Comments and suggestions on operational impacts, public opinions	Experts of various sectors, media	\$1,500
Total budget:					\$10,000
Notes: PPMO = Pu'er Project Management Office; PMTB = Pu'er Municipal Transport Bureau; O&M = operation and maintenance					

G. Grievance Redress Mechanism

29. Public participation, consultation and information disclosure undertaken as part of the local environmental impact assessment process have discussed and addressed major community environmental concerns relating to dust, noise, wastewater and traffic congestion during construction, and traffic noise and vehicle emissions during operation. Continued public participation and consultation has been emphasized as a key component of successful project implementation. As a result of public participation and safeguard assessment carried out during the initial stages of the project, major issues of grievance are not expected. However, unforeseen issues may occur. To address potential issues, a project-specific Grievance Redress Mechanism (GRM) providing effective and transparent channels for lodging and addressing complaints has been defined. The GRM will be established prior to construction of the project components. The GRM is responsive to ADB's SPS (2009) and PRC legislation.

30. **The proposed project GRM.** In consultation with the PPMO, PMTB, PEPB and potentially affected people, it was agreed that the PPMO will establish a complaints center and coordinate the GRM for both environmental and resettlement safeguards. The complaint center will direct all environmental complaints as appropriate to: (i) the contractors; (ii) PMTB; (iii) O&M units. There are multiple entry points to whom the affected people could directly register their complaints. Contact details for the complaints center and the entry points will be publicly disseminated on information boards at construction sites and nearby communities. Multiple

means of using this mechanism, including face-to-face meetings, written complaints, telephone conversations, or e-mail, will be available. In the construction and the operational periods until ADB's project completion report (PCR), the PPMO will report progress to the ADB, this will include reporting complaints and their resolution.

31. Basic steps for resolving complaints are as follows and illustrated in Figure 1:

- Step 1: For environmental problems during the construction stage, the affected person (AP) can register his/her complaint directly with the contractors, or through GRM access points (PPMO complaint center hotline, PMTB, local EPB hotline). Contractors are required to set up a complaint hotline and designate a person in charge of handling complaints, and advertise the hotline number at the main entrance to each construction site, together with the hotline number of the PPMO complaint center. The contractors are required to maintain and update a Complaint Register to document all complaints. The contractors are also required to respond to the complainant in writing within 7 calendar days on their proposed solution and how it will be implemented. If the problem is resolved and the complainant is satisfied with the solution, the GRM ends here. The contractors are required to report complaints received, handled, resolved and unresolved to the PPMO complaint center immediately, and to PMTB and PPMO monthly (through progress reporting).
- Step 2: For environmental issues that cannot be resolved by the contractors, the affected person can take the grievance to PMTB and/or PEPB. On receiving complaints by PMTB or PEPB, the party receiving the complaints must notify the other relevant parties and document the complaint in writing in a Complaint Register. PMTB and PEPB must reply to each complainant in writing within 14 calendar days with the proposed solution and method of implementation. If the issue is resolved and the complainant is satisfied with the solution, PMTB should document the complaint and resolution process in its Complaint Register, with monthly reporting to PPMO.
- Step 3: If the complainant is not satisfied with the proposed solutions in Step 2, he/she can, upon receiving the reply, take the grievance to the PPMO complaints center. Upon receiving the complaint, the center must deal with it within 14 calendar days. Once a complaint is documented and put on file, the PPMO complaints center will immediately notify ADB. After discussing the complaint and potential solutions amongst ADB, PPMO, the LIEC, the complainant and the contractor, PPMO must propose a resolution strategy within 14 calendar days from when the complaint is registered.

32. The tracking and documenting of grievance resolution by the PPMO (through its complaints center) will include the following elements: (i) tracking forms and procedures for gathering information from project personnel and complainant(s); (ii) dedicated staff to update the database routinely; (iii) systems with the capacity to analyze information so as to recognize grievance patterns, that can identify systemic causes of grievances, promote transparency, publicize how complaints are being handled, and periodically evaluate the overall functioning of the mechanism; (iv) processes for informing stakeholders about the status of a case; and (v) procedures to retrieve data for reporting purposes, including the periodic reports to the ADB.

