



Environmental Monitoring Report

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March 2012

PRC: Xinjiang Urban Transport and Environmental Improvement Project

Prepared by the Project Management Office of Xinjiang Uygur Autonomous Region Government

For Xinjiang Uygur Autonomous Region Government and the city governments of Altay, Changji, Hami, Kuytun, and Turpan

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Asian Development Bank.

**Xinjiang Urban Transport and Environmental
Improvement Project
ADB Loan: 2526-PRC**

**1st External Environment
Monitoring Report
-Altay City**

March 2012

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1. ASSIGNMENT & MONITORING PURPOSE

According to the environment management plan and relevant requirements specified in *the SEIA of Xinjiang Urban Transport and Environment Improvement Project* under Asian Development Bank (ADB) loan, routine monitoring is carried out regarding to the environmental impact during the period of construction and commissioning. In line with: (i) the target to mitigate the negative impact of the project; (ii) the relevant specifications and standards of PRC as well as the safeguard policies of ADB; and (iii) the environmental impact monitoring and data analysis during the period of construction and commissioning, it is proposed to evaluate: (i) whether the effects of the environment protection measures meet the requirements of relevant laws and regulations; (ii) the development tendency of environmental impact; and (iii) the overall effect of the environment management plan (EMP). Upon undertaking the assignment of external environment monitoring of Altay Urban Transport and Environment Improvement Project, we have carried out field survey as well as site monitoring in December, 2011, and prepare *the External Environment Monitoring Report about Xinjiang Altay Urban Transport and Environment Improvement Project (NO.1)*

2. PROJECT INTRODUCTION

2.1 Background

Being located in the northern Xinjiang, Altay has common boundary with Mongolia, Russia and Kazakhstan, and enjoys unique geographical advantages. Thus Altay has played an irreplaceable role in regional cooperation between China and Central Asia countries. As a result of its superior geographic conditions and convenient channels to abroad, Altay has become the foreland of China opening to the west. The State Council had already approved opening four local ports, which include the second biggest port to Mongolia (Takeshenken port), Hongshanzui port, Jimunai port to Kazakhstan and Aheitubieke port. As the center of the region, it also has geographical advantages in international trade and cooperation of international technology & economy. It is fatal for Altay city to seize opportunities to accelerate environment infrastructure construction under the National Western Development Policy and to establish good investment environment so as to open to the outside world in wider range, exploit preponderant resources, develop local economy and improve people's livelihoods.

With the implementation of Xinjiang 's strategy to open to the west, Altay has already become one of the biggest border open cities in Western China. However, its urban infrastructures are seriously out-of-dated and fail to meet the need of urban development compared with the sustainable growth of urban economy. So, the primary task to accelerate economic growth of Altay is to speed up construction of urban infrastructures. Based on these, Altay will improve urban integrated service functions, promote urban grade, stabilize urban image foundation, create favorable economic and social development space as well as harmonious living environment. In the light of the aim to construct medium cities, Altay will finally realize harmonious & unified development of urban economic benefits, social benefits and environmental benefits.

Currently the major problems exist in urban road network of Altay as follows:

1. The road network in old town was naturally formed without systematic planning, and there is still no smooth loop system of trunk road. The road span is unreasonable because of so many branch roads, T-shaped roads and broken end roads.

2. There are quite a few sandy soil roads at present with low hardening rate, which is no good for the improvements of urban environment image.

3. Unreasonable arrangement of road cross section, ambiguous road functions and lack of traffic facilities may bring out traffic disturbance.

4. The elevation of partial roads is higher than both roadsides, which will be difficult to arrange building facade and drain on both roadsides.

5. Due to the financial limit, there are many disadvantages about roads built previously, such as low structural design standard, inferior carrying capacity of roadbed, low pavement design standard. All of these decrease traffic capacity to a large extent, weaken ability to deal with damage and lead to serious breakage and ageing phenomenon of road surface.

6. There is lack of ancillary facilities such as road lighting system, green belt, parking lot and traffic facilities. What's more, municipal pipeline facilities are not well coordinated with each other.

2.2 Overview of the Project

The project includes 19 urban roads construction in Altay, and relevant ancillary work such as green belt and roadway illumination, road maintenance and environmental sanitary facilities. The 19 roads with total length of 28.02 km include 3 new roads (West Ring Road, Qiaodong Road and South Tuanjie Road) with a total length of 1590.35 meters, 10 expansion roads (Hongdun Road, Yuanyichang Road, North Jiefang Road, East Backstreet, Beier Road, Lanjing Road, East Backstreet Road, NO.1-10 branch road, Qianjin Street and Binhe Road) with a total length of 16986.68 meters, 6 upgrading roads

(Gongyuan Road, Jinshan Road, North Jinshan Road, Wenhua Road, South Tuanjie Road and North Tuanjie Road) with a total length of 9443.32 meters and 5 new bridges. The details are shown in table 2-1.

Table 2-1 List of Construction Content

Name of The Project	Construction Content	
Road Works	New Roads	3 new roads (West Ring Road, Qiaodong Road and South Tuanjie Road) with a total length of 1590.35 meters
	Expansion Roads	10 expansion roads (Hongdun Road, Yuanyichang Road, North Jiefang Road, East Backstreet, Beier Road, Lanjing Road, East Backstreet Road, NO.1-10 branch road, Qianjin Street and Binhe Road) with a total length of 16986.68 meters
	Upgrading Roads	6 rebuilding roads (Gongyuan Road, Jinshan Road, North Jinshan Road, Wenhua Road, South Tuanjie Road and North Tuanjie Road) with a total length of 9443.32 meters,
ancillary Works	Bridges	5 new bridges (1 at the crossing between Hongdun Road and Yinshui Road, 2 near the crossing between Beier Road and West Ring Road, 1 near the stadium of Lanjing Road, 1 at Gongyuan Road) with a total length of 281 meters
	Environmental Sanitary Work	10 public toilets, 20 garbage collection rooms, 844 waste bins, 111 garbage bins, 1 garbage compression car, 1 motorsweeper, 2 snow-clearing trucks

2.3 Institutional Framework

The organization charts of the project are shown as follows:

Fig.2-1 Organizational Figure of ADB Loan Project in Altay

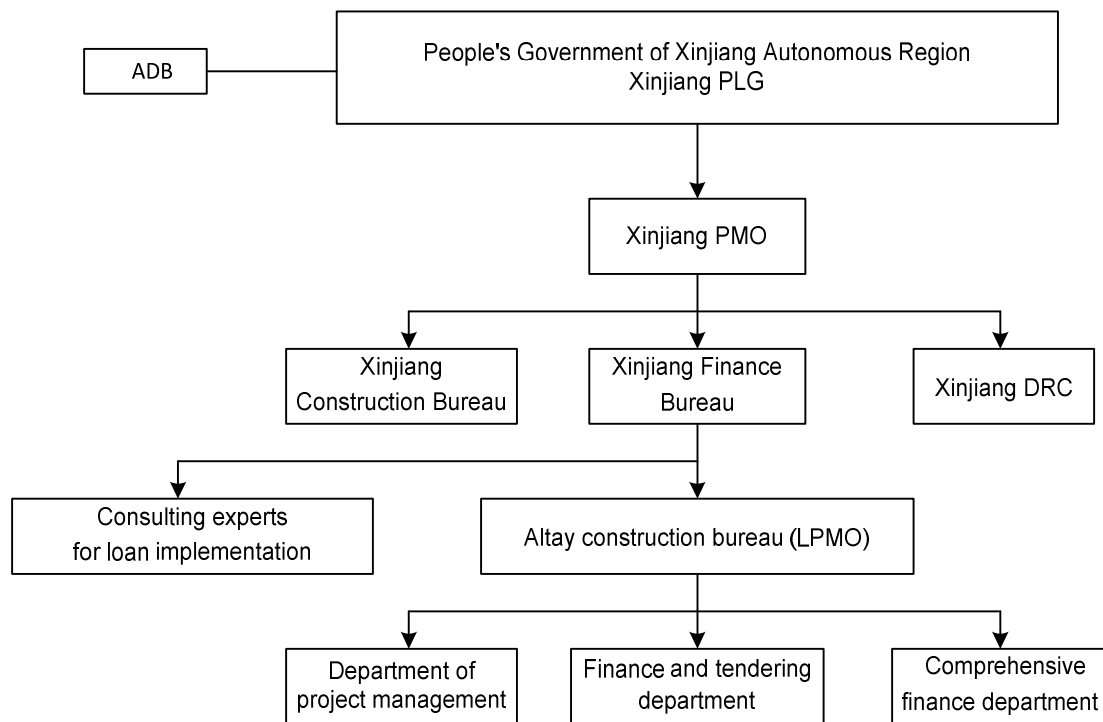
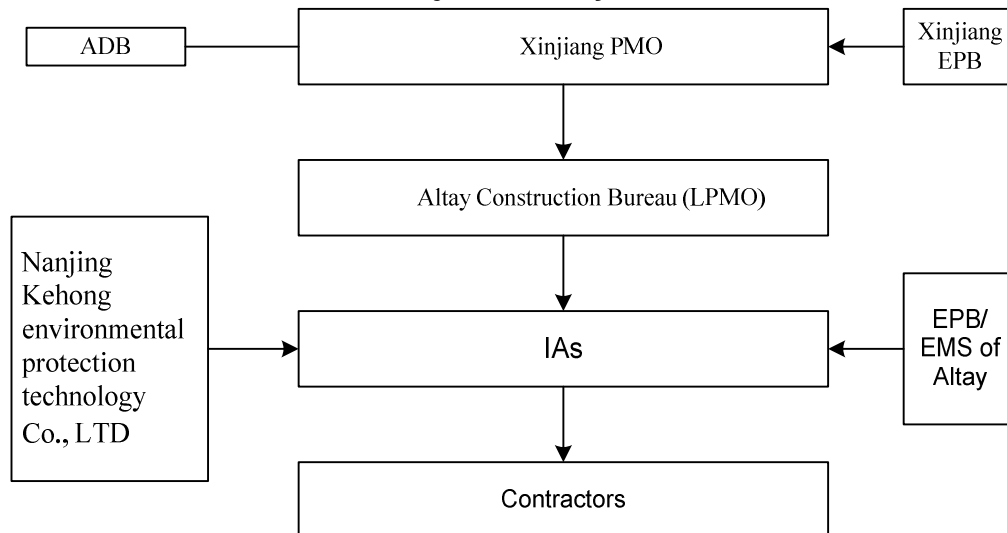


Fig.2-2 Organizational Figure of Environment Management of ADB Loan Project in Altay



2.4 Project Progress

Current schedule of Altay Environment Improvement Project is shown in table 2-2 and 2-3 (By December, 2011)

Table 2-2 Current Schedule of The Project (By December 2011)

NO.	Sub-project	Total investment by Dec,2011	Works completed by Dec,2011	Completed (%)	Planned (%)	To be finished in the first half year of 2012
1	Altay Environment Improvement Project under ADB loan	RMB 120,000,000	construction of road, bridge, environmental sanitary, road maintenance facilities, street lighting and sidewalks	65%	65%	Complete 25% of total investment, including road, bridge, environmental sanitary, road maintenance facilities, street lighting and sidewalks

Table 2-3 Current Work Schedule of All Contracts

NO.	Contract Packages	Contents	Start-End time	Progress
1	A1	Civil works and lighting facilities in Gongyuan Road, Jinshan Road, North Jinshan Road, Wenhua Road, Tuanjie Road, North Tuanjie Road	2011 -2012.8	75% in total
2	A2	Civil works and lighting facilities in 110 branch road, Qianjin Road, Yuanyichang Road, Beier Road, West Ring Road, Qiaodong Road	2010.5 -2012.8	76%
3	A3	Civil works and lighting facilities in Hongdun Road, South Tuanjie Road, North Jiefang Road, East Backstreet, East Backstreet Road	2010.5 -2012.8	50%
4	A4	Binhe Road, Lanjing Road and other ancillary facilities	2010.5 -2012.8	45%
5	A5	Bridges and other ancillary facilities	2010.5 -2012.9 (under construction now)	75%
6	B1	Street lighting	2011.8 -2012.8 (supply and installation)	70%
7	B2	Road maintenance and environmental sanitary facilities	2012.8(supply)	85%
8	D2	Public toilets	Plan:2012.4-2012.8	0

3. IMPLEMENTATION OF ENVIRONMENT MANAGEMENT MEASURES

3.1 Purpose of Environmental Management

Environmental management is carried out for all the components to prevent any environmental pollution during construction and operation period, and to minimize the negative impact on environment during the implementation of this project. Eventually the aim to improve the urban environment of Altay City will be achieved.

3.2 Environment Management Measures

According to the requirements in the approved SEIA and EIA, the following table 3-1 shows the detailed environment management measures taken by each component.

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Table 3-1 Environment Management Measures

Project Period	Subject	Environmental Impact	Mitigation Measures and Management Arrangements
Construction Period	Water	Construction wastewater and domestic wastewater from workers	There is a wastewater sedimentation tank within the construction site, by which construction wastewater can be cyclic utilized after precipitation treatment. Also a simple septic tank is built, and domestic wastewater will be discharged into the pipeline system after being treated in the septic tank and later be treated in waste water treatment plant.
	Air	Construction and transportation dust	The construction site is enclosed. The dusty roads are sprayed with water. Covering measures or closed vehicles are used for transportation. Transportation routes are carefully selected and transport vehicles are monitored to control its speed. Construction materials are covered and sprayed with water. The stacking time of construction materials on site is minimized.
		Exhaust pollution due to construction and transportation vehicles	Excellent maintenance to make the exhaust discharged by automobiles and machineries meet the standards.
	Noise	Noise from the construction equipments and transportation vehicles	Construction equipments are well maintained and reasonably operated to minimize mechanical noise. Construction time is reasonably arranged and is as far as possible arranged during the day and strictly prohibited during 0:00-8:00 am. Temporary sound fence will be built if necessary. Large transport vehicles should keep away from residential area by carefully selecting reasonable routines. Sound barriers should be built at some sensitive points to minimize the influence of traffic noise.
	Solid waste	Construction spoils and waste	Construction waste is divided into utilizable and useless waste. The utilizable part will be recycled while useless part will be put together and sent to refuse landfill.
	Ecology	Vegetation and site recovery	(1)Vegetation along the whole routes will be specially designed by professional institutes. Good indigenous tree and grass will account for a large proportion during this process, while some other fine tree species and grass seeds will be introduced too. Staggered distribution of various kinds of trees will be taken into consideration when making overall arrangement in order to increase the diversity of floristic around gallery area. The disease-resistant ability of those plants and the stability of the gallery will be strengthened. (2)Land leveling of each site is needed after having borrowed soil .Afterwards they can be planted trees on or taken as agricultural land. The surface soil of each earth fetching area will be collected to be used when land reclamation. (3)Temporary construction roads and sites will restore to their original function as cultivated land or vegetation region.