33. The PPMO will record the complaint, investigation, and subsequent actions and report results in the monthly internal Environmental Management Plan reports. In the construction period and the initial operational period covered by loan covenants the PPMO will periodically

report complaints and their resolution to ADB in the quarterly project progress reports and the semi-annual environmental monitoring reports.

H. Cost Estimates

34. Cost estimates for EMP implementation, including mitigation measures, environmental monitoring, compliance monitoring, training and public consultation are summarized in Table 10. Excluded from the costs estimates are infrastructure costs which relate to environment and public health but which are already included in the main civil works contract (e.g. road-side noise barriers). Excluded are also the remuneration costs for environment specialists within PPMO and PMTB, loan implementation environmental consultant, and technical experts on equipment operation and maintenance, which are covered elsewhere in the project budget.

Table 10: EMP Implementation Budget Estimate

EMP Item	Estimated Cost
Mitigation measures	
Construction	\$256,000
Operation	\$23,000
<i>Mitigation measures sub-total:</i>	<i>\$279,000</i>
Environmental monitoring	
Ning'er-Jiangcheng-Longfu Highway	\$228,000
Menglian- Meng'a Highway	\$136,000
Rural roads	\$80,000
<i>Environmental monitoring sub-total:</i>	<i>\$444,000</i>
Compliance monitoring of EMP implementation by ESE	\$485,000
Training	\$12,000
Public consultation	\$10,000
Total	\$1, 230,000

35. PMTB will bear all environmental and compliance monitoring costs during construction and the first year of operation and will ensure the necessary budgets are available for the PEMS and the ESE. Contractors will bear the costs for all mitigation measures during construction, including those specified in the tender and contract documents as well as those to mitigate unforeseen impacts due to their construction activities. The O&M units will bear the costs related to mitigation measures during operation, except the indirect mitigation measures of resettlement and provision of double-glazed windows, which will be borne by PMTB. The project as a whole (through PPMO) will bear the costs for training, for coordinating the Grievance Redress Mechanism (GRM), and the LIEC under contract to PPMO through the loan implementation project management consulting services.

I. Mechanisms for Feedback and Adjustment

36. The EMP is a live document. The need to update and adjust the EMP will be reviewed when there are design changes, changes in construction methods and program, unfavorable environmental monitoring results, inappropriate monitoring locations and ineffective or inadequate mitigation measures. Based on environmental monitoring and reporting systems in place, the PPMO (with the support of the LIEC) shall assess whether further mitigation and monitoring measures are required. PPMO will inform ADB promptly of any changes to the project and needed adjustments to the EMP. The updated EMP will be submitted to ADB for review and approval, and will be disclosed on the project website.

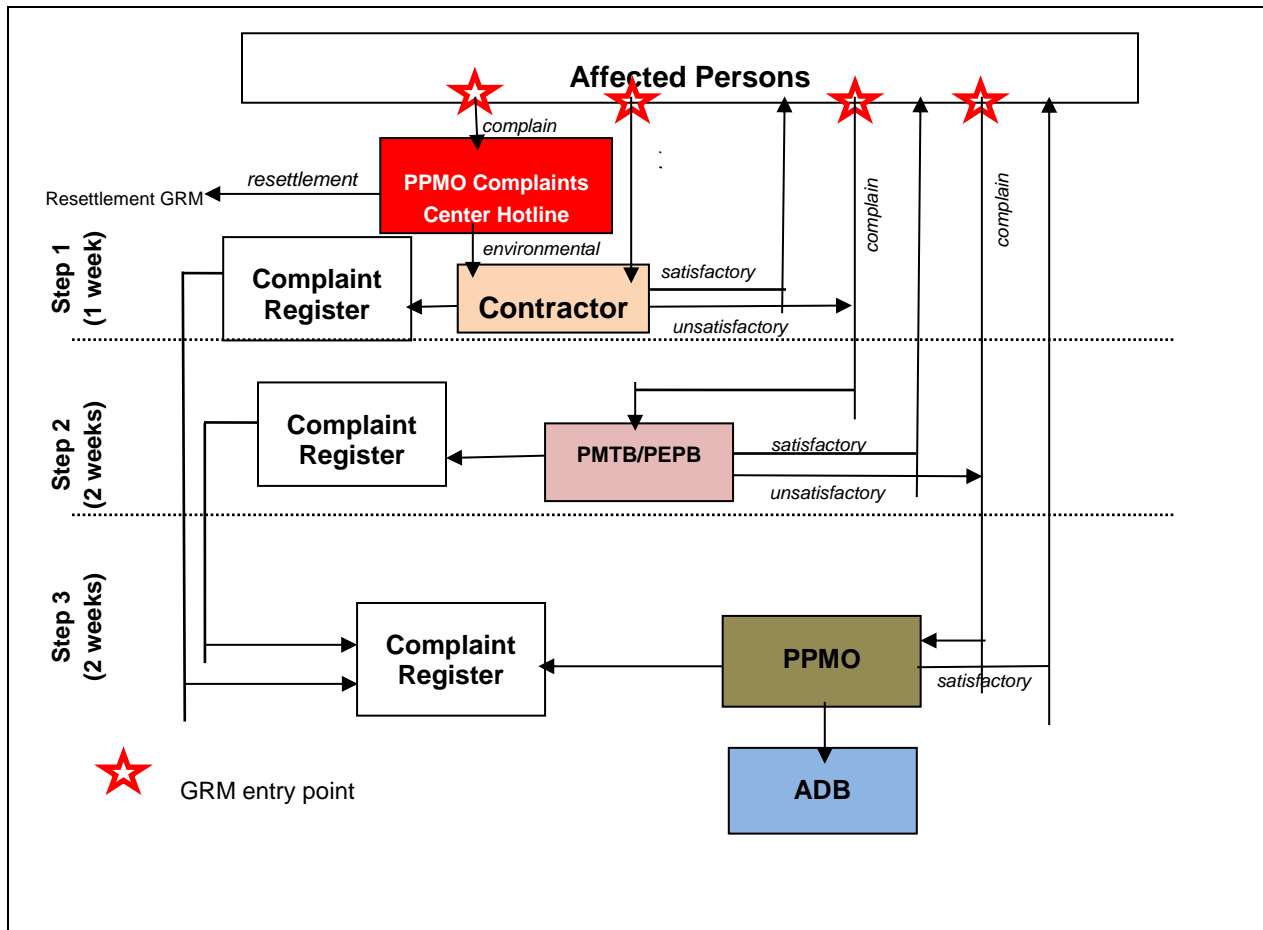


Figure 1: Proposed Grievance Redress Mechanism

Environmental Assessment and Review Framework

June 2014

PRC: Yunnan Pu'er Regional Integrated Road Network Development Project

CURRENCY EQUIVALENTS

(as of 30 November 2013)

Currency Unit	–	yuan (CNY)
CNY1.00	=	\$0.16078
\$1.00	=	CNY6.078

ABBREVIATIONS

ADB	–	Asian Development Bank
CNY	–	Chinese Yuan
CO ₂	–	carbon dioxide
EA	–	Executing Agency
EARF	–	Environmental Assessment and Review Framework
EIA	–	Environmental Impact Assessment
EIR	–	Environmental Impact Report
EIT	–	Environmental Impact Table
EMP	–	Environmental Management Plan
EPB	–	Environmental Protection Bureau
FS	–	feasibility study
FSR	–	feasibility study report
GHG	–	greenhouse gas
GRM	–	grievance redress mechanism
IA	–	Implementing Agency
LDI	–	local design institute
MSW	–	municipal solid waste
NO _x	–	nitrogen oxides
PM ₁₀	–	particulate matter with diameter ≥10 μ
PEPB	–	Pu'er Environmental Protection Bureau
PMO	–	Project Management Office
PPMO	–	Pu'er Project Management Office
TSP	–	total suspended particulates