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Project Period	Subject	Environmental Impact	Mitigation Measures and Management Arrangements
Operation Period	Atmosphere	Exhaust pollution from vehicles	It is our suggestion that strategies to control vehicle exhaust should be drawn up by Altay government as soon as possible to efficiently control urban motor vehicle exhaust.
	Water	Initial rain	(1)Surface runoff of initial rain will be lead to both sides of the road into urban water pipe system, and then flow into urban waste water treatment plant. (2)Instead of deicing salt, artificial or mechanical cleaning methods are suggested in order to avoid environmental pollution. (3)Make sure bridges in use are timely cleaned to prevent rubbish from dropping into the river.
	Noise	Noise from vehicles	(1)Abate vehicle noise; establish and improve road & traffic management system; raise the effluent standard of motor vehicle noise. Monitor motor vehicle noise regularly and do compulsory maintenance to those cars that exceed standard. Only those whose noise reaches the standard can be driven on the road, and others with larger noise will be phased out. (2)The most direct and effective measure to reduce road traffic noise is to decrease the noise level of each vehicle gradually. Muffler with high-performance should be installed to reduce vehicle exhaust noise. Traffic speed should be strictly limited, and over-speed at night is especially forbidden. Road maintaining should be paid special attention, and damaged pavement should be repaired in time. Vegetation on both sides of the road should be strengthened, especially at those sensitive points to acoustic environment such as schools and hospitals. (3)Regular detection should be done to those noise-sensitive areas such as schools, and necessary precautionary measures, such as setting up sound barriers, prohibiting whistle, should be taken if the noise exceeds the standard in order to prevent school life of teachers and students from being affected. It is prohibited for vehicles in this project to whistle at those environmentally sensitive points along the roads such as No.3 regional high school, regional vocational school, science & education school and No.2 middle school, and it is also a need for those vehicles to reduce speed to avoid traffic accidents.
	Ecology	Vegetation restoration, Road afforesting, Landscape coordination	(1)Vegetation restoration and road afforesting should be strengthened continuously during the operation period, and sections along roads need to be afforested to further improve the function of roads as urban landscape. (2)The road ancillary facilities should be always kept clean, which will enhance the coordination between these facilities and surrounding landscape.

3.3 Compliance status of loan covenant and institutional development

1. Project implementation unit has strictly followed all applicable national and local environmental laws and regulations, ADB's Environmental Policy (2002), and other laws, regulations and standards of the state, Xinjiang and local government for environmental protection, health, labor and occupational safety, to construct, operate, maintain and monitor project facilities, execute project design and construction contract, operation guiding principle and all environmental alleviation and monitoring measures as detailed in the approved environmental impact assessment report, formulated and implemented environmental monitoring and environmental management measures.

2. Training and capacity development: in order to properly implement this ADB Project, Altay City has established corresponding sub-project office, with full-time member to be responsible for environmental affairs of the project, and worked out relevant management system. During Nov. 3 to 5, 2009, ADB Beijing Office offered business training of environmental protection for Xinjiang Project, making project management personnel of Xinjiang at various levels further understand and get familiar with relevant provisions and execution procedures of ADB loan environmental protection policy and improve business quality. In Oct. 2010 Xinjiang Project Office organized personnel of sub-project areas to attend the two-and-a-half-day "Symposium for Best Practice in Sustainable Development of Asian-Pacific Cities" held in Shanghai by ADB East Asia Bureau and the School of Architecture and Urban Planning, Tongji University, carry out exchange of knowledge about sewage and sludge treatment, energy efficiency, urban planning case and urban management, and pay a visit to Zhujiajiao Town, Shanghai reputed as one of best planning cases, to the sewage control project Phase II of Shanghai environmental project with ADB loan, and to sub-project of Bailonggang sludge treatment

project. In Jan. 2011 Xinjiang Project Office organized all sub-project units to have training in Urumqi about environmental monitoring in ADB loan project .

4. ENVIRONMENT PROTECTION TARGET

According to environment management plan of Altay urban transport and environment improvement project under ADB loan, external environment monitoring is conducted regarding to the environmental impact factors (such as dust, noise) during construction period. In this project the environment protection targets related to the environment monitoring are mainly as follows:

Table 4-1 List of Environment Protection Targets

No.	Environmental Factors	Roads	Environment Protection Targets	Applied Standard
1	Atmosphere	Qiaodong Road	Kelanhe vacation village	GB3095-1996 II
		South Tuanjie Road	Xinjiang Altay animal husbandry and veterinary vocational school	GB3095-1996 II
		North Jinshan Road	No.1 high school of Altay	GB3095-1996 II
		South Jinshan Road	No.3 high school of Altay	GB3095-1996 II
		Gongyuan Road	Hump scenic spot	GB3095-1996 I
			Health school of Altay	GB3095-1996 II
			kindergarten	GB3095-1996 II
		Tuanjie Road	Xiehe hospital	GB3095-1996 II
		Wenhua Road	No.1 middle school of Altay	GB3095-1996 II
		Hongdun Road	Vocational school of Altay	GB3095-1996 II
			No.2 middle school of Altay	GB3095-1996 II
			Science and education high school of Altay	GB3095-1996 II
		Beier Road	mosque	GB3095-1996 II
		Middle of Beier Road	Graveyard of minority	GB3095-1996 II
		Beier Road	No.3 middle school of Altay	GB3095-1996 II
		Yuanyichang Road	mosque	GB3095-1996 II
2	Noise	Qiaodong Road	Kelanhe vacation village	GB3096-2008 Class- I
		South Tuanjie Road	Xinjiang Altay animal husbandry and veterinary vocational school	GB3096-2008 Class- II
		North Jinshan Road	No.1 high school of Altay	GB3096-2008 Class- II
		South Jinshan Road	No.3 high school of Altay	GB3096-2008 Class- II

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No.	Environmental Factors	Roads	Environment Protection Targets	Applied Standard
		Gongyuan Road	Hump scenic spot	GB3096-2008 Class- I
			Health school of Altay	GB3096-2008 Class- II
			kindergarten	GB3096-2008 Class- II
		Tuanjie Road	Xiehe hospital	GB3096-2008 Class- II
		Wenhua Road	No.1 middle school of Altay	GB3096-2008 Class- II
		Hongdun Road	Vocational school of Altay	GB3096-2008 Class- II
			No.2 middle school of Altay	GB3096-2008 Class- II
			Science and education high school of Altay	GB3096-2008 Class- II
		Beier Road	mosque	GB3096-2008 Class- II
		Middle of Beier Road	Graveyard of minority	GB3096-2008 Class- I
		Beier Road	No.3 middle school of Altay	GB3096-2008 Class- II
		Yuanyichang Road	mosque	GB3096-2008 Class- II

5. DETAILED WORK SCOPE OF THE ENVIRONMENT MONITORING

According to the environmentally sensitive targets and possible major environmental impacts of construction phase specified in the EIA, along with the actual project progress, we have conducted field survey and environment monitoring for Altay urban environment improvement project. The work scope for the first external environment monitoring of the project includes:

1. The location and time of monitoring is determined according to the actual progress of the project, construction contents and routes.

2. The key monitoring locations are selected near sensitive sections, such as residential areas, schools, and so forth. The selection of monitoring locations should cover all the protection targets specified in the EIA, and take the population density, construction contents, scope of construction site and project progress into consideration as well. In a word, the monitoring locations should be selected at the representative points.

3. When monitoring, brief notes are taken, including the major contractors, construction contents, daily schedule, and equipments.

5.1 Atmosphere Monitoring

1. Construction dust

Monitoring Items: TSP

Monitoring location: Sensitive points near construction sites, including Qiaodong Road, South Tuanjie Road, North Jinshan Road, South Jinshan Road, Gongyuan Road, Tuanjie Road, Wenhua Road, Hongdun Road, Beier Road, middle part of Beier Road, Yuanyichang Road.

Monitoring time: 7 continuous days, from December 1-7, 2011, with sampling time of TSP at least 12 hours per day and 45 minutes per hour.

Details are shown in table 5-1.

**Table 5-1 External Environment Monitoring Table During Construction of
Altay Road and Ancillary Facilities**

Name of roads		Monitoring Points	Monitoring Item	Monitoring Time
New Road	Qiaodong Road	Kelanhe vacation village	TSP	2011.12.1-12.7
	South Tuanjie Road	Xinjiang Altay animal husbandry and veterinary vocational school	TSP	2011.12.1-12.7
Upgrading Road	North Jinshan Road	No.1 high school of Altay	TSP	2011.12.1-12.7
	South Jinshan Road	No.3 high school of Altay	TSP	2011.12.1-12.7
	Gongyuan Road	Hump scenic spot	TSP	2011.12.1-12.7
		Health school of Altay	TSP	2011.12.1-12.7
		kindergarten	TSP	2011.12.1-12.7
	Tuanjie Road	Xiehe hospital	TSP	2011.12.1-12.7
	Wenhua Road	No.1 middle school of Altay	TSP	2011.12.1-12.7
Expansion Road	Hongdun Road	Vocational school of Altay	TSP	2011.12.1-12.7
		No.2 middle school of Altay	TSP	2011.12.1-12.7
		Science and education high school of Altay	TSP	2011.12.1-12.7
	Beier Road	mosque	TSP	2011.12.1-12.7
	Middle of Beier Road	Graveyard of minority	TSP	2011.12.1-12.7
	Beier Road	No.3 middle school of Altay	TSP	2011.12.1-12.7
	Yuanyichang Road	mosque	TSP	2011.12.1-12.7

5.2 Noise Monitoring

Monitoring Items: Equivalent A sound level (L_{Aeq})

Monitoring location: Sensitive points of noise, 150 meters around each construction site.

Monitoring time: 2 days, from December 1-2, 2011, twice per day, once in the daytime and once in the nighttime.

Details are shown in table 5-2.

**Table 5-2 External Environment Monitoring Table During Construction of
Altay Road and Ancillary Facilities**

Name of roads		Monitoring Point	Monitoring Item	Monitoring Time
New Road	Qiaodong Road	Kelanhe vacation village	L _{Aeq}	2011.12.1-12.2
	South Tuanjie Road	Xinjiang Altay animal husbandry and veterinary vocational school	L _{Aeq}	2011.12.1-12.2
Upgrading Road	North Jinshan Road	No.1 high school of Altay	L _{Aeq}	2011.12.1-12.2
	South Jinshan Road	No.3 high school of Altay	L _{Aeq}	2011.12.1-12.2
	Gongyuan Road	Hump scenic spot	L _{Aeq}	2011.12.1-12.2
		Health school of Altay	L _{Aeq}	2011.12.1-12.2
		Kindergarten	L _{Aeq}	2011.12.1-12.2
	Tuanjie Road	Xiehe hospital	L _{Aeq}	2011.12.1-12.2
	Tuanjie Road Xiehe hospital Wenhua Road	No.1 middle school of Altay	L _{Aeq}	2011.12.1-12.2
Expansion Road	Hongdun Road	Vocational school of Altay	L _{Aeq}	2011.12.1-12.2
		No.2 middle school of Altay	L _{Aeq}	2011.12.1-12.2
		Science and education high school of Altay	L _{Aeq}	2011.12.1-12.2
	Beier Road	Mosque	L _{Aeq}	2011.12.1-12.2
	Middle of Beier Road	Graveyard of minority	L _{Aeq}	2011.12.1-12.2
	Beier Road	No.3 middle school of Altay	L _{Aeq}	2011.12.1-12.2
	Yuanyichang Road	Mosque	L _{Aeq}	2011.12.1-12.2

6. MONITORING METHOD AND EVALUATION

STANDARD

According to relevant national regulations, classifications of Altay environment functions and relevant contents in the EIA, the analytical method and evaluation standard of environment monitoring are determined in Table 6-1.

Table 6-1 List of Analytical Method and Evaluation Standard

Environmental Factors	Sampling and Analyzing Method	Evaluation Standard
Atmosphere	GB-15432-95 Gravimetric Method, Measurement of Suspended Particles, Ambient Air	<i>Ambient Air Quality Standard</i> (GB3095-1996)
Noise	<i>Environmental Quality Standard for Noise</i> (GB3096-2008)	<i>Environmental Quality Standard for Noise</i> (GB3096-2008)

7. RESULTS OF ENVIRONMENT MONITORING AND EVALUATIONS

7.1 Results of Atmosphere Monitoring

1. Monitoring Results of Construction Dust

Monitoring Results of Construction Dust are shown in table 7-1

Table 7-1 Monitoring Results of Construction Dust Unit: mg/m³

Roads		Monitoring Point	Monitoring Date	TSP
Class II, Ambient Air Quality Standard (GB3095-1996)				0.30
New Road	Qiaodong Road	Kelanhe vacation village	2011.12.1	0.153
			2011.12.2	0.185
			2011.12.3	0.212
			2011.12.4	0.194
			2011.12.5	0.223
			2011.12.6	0.234
			2011.12.7	0.213
	South Tuanjie Road	Xinjiang Altay animal husbandry and veterinary vocational school	2011.12.1	0.167
			2011.12.2	0.145
			2011.12.3	0.183
			2011.12.4	0.214
			2011.12.5	0.191
			2011.12.6	0.237
			2011.12.7	0.222
Upgrading Road	North Jinshan Road	No.1 high school of Altay area	2011.12.1	0.188
			2011.12.2	0.179
			2011.12.3	0.211
			2011.12.4	0.194
			2011.12.5	0.255
			2011.12.6	0.193
			2011.12.7	0.218
	South Jinshan Road	No.3 high school of Altay	2011.12.1	0.225
			2011.12.2	0.193
			2011.12.3	0.231
			2011.12.4	0.182
			2011.12.5	0.167
			2011.12.6	0.225
			2011.12.7	0.218
	Gongyuan Road	Hump scenic spot	2011.12.1	0.166
			2011.12.2	0.198
			2011.12.3	0.185
			2011.12.4	0.168
			2011.12.5	0.175
			2011.12.6	0.188
			2011.12.7	0.165

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Roads		Monitoring Point	Monitoring Date	TSP
		Health school of Altay	2011.12.1	0.219
			2011.12.2	0.195
			2011.12.3	0.222
			2011.12.4	0.181
			2011.12.5	0.215
			2011.12.6	0.217
			2011.12.7	0.205
		Kindergarten	2011.12.1	0.188
			2011.12.2	0.195
			2011.12.3	0.225
			2011.12.4	0.217
			2011.12.5	0.235
			2011.12.6	0.198
			2011.12.7	0.194
	Tuanjie Road	Xiehe hospital	2011.12.1	0.185
			2011.12.2	0.216
			2011.12.3	0.235
			2011.12.4	0.192
			2011.12.5	0.221
			2011.12.6	0.177
			2011.12.7	0.192
	Wenhua Road	No.1 middle school of Altay	2011.12.1	0.208
			2011.12.2	0.212
			2011.12.3	0.198
			2011.12.4	0.234
			2011.12.5	0.192
			2011.12.6	0.188
			2011.12.7	0.244
Expansion Road	Hongdun Road	Vocational school of Altay	2011.12.1	0.197
			2011.12.2	0.215
			2011.12.3	0.258
			2011.12.4	0.234
			2011.12.5	0.195
			2011.12.6	0.215
			2011.12.7	0.189
		No.2 middle school of Altay	2011.12.1	0.225
			2011.12.2	0.195
			2011.12.3	0.175
			2011.12.4	0.225
			2011.12.5	0.275
			2011.12.6	0.233
			2011.12.7	0.196
		Science and education high school of Altay	2011.12.1	0.237
			2011.12.2	0.196
			2011.12.3	0.224
			2011.12.4	0.185
			2011.12.5	0.226
			2011.12.6	0.195
			2011.12.7	0.228
	Beier Road	Mosque	2011.12.1	0.195
			2011.12.2	0.227
			2011.12.3	0.194
			2011.12.4	0.234

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Roads		Monitoring Point	Monitoring Date	TSP
			2011.12.5	0.257
			2011.12.6	0.276
			2011.12.7	0.219
	Middle of Beier Road	Graveyard of minority	2011.12.1	0.192
			2011.12.2	0.182
			2011.12.3	0.231
			2011.12.4	0.175
			2011.12.5	0.194
			2011.12.6	0.225
			2011.12.7	0.185
	Beier Road	No.3 middle school of Altay	2011.12.1	0.191
			2011.12.2	0.213
			2011.12.3	0.227
			2011.12.4	0.196
			2011.12.5	0.235
			2011.12.6	0.215
	Yuanyichang Road	Mosque	2011.12.7	0.199
			2011.12.1	0.181
			2011.12.2	0.211
			2011.12.3	0.192
			2011.12.4	0.223
			2011.12.5	0.184
			2011.12.6	0.243
			2011.12.7	0.265

According to the monitoring results listed in Table 7-1, it is found that after taking appropriate environment management measures, daily average concentration monitored at atmosphere sensitive points around construction sites can meet Class-II Standard of *Ambient Air Quality Standard* (GB3095—1996) , and no data exceeds the standard limit.