WEIGHTS AND MEASURES

μ	–	micron
°C	–	degree Centigrade
cm	–	centimeter
dB[A]	–	decibel based on A-weighted measurements
d/a	–	day per annum
h	–	hour
h/d	–	hour per day
ha	–	hectare
kg	–	kilogram
kg/m ³	–	kilogram per cubic meter
km	–	kilometer
km ²	–	square kilometer

KWh	–	kilowatt hour
KWh/a	–	kilowatt hour per annum
Leq	–	equivalent continuous sound pressure level [dB]
m	–	meter
m ²	–	square meter
m ³	–	cubic meter
m ³ /d	–	cubic meter per day
m/s	–	meter per second
m ³ /s	–	cubic meter per second
mg/l	–	milligram per liter
mg/m ³	–	milligram per cubic meter
mm	–	millimeter
mm/a	–	millimeter per annum
t/a	–	ton per annum
t/d	–	ton per day
tCO ₂ e	–	ton of carbon dioxide equivalent

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I. INTRODUCTION

1. The Project, Yunnan Pu'er Regional Integrated Road Network Development Project, includes a rural road component that proposes paving and drainage improvements to 33 rural road sections, a total of 600 km in length. The project is classified by ADB as environment category A. A Project environmental impact assessment (EIA) report including an environmental management plan (EMP) has been prepared that covers all project components including the 33 rural roads. There is the possibility that the final list of rural roads funded by ADB may need to be updated after project approval.

2. As there is some degree of uncertainty over the 33 rural road sections that will be funded, this Environmental Assessment and Review Framework (EARF) has been prepared to present the agreed processes for updating the EIA and EMP in the event of change as required by ADB operational procedures for Safeguard Policy Statement (SPS, 2009).

II. RESPONSIBILITIES AND AUTHORITIES

3. The Pu'er Project Management Office (PPMO) is responsible for (i) the selection of rural roads to be added to the list, (ii) the appointment of a domestic environmental design institute to prepare the EIT for these rural roads for submission to and approval by the PEPB, and (iii) the preparation of new environmental assessment reports for replacement rural roads for submission to and approval by the ADB.

4. The new environmental assessment reports shall be submitted to ADB for review, approval and disclosure according to operational procedures as described in SPS (2009).

III. CRITERIA FOR RURAL ROAD SELECTION

5. The Project criteria for selecting rural roads are:

- (i) that the road should connect multiple village groups and administrative villages,
- (ii) that the road should connect to a national or provincial highway or an important county road,
- (iii) that there should be a balance between the 9 counties and 1 district, and
- (iv) that there should be no dead-end roads (roads should not end in the middle of nowhere, but should connect to higher level roads on both sides or end at an administrative village).

6. Rural road selection should avoid significant environmental impacts where possible. For the rural roads that have been appraised works are restricted to paving and drainage improvement and it has been agreed that replacement roads will only be considered if works are restricted to these activities. Rural roads selected should avoid sensitive habitats such as wetland and drinking water sources and protected areas, where possible.

IV. PROCEDURES FOR ENVIRONMENTAL IMPACT ASSESSMENT FOR NEWLY SELECTED RURAL ROADS

A. Key Environmental Impacts and Risks

7. If there is a need to assess new subprojects for the rural road component it will be necessary to assess proposed replacement roads to determine key environmental risks and impacts that need to be addressed in the environmental assessment reports, these may include the following:

- (i) Traffic forecast: although traffic forecast is not environmental, yet it forms the basis for predicting future traffic emissions and traffic noise. Therefore, traffic forecast up to a design horizon of 15 to 20 years must be provided by the feasibility study, so that the environmental assessment team can use the figures to predict future traffic emissions and noise, and propose appropriate mitigation measures if needed.
- (ii) Environmental protection targets: sensitive receptors that could potentially be affected by the construction and operation of the project roads. Such targets could include residential households, schools and medical establishments that are sensitive to air quality and noise pollution; protected flora and fauna, and protected areas such as nature reserves and other conservation areas; water bodies; and physical cultural resources.
- (iii) Construction phase air quality: asphalt or concrete batching plants are the main air pollution sources during road construction. Provide information or design requirements on their air pollution control requirements, such as equipped with dust removal bags, etc. Also provide specifications on where they can or cannot be sited, based on information on the locations of air sensitive targets such as schools, hospitals, temples and residential areas.
- (iv) Traffic noise during the operation phase: based on the traffic forecast, calculate the traffic noise levels at the identified noise sensitive targets such as schools, hospitals, temples and residential areas for the:
 - (a) condition at road opening,
 - (b) intermediate condition (mid-way between now and the design horizon), and
 - (c) long term condition (at the design horizon).
 Mitigation measures, such as double-glazed windows or air-conditioning, should be provided for sensitive targets impacted by traffic noise exceedance.
- (v) Greenhouse gas (GHG) emission during the operation phase: based on the types of vehicles travelling on the project roads, distances travelled and types of fuel consumed, calculate the total amount of carbon dioxide emitted from traffic travelling on all project roads each year at the design horizon.
- (vi) Climate change impacts: Opportunities to improve drainage and stabilise slopes should be considered to increase climate resilience.

B. Country Environmental Assessment and Review Procedures

8. Similar to ADB, the PRC has procedures to categorize the environmental assessment requirements for different types of projects based on their potential environmental impacts. For projects having substantial impacts on the environment (which is similar to ADB's category A projects), the PRC requires the preparation, submission and approval of a project Environmental Impact Report (EIR). For projects with less substantial environmental impacts on the environment (which is similar to ADB's category B projects), the PRC requires the preparation, submission and approval of a project Environmental Impact Table (EIT). For projects with minimal environmental impacts on the environment (which is similar to ADB's category C projects), the PRC requires the preparation, submission and approval of a project Environmental Impact Registration Form.

9. An EIT for the 33 proposed rural roads was prepared, which was approved by the Pu'er Environmental Protection Bureau (PEPB) in March 2014. Should new rural roads be added to the list, an EIT will need to be prepared and submitted to the PEPB for domestic approval.

C. Inception of the Environmental Impact Assessment Study for ADB

10. Selection of an appropriately qualified domestic design institute to conduct the environmental assessment study and prepare the report is of utmost importance. The degree of details required by ADB in environmental assessment reports is much more than that required locally. An environmental design institute with international funded investment project experience is preferred. If not available, the design institute should at least have adequate experience, staffing and capability to produce all the information mentioned in this report.

11. The selection of the Feasibility Study (FS) design institute is also important, because it will have a direct bearing on the quality of the environmental assessment report. Again, ADB requires much more details in the FS than what is required locally. In fact, ADB's 'FS' requirement is approximately equivalent to the completion of preliminary design in the PRC. Therefore, the FS design institute for the rural roads must have the experience, staffing, capability and willingness to complete the preliminary design of the rural road improvement in order to meet ADB requirements. An institute with general consulting experience will not be able to meet ADB requirements.