7.2 Results of Noise Monitoring

Sensitive points of noise related to the project at present have been monitored by day and night (no construction at night), and the results are shown in table 7-2.

Table7-2 Results of Noise Monitoring Unit: dB(A)

No.	Sections	Noise monitoring value				<i>Environmental Quality Standard for Noise (GB3096—2008)</i>	
		Monitoring Data 2011.12.1		Monitoring Data 2011.12.2			
		Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
1#	Kelanhe vacation village (Class 1 area)	50.2	44.2	52.3	43.6	55	45
2#	Xinjiang Altay animal husbandry and veterinary vocational school	51.6	41.3	53.7	45.6	60	50
3#	No.1 high school of Altay	48.8	44.5	53.2	43.2	60	50
4#	No.3 high school of Altay	49.6	46.6	50.8	42.9	60	50
5#	Hump scenic spot (Class 1 area))	48.8	40.5	50	41.3	55	45
6#	Health school of Altay	51.6	42.3	52.8	44.6	60	50
7#	Kindergarten (Gongyuan Road)	51.2	41.6	53.9	42.5	60	50
8#	Xiehe hospital	53.7	48.5	53.7	49.7	60	50
9#	No.1 middle school of Altay	51.5	45.3	53.3	48.5	60	50
10#	Vocational school of Altay	54.0	43.2	55.2	47.2	60	50
11#	No.2 middle school of Altay	49.6	46.5	50.8	45.8	60	50
12#	Science and education high school of Altay	53.3	47.8	54.5	46.8	60	50
13#	Mosque(Beier Road)	56.0	48.7	55.8	49.1	60	50
14#	Graveyard of minority (Class 1 area))	50.4	39.2	53.6	41.2	55	45
15#	No.3 middle school of Altay	51.2	43.6	56.1	45.6	60	50
16#	Mosque(Yuanyichang Road)	53.5	47.9	55.7	44.7	60	50

According to the monitoring data in Table 7-2, it is observed that the noise level of all sensitive points related to current project have respectively reached

Class-1 and Class-2 standard of *Environmental Quality Standard for Noise* (GB3096—2008), which means as a result of adopting relevant environment management measures during construction process, the noise level at construction sites is less than the prescribed limit and has little effect on the surrounding sensitive points of noise.

7.3 Summary

According to the field survey and environment monitoring, Altay urban environment improvement project has followed the relevant requirements specified in the EIA during the project construction. The environment management measures undertaken and their performance are summarized in Table 7-3.

**Table 7-3 Current Implementation and Effects
of Project Environment Management**

No.	Pollution Source	Environment Management Measures Taken	Monitoring situation	Performance
1	Wastewater	There is a wastewater sedimentation tank within the construction site, by which construction wastewater can be cyclic utilized after precipitation treatment. Also a simple septic tank is built, and domestic wastewater will be discharged into the pipeline system after being treated in the septic tank and later be treated in waste water treatment plant.	/	Standard environment management measures are taken to realize wastewater discharging to meet standard
2	Dust	The construction site is enclosed. The dusty roads are sprayed with water. Covering measures or closed vehicles are used for transportation. Transportation routes are carefully selected and transport vehicles are monitored to control its speed. Construction materials are covered and sprayed with water. The stacking time of construction materials on site is minimized.	Reach the standard	No large area of dust impact and no decline of ambient air quality nearby.

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No.	Pollution Source	Environment Management Measures Taken	Monitoring situation	Performance
3	Noise at construction sites	Construction equipments are well maintained and reasonably operated to minimize mechanical noise. Construction time is reasonably arranged and is as far as possible arranged during the day and strictly prohibited during 0:00-8:00 am.	Reach the standard	Noise at construction sites is lower than prescribed limit
4	Noise at sensitive points	Temporary sound fence will be built if necessary. Large transport vehicles should keep away from residential area by carefully selecting reasonable routines. Sound barriers should be built at some sensitive points to minimize the influence of traffic noise.		No negative impact to residents nearby and no complaints reported
5	Solid waste	Construction waste is divided into utilizable and useless waste. The utilizable part will be recycled while useless part will be put together and sent to refuse landfill.	/	No adverse impact on surrounding environment

8. CONCLUSIONS AND SUGGESTIONS

Based on the results of the first external environment monitoring to Altay Urban Transport and Environment Improvement Project under ADB loan, it is found that the contractors have basically undertaken relevant environment management measures specified in the EIA, and shown enough concerns on possible negative environmental impacts due to the project implementation. According to current external environment monitoring results, corresponding measures have been undertaken during construction to minimize the adverse impact on environment. The conclusions of the external environment monitoring are summarized as follows.

1. After adopting appropriate environment management measures at construction sites, there is little impact on external environment and environmental sensitive points.

2. Corresponding environment management measures have been taken during construction to ensure that noise at construction site is less than prescribed limit and has little effect on the surrounding noise environment at sensitive points.

Suggestions:

1. The contractors should be civilized in construction. Supervision and administration measures should be strengthened to mitigate the impact on surrounding environment.

2. The contractors should continue to implement environment management plans and measures strictly to eliminate the adverse impact of construction wastewater, dust and mechanical noise on the environment.

3. The environmental management education to staff of each contractor should be strengthened to promote their awareness of environment protection. In return this will ensure healthier and orderly developments of the project.

Appendix 1 Monitoring Evaluation Standard

Environmental Factor	Evaluation Standard		Monitoring Item	Standard Value	Unit
Atmosphere	<i>Ambient Air Quality Standard</i> (GB3095-1996)	II	TSP	0.3	mg/m ³
Noise	<i>Environmental Quality Standard for Noise</i> (GB3096-2008)		Class-1 ,daytime	55	dB(A)
			Nighttime	45	
			Class-2 ,daytime	60	
			Nighttime	50	

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Appendix 2 Pictures of Present Status On sites



Doorway of Hualinjiayuan at Gongyuan Road



South Part of Hualinjiayuan Doorway at Gongyuan Road



Regional Health School at East of Gongyuan Road



South Part of Power Station Bridge at Gongyuan Road



West Part of the Bridge near Construction Bureau



Pavement near Guohua Kindergarten at East of North Jiefang Road



Pavement at East of the Northmost Crossing
of North Jiefang Road



Pavement at North of Radio and TV University
at North Jinshan Road

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Pavement at South of Radio and TV University at North Jinshan Road



Pavement at the Fifth Street of Jinshan Road



Pavement at the Sixth Street of Jinshan Road



Renmin Hospital at the Sixth Street of Jinshan Road



Pavement at North of the crossing between Jinshan Road and Jiefang Road



Gongyuan Bridge at Linchang Road



North Part of the Sidewalk



Doorway of No.1 Middle School

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South Part of Eastern Gongyuan Bridge at Linchang Road



Passenger Station at Tuanjie Road



Pavement at North of Passenger Station at Tuanjie Road



West of Passenger Station at Tuanjie Road



North Part of Wengongtuan Road
at the Crossing between Tuanjie Road and Jiefang Road



Northeast of the Crossing
between Tuanjie Road and Jiefang Road



Bridge at the Crossing
between Tuanjie Road and Jiefang Road

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Pavement of Wenhua Road



Northwest Part of Sidewalk at Binghe Road
next to the River near Wenhua Road



Northwest of Sidewalk
at Northeastern of No.1 Middle School at Wenhua Road



Pavement at Northwest of Wenhua Road



Pavement at South of Sidewalk near the River
at the junction between Wenhua Road and Jinshan Road

**Xinjiang Urban Transport and Environmental
Improvement Project
ADB Loan: 2526-PRC**

**1st External Environment
Monitoring Report
-Changji City**

**Changji Environmental
Monitoring Station**

November 2011

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1 ASSIGNMENT AND MONITORING PURPOSE

According to the environment management plan and relevant requirements specified in the SEIA for Xinjiang Urban Transport and Environmental Improvement Project (the Project) under Asian Development Bank (ADB) loan, the routine monitoring is carried out regarding to the environmental impact during the project construction and commissioning. In line with: (i) the target to mitigate the negative impact of the sub-project; (ii) the relevant specifications and standards of China as well as the safeguard policies of ADB; and (iii) the environmental impact monitoring and data analysis during construction and commissioning, it is proposed to evaluate: (i) if the effect of the environment protection measures meets the requirements of the relevant laws and regulations; (ii) the tendency of environmental impact; (iii) the overall effect of the project environment management plan (EMP). For the commitment to the external environment monitoring of Xinjiang Urban Transport and Environmental Improvement Project, we have carried out the field survey on the project site, and completed the 1st External Environment Monitoring Report of Changji City .

2 PROJECT INTRODUCTIONS

2.1 Background

Changji city is located in the centre of Eurasian Continent; it has always been transportation strategic artery of Northern Xinjiang. There are Eurasia Continental Bridge, 312 National Highway and the Urumqi-Kytun Highway throughout the city. Nowadays, it is the satellite city of Urumqi. A highway with distance of 35 kilometers runs through between the two cities. It is only 18 km away from the Urumqi International Airport. Changji is the first launched key city of the western region development strategy. It has been jointly identified as the “Best investment environment city”, “Best living environment city”, “Best transportation and communication conditions city” and “High return rate of investment city” by NDRC and other departments. Since the reform and opening up, especially after the implementation of western development strategy, the urban economy has shown a rapid and healthy development tendency. The urban GDP has kept double-digit growing for six years. Changji has gained 10 national honors and titles of “State-level advanced science and technology city”, “State-level excellent city in urban environment comprehensive improvement”, “State-level advanced hygiene city” and “National model city of mutual support between the civilian and the arm forces”, etc.

At present, Changji urban road system is connected by Uy Road (urban section of 312 National Highway), Tacheng Road, Turpan Road, Century Avenue, Beijing Road, and Zhongshan Road which form the transportation skeleton of "Three vertical and three horizontal". Due to the historical reasons, Changji urban road grade is low and the sidewalk, non-motorized road and other city road function are imperfect. Therefore the traffic capacity of roads is much affected. With the development of Changji City, external linkage will be greatly strengthened; the current road conditions will be unable to meet the

needs of external transportation linkage. So it is very necessary to build new city road to adapt the situation.

2.2 Project Scale and Contents

The sub-project includes 9 roads , of which 7 new roads with total length of 13.87 km (Shihezi Rd, West Ningbian Rd, West Jiankang Rd, West Jianguo Rd, West outer ring Rd, North outer ring Rd, West south-park Rd) and 2 upgrading roads with total length of 9.85 km(Qingnian Rd, Tacheng Rd) .The corresponding road ancillary facilities are also included.