12. Upon start of the environmental assessment study, the environmental assessment team should complete the following tasks as soon as possible:

- (i) Site visit: The environmental assessment team should visit the proposed rural roads as soon as possible to get an understanding of the environmental conditions in the vicinity. During the site visit, all targets sensitive to air, noise and water pollution from the project must be identified and documented. Sensitive targets include residential areas, hospitals, schools, temples, cultural heritage sites, protected areas on conservation and ecology, national parks and nature reserves, water gathering grounds, and water bodies such as rivers and streams. These should be photographed and with their relative distances to the project sites measured and documented.
- (ii) Baseline monitoring: Based on the site visit, the environmental assessment team should determine whether there is a need to conduct baseline monitoring. Such determination should be based on the existing traffic conditions on the proposed rural roads, the number and locations of environmental protection targets especially schools and medical clinics, the presence of ecologically sensitive or protected areas, and the presence of surface or ground drinking water sources within the project area of influence. Baseline monitoring should be conducted if needed.
- (iii) Public consultation: ADB requires two rounds of public consultation. The first round should be conducted at environmental assessment inception. The purpose of the first round is to describe the project to the stakeholders and to solicit their views, concerns and suggestions so that these could be adequately considered in the environmental assessment study. It should be conducted as soon as the environmental assessment study is started and should be in form of a public forum. More details on public consultation are provided in later sections.

D. Procedures for Preparing the Environmental Assessment Report

13. The structure of the addendum environmental assessment report and information required under each chapter is described below.

Chapter 1 – Executive Summary

14. This chapter describes concisely the critical facts, significant findings, and recommended actions. The following information should be included in this Chapter. Where appropriate, the environmental assessment report for the substitute rural roads could make reference to information already presented in the EIA and EMP for the whole project (the Project EIA report).

- (i) Summarize the rationale for selecting these rural roads and their locations;
- (ii) Summarize the potential environmental benefits and impacts during construction and operation phases;
- (iii) Summarize information disclosure and public consultation activities undertaken during environmental assessment preparation; and
- (iv) Summarize the recommended actions in mitigating potential impacts and EMP implementation.

Chapter 2 – Policy, Legal, and Administrative Framework

15. This chapter discusses the national and local legal and institutional framework within which the environmental assessment is carried out, including applicable environmental standards. It also identifies project-relevant international environmental agreements to which the country is a party. This chapter can make reference to the same chapter in the Project EIA report.

Chapter 3 – Description of the Project

16. This chapter describes the proposed rural roads. The following information should be provided in this chapter:

- (i) Description of rationale in selecting these rural roads;
- (ii) Locations, lengths and engineering design features for the proposed rural roads;
- (iii) Existing traffic volume and projected traffic demand forecast;
- (iv) Permanent and temporary land take areas;
- (v) Earth cut and earth fill balance;
- (vi) Construction methods and duration, e.g. road paving, road drainage, etc.; and
- (vii) Drawings and maps showing the rural road locations and their project area of influence (assessment area).

Chapter 4 – Description of the Environment

17. Chapter 3 describes relevant physical, biological, and socioeconomic conditions within the project's area of influence (assessment area). The following information should be provided in this chapter where appropriate:

- (i) Description of the project sites (existing land use on permanent and temporary land take areas);

- (ii) Description of air quality and noise sensitive receptors (locations, distances to the road red line, number of households, types (e.g. school, residential, etc.);
- (iii) Description of water bodies in the assessment area, their planned function and water quality;
- (iv) Description of ecological resources that are under international, national or provincial protection; presence or absence of protected areas within the assessment area;
- (v) Description of presence or absence of physical cultural resources; and
- (vi) Information on the socio-economic profiles of the counties where these rural roads are located.

Chapter 5 – Anticipated Environmental Impacts and Mitigation Measures

18. Chapter 5 starts with describing the positive impacts and environmental benefits of the project, followed by information on environmental impacts during construction and operation, mitigation measures needed to reduce such impacts, and resettlement. The following information should be provided in this chapter:

- (i) Positive impacts and environmental benefits: Describe positive impacts and environmental benefits of the rural roads. The description should be both qualitative and quantitative.
- (ii) Impact and mitigation measures during the construction phase: Provide information on the assessment results on air quality, noise, water (surface and ground) quality, waste, ecology and cultural heritage during the construction phase. Information to address the key environmental issues during construction of the rural roads must be included here, and the information should be quantitative as far as possible. The following should be noted:
 - (a) the assessment results should be quantitative,
 - (b) compare these results with the environmental standards in Chapter 2 to see if they comply with or exceed the relevant standards,
 - (c) if there is exceedance, propose mitigation measures that will reduce the environmental impact to acceptable levels, and
 - (d) also list these mitigation measures in the environmental management plan (EMP).
- (iii) Resettlement: Provide information on
 - (a) area of land to be permanently acquired by the project,
 - (b) area of land to be temporarily occupied by the project,
 - (c) how much of the land to be permanently acquired is cultivated land,
 - (d) area of buildings to be demolished, and
 - (e) number of persons to be resettled due to the project.

The land to be permanently acquired represents resources that will be permanently lost and that cannot be replaced.
- (iv) Impact and mitigation measures during the operation phase: Provide information on the assessment results on air quality, noise, water (surface and ground) quality, waste, ecology and cultural heritage during the operation phase. Information to address the key environmental issues during operation of the rural roads must be included here, and the information should be quantitative as far as possible. The following should be noted:
 - (a) the assessment results should be quantitative,
 - (b) compare these results with the environmental standards to see if they comply with or exceed the relevant standards,

- (c) if there is exceedance, propose mitigation measures that will reduce the environmental impact to acceptable levels,
 - (d) also list these mitigation measures in the environmental management plan (EMP),
 - (e) assess impact from demand on resources as well, e.g. the quantity of ground water extracted by the water supply project and assess such impact due to increased demand on this resource, and
 - (f) also describe pollutant reductions during the operation phase, e.g., the amount of BOD₅ and COD_{Cr} reduced from discharging into the river due to the provision of WWTP by the project, the number of small boiler rooms demolished which will result in the reduction of how many tons of SO₂ emission per year due to the provision of district heating, etc.
- (v) Calculate the total annual carbon dioxide emission from traffic traveling on all the proposed rural roads in the long term design year, to assess whether the ADB threshold of 100,000 t/a carbon dioxide is exceeded.

Chapter 6 – Analysis of Alternatives

19. Chapter 6 various options considered for the rural roads, including the “no project” (no improvement) option. Examples of options that could be evaluated could include road paving, road drainage design, slope stabilization design, etc.

Chapter 7 – Information Disclosure, Consultation, and Participation

20. Chapter 7 describes the public consultations conducted during the environmental assessment study. ADB requires that the consultation must be meaningful and prefers it to be conducted in form of a discussion forum. Information to be provided in this chapter includes:

- (i) the dates and locations of the public consultation,
- (ii) the number and make up (e.g. government representatives, village leaders, private citizens, etc) of participants questions, concerns, ideas,
- (iii) suggestions raised by the participants,
- (iv) how are the questions, concerns, ideas and suggestions raised by the participants addressed in the environmental assessment study and report, and
- (v) the planned information disclosure measures (including the type of information to be disseminated and the method of dissemination) and the process for carrying out consultation with affected people and facilitating their participation during project implementation.

Chapter 8 – Grievance Redress Mechanism

21. This chapter describes the grievance redress framework (both informal and formal channels), setting out the time frame and mechanisms for resolving complaints about environmental performance. This report could make reference to the grievance redress mechanism (GRM) described in the Project EIA and EMP.

Chapter 9 – Environmental Management Plan

22. An Environmental Management Plan (EMP) has to be prepared as an Appendix to the environmental assessment report. The requirements of the EMP are described in later sections.

Chapter 9 in the environmental assessment report summarizes the key components of the EMP, which include:

- (i) a summary of environmental impacts and their respective mitigation measures,
- (ii) a summary of the environmental monitoring plan,
- (iii) public consultation needs during the construction and operation phases,
- (v) responsibilities of various parties during the implementation of the EMP,
- (vi) a project specific GRM, and
- (v) cost estimates for implementing the EMP.