2.3 Institutional Arrangement

The organizational chart of the sub-project is shown as follows:

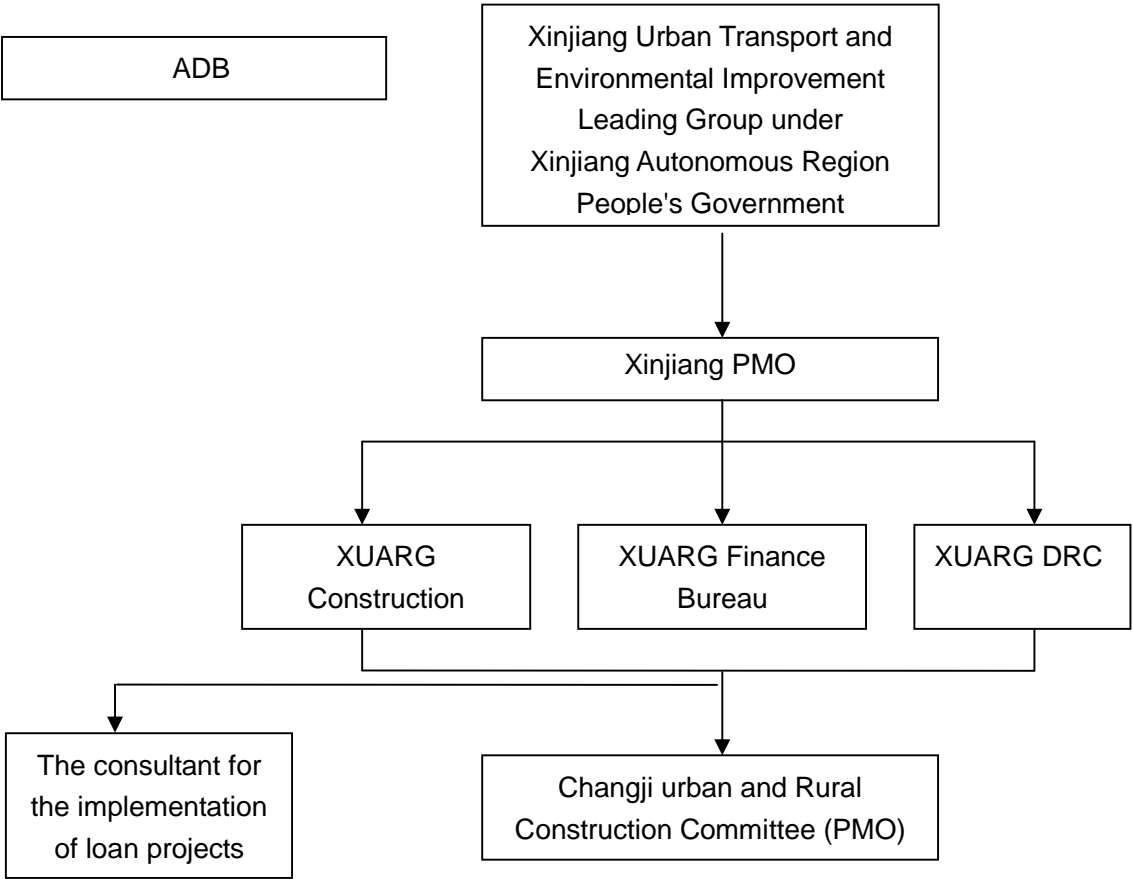


Figure 2-1 Organizational chart of ADB loan project

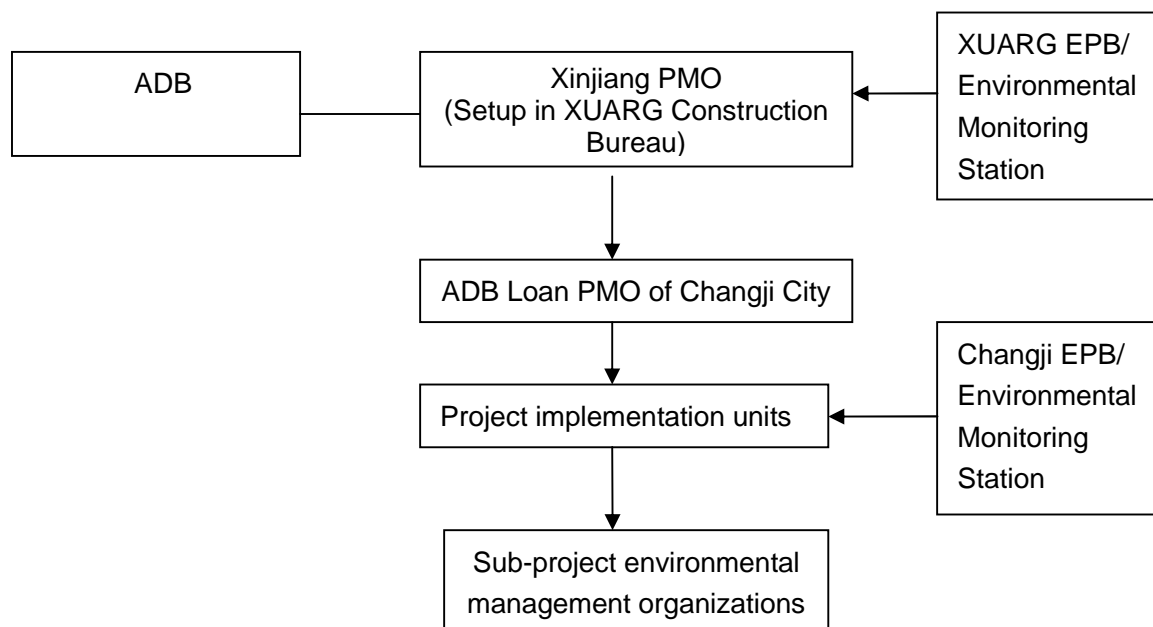


Figure 2-2 Organizational chart of Environmental management

2.4 Project Progress

Table 2-1 Current Work-schedule (By November 2011)

No .	Name of Rd.	Start work	Works completed by November ,2011	Current stages	Completed investment (RMB, million)	Schedule in 2012
1	West and North outer ring Rd.	April,2011	Asphalt oil paved on the main roads	construction period	42	Completion
2	West south-park Rd	April,2011			42	Completion
3	Qingnian Rd	April,2011			42	Completion
4	Shihezi Rd	April,2011			42	Completion

3. ENVIRONMENT MANAGEMENT MEASURES

3.1 Purpose of Environment Management

Environment management is carried out for all the components to prevent any environmental pollution during construction, minimize the negative environmental impact of the sub-project during the implementation, and eventually the objective of improving the urban environment of Changji City will be achieved.

3.2 Environment Management Measures and Implementation

3.2.1 Environment management measures during construction period

Table 3-1 Environment management measures during construction period

Environment Problems	Management Arrangement
Dust / Air Pollution	1) During the construction period, watering the road not less than 2 times; resident area should be increase the watering frequency (mainly aimed at tunnel construction). Watering to compacted materials during roadbeds filling, after compacting, should be regularly watered to prevent dusting.
	2) Powdery materials such as cement, lime should be piled up with sheeting covering. The main road for transport sand/stone and construction site should be equipped with sprinkler, watering regularly, in order to reduce the handling, transport sand stone produced by dust.
	3) The road beds are layered, compacted and sprayed with water, as well as decrease dust. For the pipeline laying, section construction is used and the roads shall be restored soon after completion to avoid blocking or dust.
Construction Site	1) Taking adequate measures at the construction site, such as providing dustbins and hygiene facilities, cleaning toilets fecal water regularly.
	2) Garbage collection in a fixed place, and regular cleaning.
Noise	1) Strictly implement standards of industrial enterprise noise to prevent works noise infringement. The works who closed to high noise source should be protected and limited the working time.
	2) The strong noise construction will be prohibited when

Environment Problems	Management Arrangement
	construction site around residents, fixed mechanical away from the residential areas as well.
	3) Strengthening the maintenance of machinery and vehicles to enable them to maintain low noise.
Ecological Environment	1) To minimize the fill and excavation earthwork.
	2) Strengthening the environmental protection education to applicators on jobsite, no discharge of waste and destruction of vegetation.
Soil Erosion	1) To strengthen the embankment protection, to build road drainage works.
	2) Site formation, restoration of vegetation after taking and discarding soil, sand and stone material.
Accident Rise	1) In order to guarantee the construction safety, to install lighting equipment and safety signal on the road in the construction period temporality.
	2) Adopting effective safety and warning measures to reduce the accident.
Traffic & Transportation	1) Use local construction material as possible to avoid long-distance transport the construction materials, especially cubic meter of earth and stone.
	2) Consultation with traffic and public security departments when road is jam, to take adequate measures to guide traffic.
	3) Considering prepare materials at less traffic jams seasonal.

3.2.2 Environment management during operation phase

Table 3-2 Environment management measures during operation phase

Environment problems	Measures undertaken
Transportation management	1) It is need to have the traffic department issued 3 permits--navicert, driving license and guard certificate. According to the provisions of the Ministry of communications for all transportation of dangerous goods vehicles will have a unified logo.
	2) Public security and transportation management department, the fire department designated specialized transport routes for transportation of dangerous goods. Dangerous goods vehicles can only park in the designated parking.
Vehicle management	1) Strengthening traffic management, road vehicles must meet the requirements of the national emission standards, and yearly inspection and regular inspection.
	2) Strengthening the related regulations of Education about the vehicle air pollution, noise.

Environment problems	Measures undertaken
Road maintenance	1) Strengthening the maintenance of the road to ensure the normal running of the vehicle, reducing vehicle exhaust and noise emissions to avoid traffic jam.
	2) Reasonable arrangement of pavement repair time to avoid the peak period.
Noise	According to the monitoring results, exceed the standard place in noise to set up sound barrier or line traffic control.
Drainage system maintenance	Regular drainage dredging to ensure the normal operation of drainage system.
Environment supervision	1) municipal sanitation group is charge in arrange specially-assigned person to clean road, timely cleaning road obstructions to ensure traffic safety,
	2) Regular maintenance, check the road signs, warning signs and street lighting to ensure traffic is unblocked.
	3) landscape department to guarantee the road on both sides of the green belt, buffer zone and a sidewalk trees will grow well, modeling of plants to maintain a beautiful shape.

3.3 Compliance status of loan covenant and institutional development

1. Project implementation unit has strictly followed all applicable national and local environmental laws and regulations, ADB's Environmental Policy (2002), and other laws, regulations and standards of the state, Xinjiang and local government for environmental protection, health, labor and occupational safety, to construct, operate, maintain and monitor project facilities, execute project design and construction contract, operation guiding principle and all environmental alleviation and monitoring measures as detailed in the approved environmental impact assessment report, formulated and implemented environmental monitoring and environmental management measures.

2. Training and capacity development: in order to properly implement this ADB Project, Changji City has established corresponding sub-project office, with full-time member to be responsible for environmental affairs of the project, and worked out relevant management system. During Nov. 3 to 5, 2009, ADB PRCM offered business training of environmental protection for Xinjiang Project,

making project management personnel of Xinjiang at various levels further understand and get familiar with relevant provisions and execution procedures of ADB loan environmental protection policy and improve business quality. In Oct. 2010 Xinjiang Project Office organized personnel of sub-project areas to attend the two-and-a-half-day "Symposium for Best Practice in Sustainable Development of Asian-Pacific Cities" held in Shanghai by ADB East Asia Bureau and the School of Architecture and Urban Planning, Tongji University, carry out exchange of knowledge about sewage and sludge treatment, energy efficiency, urban planning case and urban management, and pay a visit to Zhujiajiao Town, Shanghai reputed as one of best planning cases, to the sewage control project Phase II of Shanghai environmental project with ADB loan, and to sub-project of Bailonggang sludge treatment project. In Jan. 2011 Xinjiang Project Office organized all sub-project units to have training in Urumqi about environmental monitoring in ADB loan project .

4. ENVIRONMENT PROTECTION TARGET

Based on the EIA of Changji sub-project under ADB loan Xinjiang Urban Transport and Environment Improvement Project, the environmental sensitive targets are identified. Currently there are 5 roads at construction phase. Three of them are involved in environmental sensitive points. So we have conducted field survey and environmental monitoring for these environmental sensitive points on the three roads under construction (Qingnian Rd, West south-park Rd, Shihezi Rd) in the sub-project. The main environmental protection targets are as **table 4-1**:

Table 4-1 List of environmental protection targets

No.	Environmental Factors	Environment Protection Targets	Applied Standard
1	Atmosphere environment	Taoyuan subdistrict (Qingnian Rd.)	Class-II Of Environmental Air Quality Standard (GB3095—1996)
		Changji Maternal and Child Health Hospital (South-park Rd.)	
		Kaidi substrict (Shihezi Rd.)	
2	Acoustic environment	Taoyuan subdistrict (Qingnian Rd.)	Class-II of Environmental quality standard for noise (GB3096—2008)
		Changji Maternal and Child Health Hospital (South-park Rd.)	
		Kaidi subdistrict (Shihezi Rd.)	

5. WORK SCOPE OF THE ENVIRONMENT MONITORING

Through field investigation, all the roads under construction are not involved in nature reserve or scenic area. But noise and atmospheric environment sensitive points at both sides of the roads require careful considerations .

At this stage, only monitoring environment during construction period has been conducted.

5.1 Environmental Monitoring Scope

1. The location and timing of monitoring are determined according to the sub-project's actual progress, construction activities and routes.
2. The key monitoring locations are selected near sensitive road sections, such as residential areas, schools, hospitals and etc.

5.2 Atmosphere Monitoring

Monitoring Items: TSP

Monitoring locations: atmosphere sensitive points around Qingnian Rd, South-park Rd, Shihezi Rd

Monitoring time: TSP sampling duration no less than 12hours per day, once a day, consecutively for 7 days from 09/10/2011-15/10/2011.

5.3 Noise Monitoring

Monitoring Items: Equivalent sound a level (Leq)

Monitoring location: noise sensitive points around Qingnian Rd, South-park Rd, Shihezi Rd

Monitoring time: once in the daytime and once at night on Oct 09, 2011.

6 MONITORING METHOD AND EVALUATION STANDARD

According to the relevant national regulations, environmental function classification of Changji City and relevant contents in the EIA reports for the sub-project, the monitoring method and evaluation standards are determined as follows (see Table 6-1).

Table 6-1 List of Monitoring Methods and Evaluation Standards

Environmental Factors	Sampling and Analyzing Method	Evaluation Standards
Atmosphere	Ambient Air--Determination of total suspended particulates--Gravimetric method (GB / T 15432-1995)	Class-II of Environmental Air Quality Standards (GB3095-1996)
Noise	Environmental quality standard for noise (GB3096-2008)	Class-II of Environmental quality standard for noise (GB3096—2008)

7 ENVIRONMENTAL MONITORING RESULT AND EVALUATION

7.1 Atmospheric Environment monitoring results

Table 7-1 Monitoring Data of Atmosphere pollutants

Monitoring location	Monitoring Date	TSP
Taoyuan district, Qingnian Rd	Oct 09, 2011	0.194
	Oct 10, 2011	0.161
	Oct 11, 2011	0.203
	Oct 12, 2011	0.188
	Oct 13, 2011	0.165
	Oct 14, 2011	0.170
	Oct 15, 2011	0.175
Kaidi garden district, Shihezi Rd	Oct 09, 2011	0.172
	Oct 10, 2011	0.169
	Oct 11, 2011	0.189
	Oct 12, 2011	0.175
	Oct 13, 2011	0.177
	Oct 14, 2011	0.192
	Oct 15, 2011	0.195
Changji Maternal and Child Health Hospital, South-park Rd	Oct 09, 2011	0.163
	Oct 10, 2011	0.165
	Oct 11, 2011	0.202
	Oct 12, 2011	0.163
	Oct 13, 2011	0.178
	Oct 14, 2011	0.174
	Oct 15, 2011	0.188
Class-2 Environmental Air Quality Standards (GB3095-1996)		0.30

According to the monitoring data in the Table 5-2, it is observed that the TSP level of all sensitive points at Qingnian Rd, Shihezi Rd, South-park RD can meet Class-II Standard of Environment Air Quality Standard (GB3095—1996).

7.2 Noise Environment monitoring results

All sensitivity points had been monitored on Qingnian Rd, Shihezi Rd, South-park Rd at daytime and nighttime, as table following:

Table 7-2 Noise Monitoring Data Unit: dB (A)

Monitoring location	Name of sensitive point	Leq(dB)	
		daytime	nighttime
△1 [#]	Taoyuan district, Qingnian Rd	54.8	44.8
△2 [#]	Kaidi garden district, Shihezi Rd	53.3	43.9
△3 [#]	Changji Maternal and Child Health Hospital, South-park RD	54.5	44.3
Class-II of Environmental quality standard for noise (GB3096—2008)		60	50

According to the monitoring data in the Table 5-3, it is observed that the noise level of all sensitive points near Qingnian Rd, Shihezi Rd, South-park Rd can meet the Class-2 standard (Daytime 50dB and Nighttime 60dB) of Environmental quality standard for noise (GB3096—2008).

8. MONITORING FINDINGS AND SUGGESTIONS

8.1 Key Findings

Based on the site survey and monitoring for the first external environment monitoring report, it is found that on the five roads under construction have undertaken the relevant environmental management measures specified in the project EIA reports, and shown enough concern on the possible negative environmental impact due to the project implementation. According to the monitoring results, the mitigation measures undertaken during the project operation have minimized the adverse environmental impact and all environmental protection targets monitoring data can satisfy relevant national standards.

8.2 suggestions

1. Civilized construction, strengthening supervision and management, minimizing adverse impact on the surrounding environment.
2. The contractor should continue to strictly implement the project environmental management plans and measures, reduce construction waste water, dust, mechanical noise and other adverse environmental impacts.
3. Strengthening environment awareness of contractors, increasing awareness of environmental protection to ensure that the project construction in an environment-friendly manner.

APPENDIXES

Appendix 1 Environmental Air Quality Standard (GB3095—1996)

Class-II

Pollutant	Daily average concentration, mg/m ³
TSP	0.30

Appendix 2 Environmental quality standard for noise (GB3096—2008)

Unit: dB(A)

Function areas	Class-0	Class-1	Class-2	Class-3	Class-4a	Class-4b
Daytime limit	≤50	≤55	≤60	≤65	≤70	≤70
Nighttime limit	≤40	≤45	≤50	≤55	≤55	≤60

**Xinjiang Urban Transport and Environmental
Improvement Project
ADB Loan: 2526-PRC**

**External Environment
Monitoring Report
-Hami City**

November 2011

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1. ASSIGNMENT AND MONITORING PURPOSE

According to the environment management plan and relevant requirements specified in the SEIA for Xinjiang Urban Transport and Environmental Improvement Project (the Project) under Asian Development Bank (ADB) loan, the routine monitoring is carried out regarding to the environmental impact during the project construction and commissioning. In line with:(i) the target to mitigate the negative impact of the sub-project; (ii) the relevant specifications and standards of China as well as the safeguard policies of ADB; and (iii) the environmental impact monitoring and data analysis during the period construction and commissioning, it is proposed to evaluate: (i) if the effect of the environment protection measures meets the requirements of the relevant laws and regulations; (ii) the tendency of environmental impact; and (iii) the overall effect of the project environment management plan (EMP). For the commitment to the external environment monitoring of Xinjiang Urban Transport and Environmental Improvement Project, we have carried out the field survey on the project site, and completed the External Environment Monitoring Report of Hami City for the sub-project.

2. PROJECT INTRODUCTION

2.1 Background

Under the new situation of Central Asia regional economic cooperation, western development, China's accession to the World Trade Organization and the strategic adjustment of the national economy, Xinjiang relies on its rich resources, the unique geographical conditions, as well as large regional market to seize opportunities and seek more space for development. Xinjiang also takes its regional location advantages with its convenient traffic conditions to strengthen exchanges and contacts with the mainland, Central Asia and the western.

Hami City is located in the southern Tianshan Mountain, known as "Western throat, the East-West route," is the east gate of Xinjiang and the central city of eastern Xinjiang. Hami city as the location of Hami municipal administrative office, is political, economic, cultural, technology and circulation center of Hami municipality. Its urban area is 27.98km² with the administrative division of 5 street offices, 3 towns, 15 townships, and has a total population of 512 thousand people with 28 ethnic minorities. Hami city is a new industrial city, mainly for the chemical, building materials, textiles, fur, leather, metallurgy, food ,with developed tertiary industry, Hami city has gradually improved health care, education and other infrastructure.

To meet the growing needs of opening up, Hami city has increased the intensity of urban infrastructure, and made efforts to improve the urban functions. After years of efforts, the urban infrastructure of Hami city has made great achievements. Urban roads have formed the road network from the center outward. However, with the further development of the city, the present urban infrastructure is still lagging behind, and cannot meet the need for further development of the city. Because of present situation road distribution is not reasonable and infrastructure is not perfect, especially the part of

Renmin road still was a dirt track. Most of the other streets roads maintenance delay and damage much without ancillary facilities, which seriously affect the traffic safety and health of surrounding residents. So a portion of the roads should be constructed and upgraded to improve the present road traffic environment and the residents' living environment, promote city development coordination. The sub-project will improve the traffic chaos and mitigate part of the road traffic pressure in Hami city, contribute land value along the roads, and promote economic development. Infrastructure is the "hardware" for urban development. The sub-project will have very big promoting effect on Hami city economic development, social stability as well as people living standard enhancement. Hami city development is important to the economic development, social stability, national unity and prosperity of Xinjiang, also is a very important part of implementing western development strategy in Xinjiang.

2.2 Overview of the Project

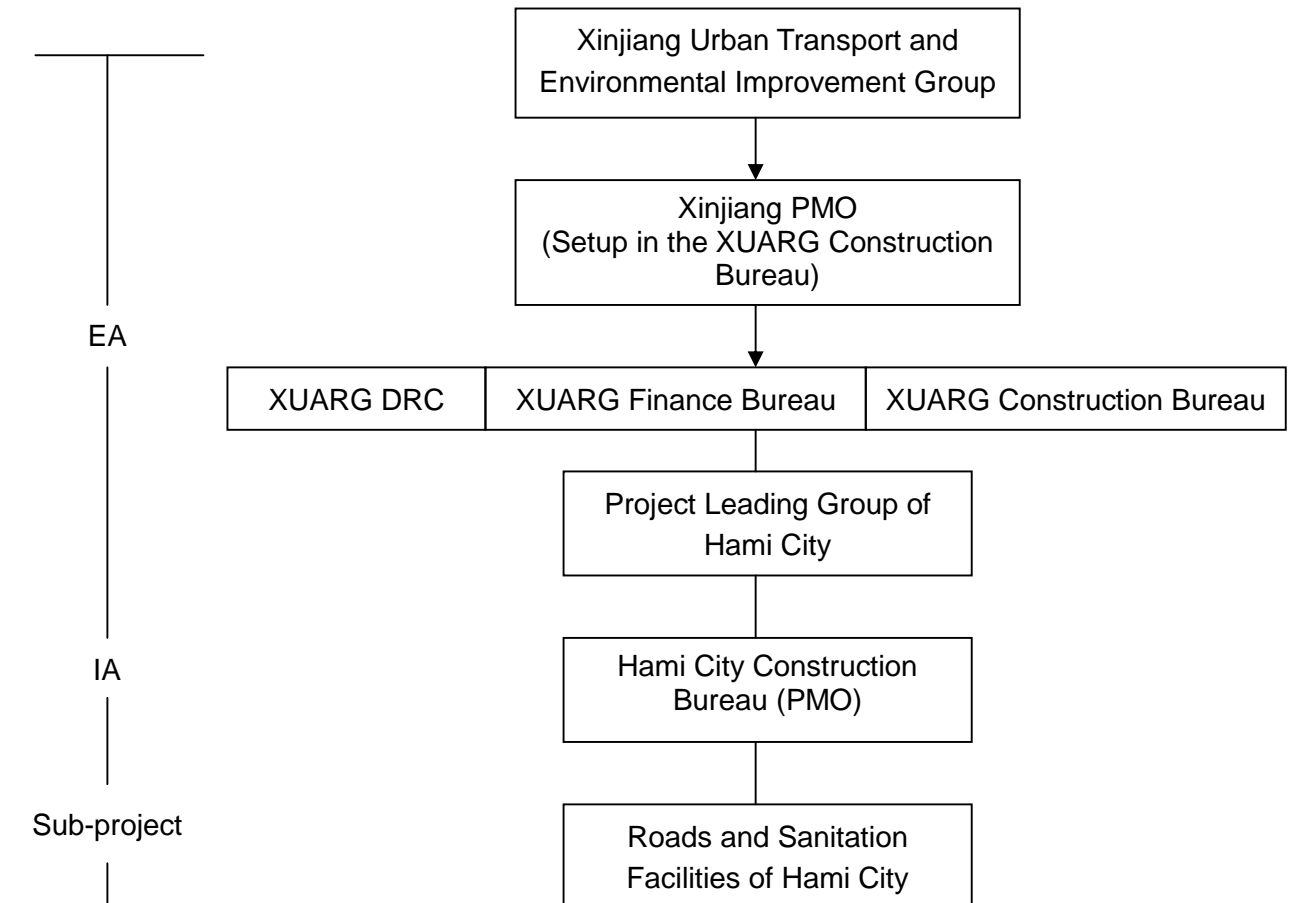
- Project Name: Hami sub-project, ADB Xinjiang Urban Transport and Environmental Improvement Project-
- Construction nature: Upgrading and Extension of Urban Road
- Construction Unit: Construction Bureau of Hami City
- Location: Hami City of Xinjiang
- Construction Scale and Construction Content

Roads, bridges, as well as the corresponding greening, lighting and other ancillary facilities of 3 trunk roads (South Bayi Road, North Bayi Road and Renmin Road) ;respectively setting a 1-4.0m slab culvert in South Bayi Road, North Bayi Road and 2-4.0m slab culvert in Renmin Road of Hami city. The road total length is 9021.75m, including 190314.29 m² of motor vehicle lanes, 60,001.56 m² of non-motorized vehicles lanes, 12,674.88 m² of green belt area, 35075.6 m² of sidewalk area, with the total area of 270,500 m².The sub-project also includes the corresponding road ancillary facilities, sanitation facilities(182

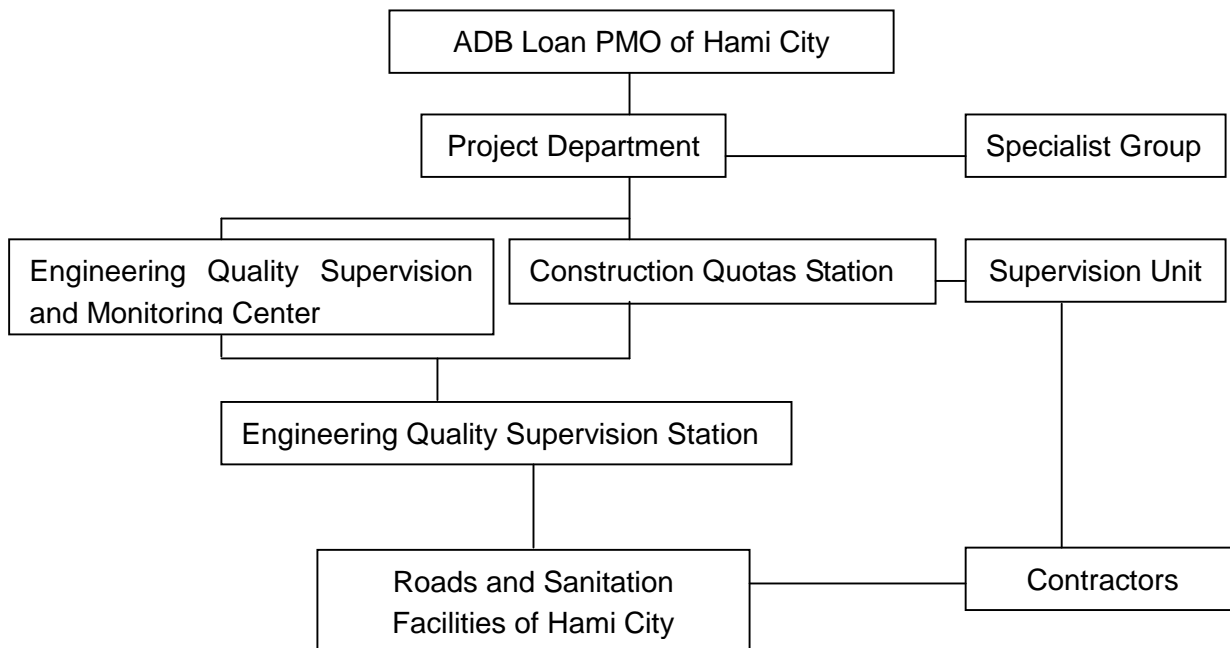
trash cans, 2 street sweeper trucks and 1 street cleaning truck).

2.3 Institutional Arrangement

The organization chart of the sub-roject is shown as follows:



Technology management chart



2.4 Project Progress

Table 2-1 Current Work-schedule (By September 2011)

No	Component	Construction schedule	Works completed by September2011
1	Renming Rd.	April 2010 to August 2010	Completed and opened in 2010
2	South Bayi Rd.	Planned to bid in 2012.	In order to ensure construction of Hami new developed area, construction of the two roads are suspend for one year, which being approved by the ADB.
3	North Bayi Rd.	Construction periods will cover May 2012 to September 2012	

3. ENVIRONMENT MANAGEMENT MEASURES

3.1 Purpose of Environment Management

Project management is carried out for all the components to prevent any environmental pollution during construction and operation, minimize the negative environmental impact of the sub-project during the implementation, and eventually the objective of improving the urban environment of Hami City will be achieved.

3.2 Environment Management Measures

According to the requirements of the relevant environment authority and project environment impact assessment (EIA) reports, the following table 3-1 shows the detailed environmental mitigation measures undertaken by each component.

Table 3-1 Environmental Mitigation Measures Undertaken

Project Period	Environmental Factors	Environmental Impact	Mitigation Measures and Management Arrangements
Construction Phase	Water	Construction wastewater and domestic wastewater from construction workers	There is one wastewater sedimentation tank within the construction site. There is also a simple septic tank. The domestic wastewater is discharged into the pipeline system and further be treated in WWTP after being treated in the septic-tank.
	Atmosphere	Construction and transportation dust	During the construction period, there are sprinklers and the dusty roads are sprayed with water; the road beds are layered, compacted and sprayed with water; covering measures or closed vehicles are used for transportation; vehicles carrying aggregate materials are monitored to avoid overloading and leakage; for the pipeline laying, section construction are used and the roads shall be restored soon after completion to avoid blocking or dust; After the completion of the pipeline works, it is necessary to restore the vegetation on site.
		Exhaust pollution due to construction and transportation vehicles	Excellent maintenance to make the exhaust discharge of automobiles and machineries meet the standards.
	Noise	Noise from the construction equipments and transportation vehicles	Construction equipment and measures are well selected; the construction equipments are well maintained and properly operated so that the equipment noise is minimized; the construction activity is rationally scheduled and are arranged in daytime. If construction during the nighttime (00:00-08:00) due to quality requirement, it must be reported to the local EPA for approval with emergency mitigation measures. For the construction near the sensitive point, such as the schools, the construction shall be arranged during summer vacation time to reduce the impact. Site environment management are strengthened. When the construction material is transported, the speed of the vehicles are limited to be no more than 20km/h and without whistle.