Chapter 10 – Conclusions

23. Chapter 10 summarizes the findings of the environmental assessment study. It should include information on:

- (i) project benefits including both socio-economic and environmental benefits,
- (ii) summary of significant environmental impacts during the construction and operation phases, and their respective mitigation measures,
- (iii) the use of irreplaceable resources such as the area of land and associated habitats and resources that will be permanently lost due to permanent land acquisition, and
- (iv) highlights of the environmental management plan including environmental monitoring requirements.

E. Procedures for Preparing the Environmental Management Plan

24. The EMP should include 5 main items. These are (i) environmental mitigation measures, (ii) environmental monitoring, (iii) public consultation, (iv) institutional strengthening and training, and (v) project GRM. These items are described below.

25. The EMP should include a table listing the implementation of the mitigation measures (see Table 2 of the project EMP). All mitigation measures for the rural roads mentioned in the environmental assessment report should be listed in this table, covering the detail design, construction and operation phases. It is important to include the detail design phase because some mitigation measures such as drainage and slope stability will become part of the road infrastructure and will have to be designed and included in the specifications for tendering. It is important to clearly state the responsibilities, on who is responsible for implementation and who for supervision. Cost estimates also need to be provided. To avoid double counting of costs, costs for items that will become a permanent part of the facility (such as road side landscaping, road drainage etc) and for items that are already included in the daily operational costs of the project should not be included in this table, since these should already have been included in the overall project cost. Costs to be included in the table should be mostly temporary measures during the construction stage. Examples are the watering of construction site and haul roads to reduce dust, temporary noise barriers around noisy machines, sedimentation basins and perimeter drainage ditch to control muddy site runoff, temporary chemical toilets for construction workers etc.

26. Based on results of the environmental impact assessment and the locations of sensitive targets such as residential areas, hospitals, schools, temples, rivers, etc, an environmental monitoring plan should be compiled for the construction and operation phases (see Table 5 of the project EMP). The plan should be impact and location specific. For example, construction dust and noise monitoring at environmental protection target locations might only be needed

when construction activities are within 500 m of the targets. The plan should also be very specific on the parameters to be monitored, the total number of monitoring locations, the exact locations (=location and name of each sensitive target) where monitoring is to be carried out, and the frequency and duration of monitoring. The table should also list clearly who is responsible for doing the monitoring and who is responsible for supervision. Cost estimates should be provided for undertaking such monitoring. For the operation phase, cost estimates should be provided for the first year, and the need to continue monitoring after the first year should be reviewed at the end of the first year.

27. The need for public consultation should be addressed in the EMP, with the numbers and types of public consultation during the construction and operation phases listed (see Table 9 of the project EMP). This is an important public relations means to get the stakeholders involved and informed in the project. Cost estimates for conducting such consultation should also be provided.

28. Institutional strengthening and training of the local PMO, EA, IA and other parties involved in the project is important in ensuring that they have the capacity to implement the EMP (see Table 8 of the project EMP). The environmental assessment report should review and determine if further training will be needed, such as for the new O&M units for the substitute rural roads.

29. A GRM for the project should be included in the EMP. This report could make reference to the GRM already established for the project as described in the approved Project EIA and EMP.

F. Report Review and Submission

30. The PPMO should first review the environmental assessment report. Their review criteria will be based on adequacy of information requirements described in this report. If the environmental assessment reports are deemed to fulfil the information requirements described in this EARF, the PPMO will submit to ADB for review, approval and disclosure.

31. ADB will update the approved Project EIA/EMP with the information from the new environmental assessment report. This will be done by including an addendum cover sheet explaining the changes and their implications for implementation and the new environmental assessment report for the replacement road sections will be included as a new appendix in the updated version of the Project EIA/EMP. The updated Project EIA/EMP will be disclosed on the ADB website for a period of 120 days prior to approval of the change in scope.

G. Staffing Requirements and Budget

32. The EAs will bear the costs for preparing the new environmental assessment studies and reports. The EMP will itemize the staffing requirements, institutional strengthening and training needs, implementation of the environmental mitigation measures and environmental monitoring. The EAs will bear all these costs.