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External Environment Monitoring Report of Hami City

Project Period	Environmental Factors	Environmental Impact	Mitigation Measures and Management Arrangements
	Solid waste	Construction spoils and waste	The spoils sand waste are transported to waste treatment plant in Hami city timely. It is suggested to have trash cans in the construction site to collect garbage and transported to landfill in Hami City regularly.
	Ecology	Land occupation due to construction	Temporary land is rationally selected for road and ancillary facilities to shorten the occupied time. The destroyed vegetation should be restored after completion as soon as possible. The spoil is taken in strict accordance with the design and the ecology should be restored soon after the project completion. The construction activities are properly scheduled. And the road construction shall be arranged by section and appropriate time. Ecological restoration will be strengthened.
		Soil erosion	For the rich soil, the surface soil (30cm) are reserved for the landscape on the road sides to reduce soil erosion. Soil and water conservation is strengthened. The spoil is reused. If not, it should be transported to avoid soil erosion after raining. It is forbidden to dump the construction waste, which is stored at certain site and then transported out to avoid soil pollution. For the wood cut, "cutting compensation" measures are taken, that is, one tree will be planted at another site for one tree cut.
Operation Phase	Water	Rain and snow	The runoff will flow into the storm water pipe system and further into WWTP. Instead of deicing salt, artificial or mechanical cleaning methods are used as possible to avoid environmental pollution.
	Atmosphere	Exhaust pollution from vehicles	Abatement and control of vehicle exhaust is complex, which should be considered in the city's overall strategy.
	Noise	Noise from vehicles	Strengthen the green on both sides of the road. Set up whistle forbidden warning signs and decelerating belt at the sensitive points.
	Solid waste	Waste residue	Waste asphalt generated during the maintenance shall be reused for the first consideration. It is suggested that the useless asphalt shall be disposed at the designated site according to the local environmental protection authorities.

3.3 Compliance status of loan covenant and institutional development

1. Project implementation unit has strictly followed all applicable national and local environmental laws and regulations, ADB's Environmental Policy (2002), and other laws, regulations and standards of the state, Xinjiang and local government for environmental protection, health, labor and occupational safety, to construct, operate, maintain and monitor project facilities, execute project design and construction contract, operation guiding principle and all environmental alleviation and monitoring measures as detailed in the approved environmental impact assessment report, formulated and implemented environmental monitoring and environmental management measures.

2. Training and capacity development: in order to properly implement this ADB Project, Hami City has established corresponding sub-project office, with full-time member to be responsible for environmental affairs of the project, and worked out relevant management system. During Nov. 3 to 5, 2009, ADB Beijing Office offered business training of environmental protection for Xinjiang Project, making project management personnel of Xinjiang at various levels further understand and get familiar with relevant provisions and execution procedures of ADB loan environmental protection policy and improve business quality. In Oct. 2010 Xinjiang Project Office organized personnel of sub-project areas to attend the two-and-a-half-day "Symposium for Best Practice in Sustainable Development of Asian-Pacific Cities" held in Shanghai by ADB East Asia Bureau and the School of Architecture and Urban Planning, Tongji University, carry out exchange of knowledge about sewage and sludge treatment, energy efficiency, urban planning case and urban management, and pay a visit to Zhujiajiao Town, Shanghai reputed as one of best planning cases, to the sewage control project Phase II of Shanghai environmental project with ADB loan, and to sub-project of Bailonggang sludge treatment

project. In Jan. 2011 Xinjiang Project Office organized all sub-project units to have training in Urumqi about environmental monitoring in ADB loan project .

4. ENVIRONMENT PROTECTION TARGET

According to the EMP in “Hami City Environmental Impact Assessment Report” under ADB loan Xinjiang Urban Transport and Environment Improvement Project, the external environment monitoring is conducted regarding to the related environmental impact factors during construction (such as construction wastewater and domestic sewage, dust, noise, solid wastes and impact to vegetation period) and during commissioning(vehicle exhaust and noise). The sub-project’s environmental protection targets for different components are mainly as follows:

Table 4-1 List of Environment Protection Targets

No.	Environmental Factors	Environment Protection Targets	Applied Standard
1	Water environment	Shichengzi reservoir	Category-III
2	Atmosphere environment	Earthquake Bureau	Class-II
3	Acoustic environment	Renmin Road	Class-2

5. WORK SCOPE OF THE ENVIRONMENT MONITORING

According to the environmental targets for sensitive receivers and possible major environmental impacts of construction phase specified in the EIA reports, along with the actual project progress, we have conducted the field survey and environmental monitoring for the sub-project. The work scope for the External Environment Monitoring of the Project includes:

1. The location and time of monitoring is determined according to the sub-project's actual progress, construction activities and routes.
2. The key monitoring locations are selected near sensitive sections, such as residential areas, schools, and etc. To cover the protection targets specified in the EIA reports as well as the population density, construction activities and site, and project progress, the monitoring locations are selected at the representative points.
3. During monitoring, brief notes are taken, including the major contractors and major construction activities, daily schedule, and equipments.

5.1 Surface Water Monitoring

Monitoring Items: pH, COD_{cr}, COD_{mn}, BOD₅, NH₃-N, SS, total phosphorus, total nitrogen, cyanide, volatile phenol, hexavalent chromium, sulfur, petroleum, flow rate, dissolved oxygen, anionic surface active agent, Fecal coliform, temperature, salinity, conductivity, chloride, fluoride compounds, sulfate, nitrate, copper, lead, cadmium, arsenic, mercury, zinc, selenium.

Monitoring location: Hami Shichengzi River

Monitoring time: August 24-25, 2011

5.2 Atmosphere Monitoring

Monitoring Items: SO₂, NO₂, PM₁₀.

Monitoring location: on the roof of the Earthquake Bureau by the side of Renmin Road

Monitoring time: sampling duration of 24h per day, continually for 7 days from September 24-30, 2011 with automatically atmosphere monitor.

5.3 Noise Monitoring

Monitoring device: noise statistics analyzer of AWA6218

Monitoring locations: sensitive points within 150m of Renmin Road

Monitoring time: during 10:00-13:00, 16:00-19:00 in the daytime and 00:00-02:00 in the nighttime on May 19, 2011 at each sensitive points.

6. MONITORING METHOD AND EVALUATION STANDARD

According to the relevant national regulations, environmental function classification of Hami City and relevant contents in the EIA reports for the sub-project, the monitoring method and evaluation standards are determined as follows (see Table 6-1).

Table 6-1 List of Monitoring Methods and Evaluation Standards

Environmental Factors	Sampling and Analyzing Method	Evaluation Standards
Surface water	Technical Codes for Surface Water and Wastewater Monitoring (HT/T91-2002), Design Specifications for Water Quality Sampling Method (GB12997-91), Technical Guidance for Water Quality Sampling (GB12998-91), Technical Specifications for Water Quality Sampling, Sample Storage and Management (GB12999-91).	Category-III of Surface Water Environment Quality Standards (GB3838-2002)
Atmosphere	Environmental Air Quality Standards (GB3095-1996)	Class-II of Environmental Air Quality Standards (GB3095-1996)
Noise	Environmental quality standard for noise (GB3096-2008)	“Class-1 and 2 Area” Standard of Environmental quality standard for noise (GB3096-2008); Class-2 of Noise Limit for Construction Site Boundary (GB12523-90) and Emission standard for industrial enterprises noise within the boundary (GB12348-2008)

7. RESULT AND DISCUSSION

7.1 Findings of Surface Water Monitoring

**Table 7-1 Water Quality Monitoring Data of
Shichengzi River in Hami city**

Unit: mg/l (except temperature, pH)

No.	Item	Value	(GB3838-2002): Category-III	No.	Item	Value	(GB3838-2002): Category-III
1	Temperature(°C)	20	/		Fecal coliform	0.9×10 ⁴	10000
2	Ph	8.17	6-9	17	Cu	< 0.001	≤1.0
3	Dissolved solid	168	/	18	Pb	< 0.0001	≤0.05
4	SS	66	/	19	Cd	< 0.0001	≤0.005
5	Conductivity	23.4	/	20	As	< 0.0005	≤0.05
6	COD _{Mn}	2.53	≤6	21	Hg	<0.000025	≤0.0001
7	COD _{Cr}	15.9	≤20	22	Zn	< 0.05	≤1.0
8	BOD ₅	1.53	≤4	23	Se	< 0.001	<0.01
9	Cl ⁻	2.89	≤250	24	CN ⁻	<0.001	≤0.2
10	Fluoride	0.270	≤1.0	25	Volatility Phenol	< 0.0003	≤0.005
11	SO ₄ ²⁻	11.9	≤250	26	NH ₃ -N	< 0.025	≤1.0
12	NO ₃ ⁻	2.54	≤10	27	Cr ⁶⁺	< 0.004	≤0.005
13	TN	0.996	≤1.0	28	S ²⁻	< 0.02	≤0.2
14	DO	7.91	≥5	29	Petroleum	< 0.01	≤0.05
15	Anion surface active agent	<0.05	≤0.3	30	Flow rate	8.6	/

According to the monitoring data in Table 7-1, it is observed that the monitoring items in Shichengzi River meet the Category-III requirements of Surface Water Environment Quality Standard (GB3838-2002); and belongs to clean and not polluted water body.

7.2 Findings of Noise Monitoring

All sensitivity points had been monitored along Renming Road referring to the road traffic noise monitoring standard of " Environment quality Standard of Noise" (GB3096-2008).

Table 7-2 Noise Monitoring Data Unit: dB (A)

No.	Name of sensitive point	Name of Road	Distance to road shoulder(m)	Leq(dB)		
				Morning	Noon time	Night time
1	Shannxi Temple	Renming Rd.	20	43.9	42.7	40.5
2	Qawak Mosque	Renming Rd.	6	45.9	40.6	41.3

According to the monitoring data in the Table 7-2, it is observed that the noise level of all sensitive points near Renmin Road can meet the Class-2 standard (Daytime 50dB and Nighttime 60dB) of Environmental quality standard for noise (GB3096—2008).

7.3 Findings of Atmosphere Monitoring

Table 7-3 Monitoring Data of Atmosphere pollutants

Monitoring Date	Sampling locations	Analytic item Unit (mg/m ³)		
		SO ₂	NO ₂	PM ₁₀
Sep 24,2011	Roof of local Earthquake Bureau	0.023	0.020	0.069
Sep 25,2011		0.021	0.029	0.099
Sep 26,2011		0.027	0.020	0.063
Sep 27,2011		0.019	0.017	0.082
Sep 28,2011		0.020	0.015	0.082
Sep 29,2011		0.019	0.020	0.088
Sep 30,2011日		0.023	0.020	0.079

The pollution indexes of general atmospheric pollutant, including SO₂, NO₂, and PM10 see Table 7-4.

Table 7-4 The Pollution Indexes of Atmosphere Pollutants

Monitoring item	Average value (mg/m ³)	Standard limit (mg/m ³)	Pollution index
SO ₂	0.020	0.15	0.13
NO ₂	0.017	0.12	0.14

PM ₁₀	0.080	0.15	0.53
------------------	-------	------	------

According to the results listed in Table 7-3 and 7-4, it is found that regarding to the atmosphere sensitive receivers around Renmin Road, the daily average concentrations of SO₂, NO₂, and PM₁₀ meet Environment Air Quality Standard (GB3095—1996) Class-II Standard based on the monitoring data of the urban atmosphere quality automatic monitoring location set up on the roof of local Earthquake Bureau. No data exceed the standard limit and air quality is good.

7.4 Summary

According to the field survey and environment monitoring, during the project operation, Hami sub-project has followed the relevant requirements specified the SEIA report of the Project. The environment management measures undertaken and their performance are summarized in Table 7-5.

Table 7-5 Current Implementation and Effects of Project Environmental Management on Renmin Road during operation phase

No.	Pollution Source	Environment Management Measures Taken	Performance
1	Ecology	1. Vegetation and rehabilitation on the road and its both sides during operation phase. 2. Keep road ancillary facilities clean and enhance roads ancillary facilities harmony with the surrounding environment.	Afforestation of both sides is good.

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No.	Pollution Source	Environment Management Measures Taken	Performance
2	Noise	<p>1.Plant more trees along both sides of the road, especially for sensitive receivers</p> <p>2.Optimitzaion land utilization planning of both sides along the path</p>	Meet the relevant applicable standard limit and no negative impact to residents nearby
3	Air	<p>1. Develop and improve the exhaust control regulations and strengthen exhaust control management.</p> <p>2. Improve vehicle performance, and install exhaust purification devices, and use lead-free petrol to reduce the emission of air pollutants.</p> <p>3. Develop the public transportation system to slow down the rapid growth of private cars.</p> <p>4. Increase the urban green coverage rate</p>	Minor adverse impact to surrounding atmosphere environment
4	Water	<p>1. The road surface runoff through the initial rainfall will be led to both sides of the road and discharged into municipal drainage pipe network, then to waste water treatment plant.</p> <p>2. Reduce the use of deicing salt. The manual and mechanical methods are recommended to reduce pollution.</p>	No negative impact to drinking water body
5	Solid waste	Consider reusing the off scum of asphalt or transporting it to locations approved by the local environmental authority	No adverse impact to surrounding environment

8. CONCLUSIONS AND SUGGESTIONS

8.1 Conclusions

Based on the site survey and monitoring for the first external environment monitoring report, it is found that on Renmin Road the implementation unit of partly completed project has undertaken the relevant environmental management measures specified in the project EIA reports, and shown enough concern on the possible negative environmental impact due to the project implementation. According to the monitoring results, the mitigation measures undertaken during the project operation have minimized the adverse environmental impact. The conclusions of the environmental monitoring are summarized as follows.

(i) Air quality

Upon completion of Renmin Road, automobile exhaust has become the main air pollutant source along the route. In order to effectively reduce the pollutant of automobile exhaust, the automobile emission examination system should be applied to forbid or limit travelling of the vehicles exceeding the allowed emissions limit. It will effectively control the exhaust diffusion to surrounding environment through strengthening afforestation on both sides of the path. Those plants (trees, bush and so on, or lawn) in the both sides can absorb or adsorb automobile exhaust.

(ii) Acoustic environment

After completion of Renmin Road, different driving conditions and different models of vehicles have different noise intensity during the operation. As the vehicles increase, the noise impact on both sides of the path will also increase but not largely. Planting trees and forest belt can also effectively control noise.

(iii) Water quality

After Renmin Road put to operation, the road runoff has been the main

form of water pollution along the route. The precipitation is scarce and the evaporation is very intense in Hami city. Only if strong rainstorm occurs, it is very difficult to form runoff on the path. The runoff through the rainfall will be discharged through the surface drainage system into the urban drainage pipe network and have no influence on the water body along the route.

8.2 Suggestions

1. Continue to strengthen vegetation and rehabilitation on both sides of the road. Keep road ancillary facilities clean and enhance roads ancillary facilities to coordinate with the surrounding environment.

2. Establish and improve the road management system. Set up whistle warning sign and deceleration strip on the sensitive points.

The Pictures of Present Status of Renmin Road



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APPENDIXES

Appendix 1 Environmental Air Quality Standard (GB3095—1996)

Class-II

Pollutant	Daily average concentration, mg/m ³	Hourly average concentration, mg/m ³
SO ₂	0.15	0.50
NO ₂	0.12	0.24
PM ₁₀	0.15	-----

Appendix 2 Environmental quality standard for noise (GB3096—2008)

Unit: dB(A)

Function areas	Class-0	Class-1	Class-2	Class-3	Class-4a	Class-4b
Daytime limit	≤50	≤55	≤60	≤65	≤70	≤70
Nighttime limit	≤40	≤45	≤50	≤55	≤55	≤60

Appendix 3 Surface and underground Water Environment Quality Standard

Unit: mg/L

Item	Surface Water Environment Quality Standard (GB3838-2002): Category-III	Underground Water Quality Standard (GB/T14848-93): Category-III
PH	6—9	6.5—8.5
DO	≥5	/
COD _{Mn}	≤6	≤3.0
BOD ₅	≤4	/
NH ₃ -N	≤1.0	≤0.2
Fluoride	≤1.0	≤1.0
Cu	≤1.0	≤1.0
Zn	≤1.0	≤1.0
Se	≤0.01	≤0.01
As	≤0.05	≤0.05
Hg	≤0.0001	≤0.001
Pb	≤0.05	≤0.05
Cd	≤0.005	≤0.01
Cr ⁶⁺	≤0.05	≤0.05
CN-	≤0.2	≤0.05

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Item	Surface Water Environment Quality Standard (GB3838-2002): Category-III	Underground Water Quality Standard (GB/T14848-93): Category-III
Volatility Phenol	≤ 0.005	≤ 0.002
Petroleum	≤ 0.05	/
S^{2-}	≤ 0.2	/
Total soluble solid	/	≤ 1000
Total hardness	/	≤ 450
SO_4^{2-}	≤ 250	≤ 250
Cl-	≤ 250	≤ 250
COD_{cr}	≤ 20	/
TP	≤ 0.05 (Lake, reservoir)	/
TN	≤ 1.0	/
NO_2^-	/	≤ 0.02
NO_3^-	≤ 10	≤ 20
Fe	≤ 0.3	≤ 0.3
Mn	≤ 0.1	≤ 0.1

**Xinjiang Urban Transport and Environmental Improvement Project
under ADB Loan**

Loan No.: 2526-PRC

**Report for Monitoring of External Environment of
Kuytun City**

November of 2011

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1. Task Source and Monitoring Purpose

According to environmental management plan and relevant requirement under project of Kuytun urban transport and environmental improvement with ADB loan, our station, as entrusted by Kuytun Construction Bureau, according to relevant national codes and standards as well as ADB's safety policy, has carried out monitoring of environmental impact factors during trial operation period after completion of the project, to evaluate whether effect of the environmental protection measures in trial operation period meets requirements of environmental protection law, and finally prepared this Report for Monitoring of External Environment of Kuytun City under the Project of Kuytun Urban Transport and Environmental Improvement with ADB Loan on the basis of site survey and monitoring in Oct. 2011.

2. Description of the Project

2.1 Project background

Xinjiang Uygur Autonomous Region is located at the frontier of Northwest China, with area 1.66 million sq. km, accounting for one sixth of China. Kuytun City is at the northern foot of Tianshan Mountains, southwest brink of Zhungar Basin and the center of the economic zone along northern foot of Tianshan Mountains, which enjoys priority in Xinjiang's development policy. Kuytun, a garden city, serves as the regional center of land transport, post and telecommunication in North Xinjiang, highlighting commerce and trade, finance and processing industry. Completion of Urumqi-Kuytun Expressway and North Xinjiang Railway fueled economic development of Kuytun, and construction of Jinghe-Yining-Horgos Railway and Kuytun-Salim Lake high-grade highway will surely drive Kuytun's economic development to a higher level, and make the city play more and more striking role as a central one, develop stronger and stronger radiating and gathering ability and meet more frequent urban-rural and inter-city economic ties, information exchange, traffic and people flow, which means higher requirements for urban transport conditions. Most of current roads in the city is upgraded from original earth road or sand-stone road, characterized by thin structural layer, narrow surface and low standard. After reform and opening-up, particularly during the “10th Five-Year Plan ”and the “11th Five-Year Plan” period, the city government quickened construction of road and built new road in urban area, making urban transport conditions improved to some extent. However, the construction is far behind needs of increase of transport. Therefore it is very

necessary to improve road in urban area for enhancing ties of the central city with surrounding regions.

Currently Kuytun City has basically formed skeleton of city road network, but the network is less perfect, some sections are in the state of low grade and poor situation, making vehicle flow gather in downtown area badly. Added with dense population, buildings and commercial outlets in old urban area, some roads have been overloaded. According to the overall plan of the city, the urban area will surely expand eastward and westward, for which infrastructure should be improved first. Implementation of the project will speed up and lift Kuytun City's infrastructure, including road and traffic management facilities; and reduce pollution and improve environment, health and living standard of people from various ethnic groups in the city. So expansion of some roads is very necessary.

2.2 Organization

This project has the organization chart as follows:

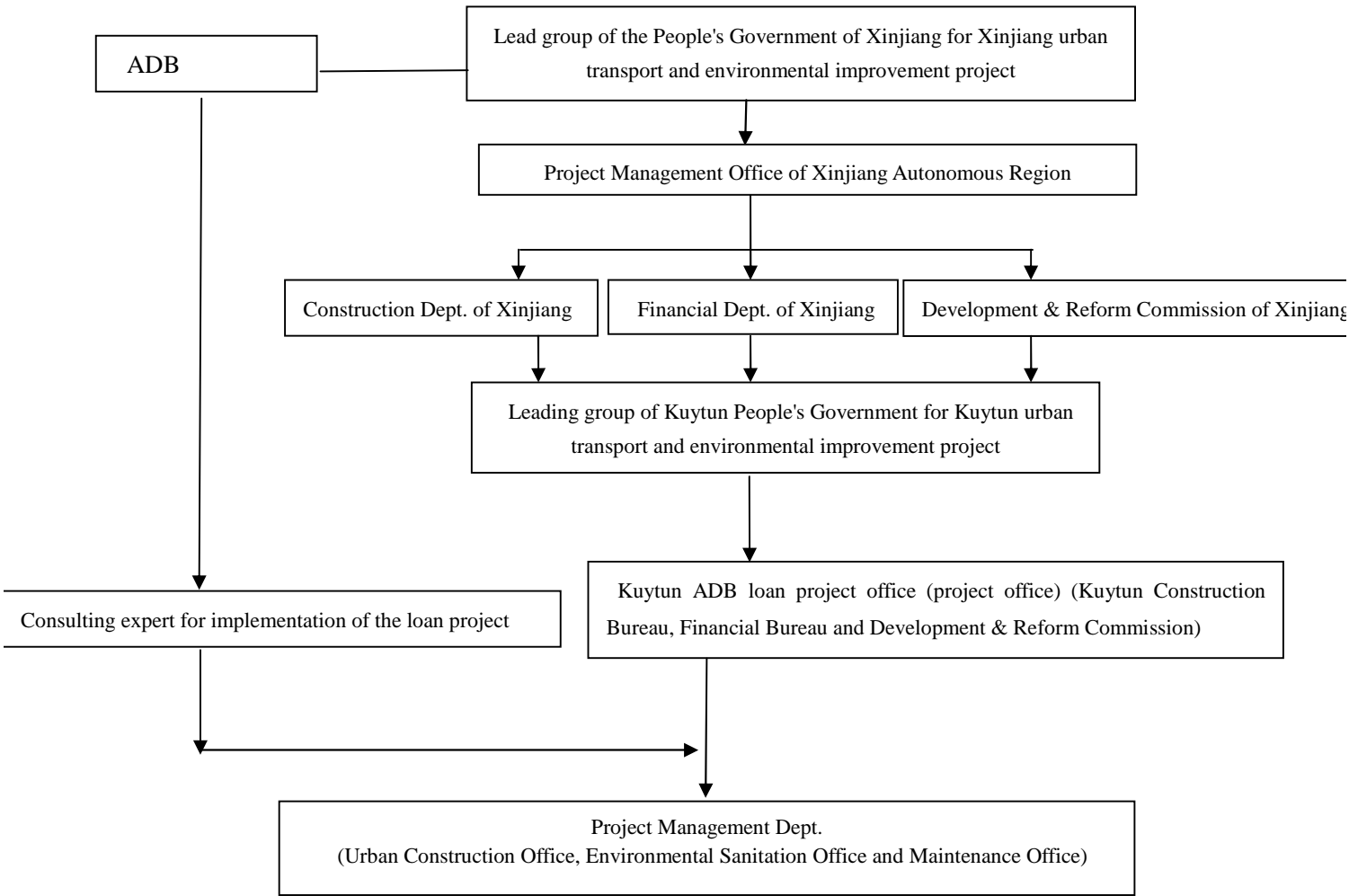


Fig. 2-1 ADB Loan Project Organization Chart

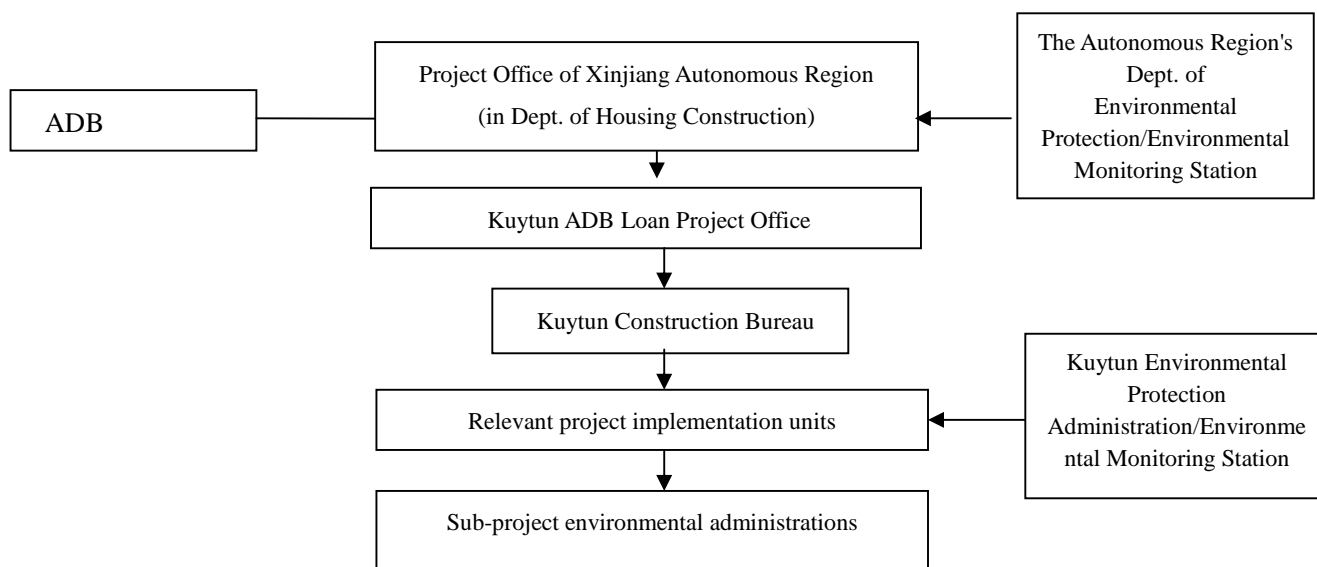


Fig. 2-2 Organization chart for environmental management

2.3 Project progress

Summary 2-1 of progress of Kuytun urban transport and environmental improvement project (Sept. 2011):

Table 2-1 Progress of Kuytun Urban Transport and Environmental Improvement Project (by Sept. 2011)

No.	Project Name	Road Section for Construction	Construction Time	Cumulative Investment by the End of Sept. 2011	Works Completed by the End of Sept. 2011
1	S. Tuanjie Street	Beijing Road —Railway Station	April 25, 2010 —August 30, 2010	9.335 million yuan	Construction works completed(Sidewalk of some sections such as E. Beijing Road had not been completed, but the main road had been opened for traffic)
2	E. Beijing Road	Manas Street —Shanshan Street		7.89 million yuan	
3	E. Urumqi Road	Manas Street —Shanshan Street		6.0888 million yuan	
4	W. Qitai Road	Tacheng Street—Tuoli Street		1.1686 million yuan	
5	Tacheng Street	S. Ring Road —W. Beijing Road		2.8965 million yuan	
6	Hutubi Street	Korla Road —Urumqi Road		228,000 yuan	Not completed(construction suspended as National Highway No.217 was closed for bridge construction, large transportation vehicle had to detour; and for avoiding road damage)
7	Wusu Street	S. Ring Road —Urumqi Road	March 15, 2010 —July 31, 2010	1.3284 million yuan	Construction completed(Sidewalk of some sections had not been completed, but the main road had been opened for traffic)
8	W. Urumqi Road	Tuoli Street—National Highway No.217		6.6153 million yuan	
9	Korla Road	Tacheng Street—Tuoli Street		629,800yuan	

No.	Project Name	Road Section for Construction	Construction Time	Cumulative Investment by the End of Sept. 2011	Works Completed by the End of Sept. 2011
10	Kashi Road	Tacheng Street—Tuoli Street		4.82 million yuan	
11	Hefeng Street	Aksu Road —Urumqi Road		2.4812 million yuan	
12	Emin Street	S. Ring Road —W. Beijing Road		2.5205 million yuan	
13	Xiyi Street	W. Kashi Road —W. Beijing Road		0	Not completed(construction suspended as National Highway No.217 was closed for bridge construction, large transportation vehicle had to detour; and for avoiding road damage)

3. Environmental Management Measures

3.1 Purpose of environmental management

Carrying out project management of sub-project in the project to prevent environmental pollution during construction period and operation period, minimize negative impact on environment during implementation of this project and finally achieve the goal of improvement of urban transport and environment of Kuytun City.

3.2 Environmental management measures

According to requirements of competent department for environmental protection and environmental impact report of the project, the environmental management measures to be take for the project are detailed as Table 3-1.

Table 3-1 Environmental Management Measures for Kuytun Urban Transport Improvement Project

Project Stage	Influencing Factor	Environmental Impact	Improvement Measures and Management Arrangement
Construction Period	Water	Construction waste water and worker's domestic sewage	<p>(1) In initial period of construction, make proper arrangement of construction period, construct main dry discharge system, then carry out road construction. Short-cut must not be opened randomly during construction.</p> <p>(2) During construction, spraying water at fixed interval can reduce pollution.</p> <p>(3) Construction waste water mainly consists of flushing water with high pH and oil content, which will be reused by constructing impervious collecting basin separately at the construction site or evaporated naturally.</p>

Project Stage	Influencing Factor	Environmental Impact	Improvement Measures and Management Arrangement
	Exhaust	Construction and transportation dust	<p>(1) For subgrade construction, sprayer will be prepared to spray water in road sections and sidewalks under construction by at least two times a day.</p> <p>(2) Asphalt mixing station and construction material yard shall be at the place far away from environmental sensitive area, and > 1000m from downwind of sensitive area. Asphalt mixing station shall use Model 1500 mixing equipment, supported with cloth-bag dust-removing system. Emission of asphalt smoke shall be subject to the limited value for emission as allowed in GB16297-1996 Integrated Emission Standard of Air Pollutants.</p> <p>(3) Powder materials such as cement and lime, etc should be canned or bagged, but must not be transported in bulk to avoid dust or falling scattered during transportation.</p>
		Asphalt smoke from asphalt mixing site	
	Noise	Noise from construction machinery and transportation vehicle	<p>(1) High-noise equipment will be strictly prohibited from working at the construction site(for example, thrust borer, pneumatic drill, etc) during night {00:00-08:00} , specifically subject to the Standard for Noise at the Boundary of Construction Site {GB12523-90} .</p> <p>(2) Low-noise machinery and equipment or facilities with sound insulation, dampening equipment will be adopted, for example, site-use generator should be equipped with sound insulation and dampening device.</p> <p>(3) Construction units should make reasonable arrangement of construction schedule and construction place, high-noise operation area should be away from sound environment sensitive area as far as possible, equipment should be maintained regularly, and operation regulations should be strictly executed.</p> <p>Emergency precautions during construction period: if night construction is unavoidable due to project quality requirement {00:00-08:00} , the case must be reported to local environmental protection bureau for approval, and emergency precautions must be taken.</p> <p>(4) Reasonable planning, utilization and layout of land on both sides of road: The planned control distance from first-row buildings along both sides of main road to boundary line of the road should be no less than 100 meters;</p> <p>(5) Measures shall be taken to dampen vehicle noise, establish and perfect road and traffic management system, gradually perfect and improve motor vehicle noise emission standard; to regularly monitor motor vehicle noise; to carry out mandatory maintenance of over-standard vehicle to guarantee vehicle on road</p>

Project Stage	Influencing Factor	Environmental Impact	Improvement Measures and Management Arrangement
			with noise up to standard; to strictly limit driving speed, particularly over-speed driving during night; to properly maintain road surface and repair damaged surface in time. (6) To strengthen landscaping of both sides along road, particularly sensitive points such as school; to take sound-insulation measures for school and residential area near road, so as to make interior noise dampened to under standard to avoid bad influence.
	Solid waste	Construction and domestic waste	During construction period, solid wastes such as spoil, construction waste and domestic waste as well as spoils from foundation excavation and backfilling works, should removed by classification in time, and transported to Kuytun waste landfill for sanitary landfilling except for those that will be used for site treatment, green space and road construction, .
	Ecological requirements	Construction-covered land; soil and water loss	(1) Construction camp shall be placed on the idle land along the road, so as to reduce impact to ecological environment by provisional land occupation for construction. (2) Construction short-cut: in road construction section, construction vehicle shall be controlled to drive within the design width of the road, so as to reduce impact to surrounding environment. (3) For construction in rainy days, water-proof cloth, etc should be used to cover construction-excavated working face and loose soil layer, so as to prevent soil loss.
	Social environment	1. During construction period, demolition of communication and electrical facilities will make provisional influence on their functions 2. Construction will adversely influence travel of residents on both sides of relevant road 3. Construction will adversely influence current transport	(1) According to demolition and settlement plan, settlement should be carried out in advance in such a way that relevant people along the route accept it. (2) Construction, if near residential area or school, shall not be carried out during 12: 00 pm — 8: 00 am, so as to reduce noise influence on residents and school. (3) Construction unit should strengthen training and education of construction workers about national policy on ethnic minorities and be respectful of their lifestyles, so as to safeguard ethnic harmony and social stability. (4) Safety stations shall be arranged at cross-road, in sections with dense population and school and in communities with transport vehicle passing through, so as to guarantee safety.
			(5) Construction signboard should be erected at construction site, to indicate project name, person-in-charge, construction permit and complaint telephone number, etc, for supervision of various

Project Stage	Influencing Factor	Environmental Impact	Improvement Measures and Management Arrangement
			<p>circles and residents. Construction unit should arrange for 1~2 full-time environmental protection members for environmental management; prepare sprayers and dust and noise control equipment and sewage purifying agent, etc so as to avoid influence on residents' rest and environmental pollution.</p> <p>(6) Infrastructure: before construction, works should be done to understand position of roadside infrastructure and underground pipelines, and corresponding measures should be taken, so as to reduce unnecessary influence on residents along the route.</p>
Operation period	Exhaust	Automobile tail gas	<p>(1) To develop gas vehicle to reduce tail gas pollution</p> <p>(2) To install motor vehicle tail gas controlling device</p> <p>(3) To quicken cull-out of old vehicles</p> <p>(4) To greatly develop public transit and decrease automobile speed</p> <p>(5) To strengthen maintenance of road sections under construction and traffic management.</p> <p>(6) To formulate and perfect motor vehicle tail gas control regulations; to strengthen motor vehicle tail gas control management</p>
	Noise	Traffic noise	<p>(1) When passing along sensitive points such as school, etc, vehicles must not toot, in order to avoid interruption with normal class of students, and should drive more slowly to avoid traffic accident.</p> <p>(2) Test should be carried out regularly in noise sensitive areas such as school. If finding noise higher than relevant standard, necessary precautions must be taken to avoid influence on teachers and students and on their studies and life.</p>
	Solid waste	Road maintenance waste	Solid waste from highway maintenance during operation period shall be removed to the designated place according to relevant regulations.

3.3 Compliance status of loan covenant and institutional development

1. Project implementation unit has strictly followed all applicable national and local environmental laws and regulations, ADB's Environmental Policy (2002), and other laws, regulations and standards of the state, Xinjiang and local government for environmental protection, health, labor and occupational safety, to construct, operate, maintain and monitor project facilities, execute project design and construction contract, operation guiding principle and all environmental alleviation and monitoring measures as detailed in the approved environmental impact assessment report, formulated and implemented environmental monitoring and environmental management

measures.

2. Training and capacity development: in order to properly implement this ADB Project, Kuytun City has established corresponding sub-project office, with full-time member to be responsible for environmental affairs of the project, and worked out relevant management system. During Nov. 3 to 5, 2009, ADB Beijing Office offered business training of environmental protection for Xinjiang Project, making project management personnel of Xinjiang at various levels further understand and get familiar with relevant provisions and execution procedures of ADB loan environmental protection policy and improve business quality. In Oct. 2010 Xinjiang Project Office organized personnel of sub-project areas to attend the two-and-a-half-day "Symposium for Best Practice in Sustainable Development of Asian-Pacific Cities" held in Shanghai by ADB East Asia Bureau and the School of Architecture and Urban Planning, Tongji University, carry out exchange of knowledge about sewage and sludge treatment, energy efficiency, urban planning case and urban management, and pay a visit to Zhujiajiao Town, Shanghai reputed as one of best planning cases, to the sewage control project Phase II of Shanghai environmental project with ADB loan, and to sub-project of Bailonggang sludge treatment project. In Jan. 2011 Xinjiang Project Office organized all sub-project units to have training in Urumqi about environmental monitoring in ADB loan project .

4. Environmental Protection Object

According to environmental management plan of ADB loan —— Kuytun urban transport and environmental improvement project, monitoring of environmental impact factors (noise and smell) during project construction and operation period has been carried out. Environmental protection object of the project involved in this environmental monitoring is as follows:

Table 4-1 Summary of Environmental Protection in the Project

S. No.	Environmental Factor	Environmental Protection Object	Environmental Function
1	Atmospheric environment	Tongjili Community	Environmental air Class II
		No. 4 Middle School	
		Former Prefecture Architecture School	
3	Sound environment	Tongjili Community	Class I Area of urban environmental noise
		Residential area of Dongxuanyuan Power Plant	
		No. 4 Middle School	

S. No.	Environmental Factor	Environmental Protection Object	Environmental Function
		No. 5 Primary School	
		Prefecture Kuytun hospital	
		Environmental protection bureau	
		Kuytun Hotel	
		Former Prefecture Architecture School	

5. Specific Description of This Environmental Monitoring

Currently, main road of most sections have been opened for traffic, and sections having not completed remains uncompleted due to objective reasons, so no construction activity of the project is executed this year, and actual site test should be mainly carried out in operation period. According to the environmental sensitive object as specified in the environmental impact report and the possible main environmental impacts in project operation period, our station executed site survey and environmental monitoring of Kuytun urban transport improvement project currently in progress, which are described as follows:

1. Air pollution during road operation mainly comes from secondary dust from auto driving and tail gas, with main pollutants of TSP, NO₂ and CO. Therefore, TSP, NO₂ and CO are determined as the indexes for this atmospheric environment monitoring.

2. Noise monitoring covers road traffic noise and sensitive point noise monitoring, and traffic volume is recorded at the same time.

3. Specific implementation monitoring points are determined according to the completed sections and the sections' sensitive points, mainly in more sensitive areas such as residential area and school, etc. While covering protection object as mentioned in the environmental impact report, monitoring points are arranged in representative places.

4. Monitoring is executed according to corresponding technical specifications for environmental monitoring.

5.1 Atmospheric environment monitoring

Monitoring item: TSP, NO₂ and CO

Monitoring points: atmospheric environment sensitive points near the road to be improved and expanded.

Monitoring time period: monitoring for three consecutive days; sampling time: no less than 12h for TSP per day, no less than 18h for NO₂, CO per day; at least 45 minutes per hour. For details, see Table 5-1.

Table 5-1 Information on Atmospheric Environment Monitoring of Kuytun Urban Transport Improvement Project

Project Name	Name of Section	Monitoring Point	Monitoring Time
S.Tuanjie Street	Beijing Road —Railway Station	Tongjili Community	Sept. 12 to 14, 2011
E. Urumqi Road	Manas Street —Shanshan Street	No. 4 Middle School	Sept. 12 to 14, 2011
Korla Road	Tacheng Street—Tuoli Street	Former Prefecture Architecture School	Sept. 12 to 14, 2011

5.2 Monitoring of noise environment

Monitoring item: equivalent A sound level (Leq) .

Monitoring points: monitoring of noise environment sensitive points on both sides of 11 roads and in the range of 150m around the roads.

Monitoring time period: monitoring by twice a day (24hours), for one day in total.

Table 5-2 Information on Noise Monitoring of Kuytun Urban Transport Improvement Project

S. No.	Project Name	Name of Section	Traffic Noise Monitoring Points	Monitoring Points Involving Sensitive Point	Monitoring Time
1	S.Tuanjie Street	Beijing Road —Railway Station	Xinyuan Hotel	Tongjili Community	Sept. 12 to 13, 2011
2	E. Beijing Road	Manas Street —Shanshan Street	Kuytun Jinye Textile	Residential area of Dongxuanyuan Power Plant	Sept. 12 to 13, 2011
3	E. Urumqi Road	Manas Street —Shanshan Street	No. 4 Middle School	Middle School No. 4	Sept. 12 to 13, 2011
4	W. Qitai Road	Tacheng Street—Tuoli Street	No. 5 Primary School	Primary School No. 5	Sept. 12 to 13, 2011
5	Tacheng Street	S. Ring Road —W. Beijing Road	Yelintao Building 31	Prefecture Kuytun Hospital	Sept. 12 to 13, 2011
6	Wusu Street	S. Ring Road —Urumqi Road	Bureau of Agriculture, Forestry, Fishery and Animal Husbandry	Middle School No. 7 of Kuytun City	Sept. 12 to 13, 2011
7	W. Urumqi Road	Tuoli Street—National Highway No.217	Distillery of Agricultural Regiment No.131	Kuytun Hotel	Sept. 12 to 13, 2011
8	Korla Road	Tacheng Street—Tuoli Street	Former Prefecture Architecture School	Former Prefecture Architecture School	Sept. 12 to 13, 2011

S. No.	Project Name	Name of Section	Traffic Noise Monitoring Points	Monitoring Points Involving Sensitive Point	Monitoring Time
9	Kashi Road	Tacheng Street—Tuoli Street	New public security bureau office building		Sept. 12 to 13, 2011
10	Hefeng Street	Aksu Road —Urumqi Road	Artillery Regiment		Sept. 12 to 13, 2011
11	Emin Street	S. Ring Road —W. Beijing Road	Meteorological Station		Sept. 12 to 13, 2011

6. Monitoring Method and Evaluation Standard

According to relevant technical specifications of China, Kuytun Environmental Function Division and environmental impact report of Kuytun urban transport improvement project, analysis method and evaluation standard for this environmental monitoring are determined as Table 6-1.

Table 6-1 Summary of Analysis Method and Evaluation Standard for Monitoring

Environmental Factors	Sampling and Analysis Method	Evaluation Standard
Groundwater	Technical Specifications for Groundwater Environment Monitoring (HJ/T164-2004)	Groundwater Quality Standard (GB/T14848-1993) Class III standard
Atmosphere	Determination of Total Suspended Particulates in Environmental Air (GB/T15432—1995)	Environmental Air Quality Standard (GB3095-1996) Class II
	Saltzman Method for Determination of Nitrogen Oxide in Environmental Air (GB/T15435-1995)	
	Non-disperse Infrared Method for Determination of CO in Air (GB9801-1988)	
Noise	Sound Environmental Quality Standard (GB3096-2008)	Class 1 and Class 4a Areas' standard of Sound Environmental Quality Standard (GB3096-2008)

7. Environmental Monitoring Result and Evaluation

7.1 Atmospheric environment monitoring result

Atmospheric environment monitoring result is shown as Table 7-1:

Table 7-1 Summary of Atmospheric Environment Monitoring Result

Project Name	Section	Sensitive Point		Pollutant Concentration (mg/m ³)		
		Name	Distance from road center	TSP	NO ₂	CO
S. Tuanjie Street	Beijing Road —Railway Station	Tongjili Community	150m east of the road	0.168	0.035	<1.25

Project Name	Section	Sensitive Point		Pollutant Concentration (mg/m ³)		
		Name	Distance from road center	TSP	NO ₂	CO
E. Urumqi Road	Manas Street—Shanshan Street	No. 4 Middle School	50m north of the road	0.211	0.062	<1.25
Korla Road	Tacheng Street—Tuoli Street	Former Prefecture Architecture School	100m north of the road	0.126	0.045	<1.25
Limited value of Class II standard of Environmental Air Quality Standard(GB3095-1996)				0.30	0.12	4.0
Result evaluation				Up-to-standard		

7.2 Noise environment monitoring result

1. Noise environment sensitive point monitoring

Day-and-night noise monitoring of noise environment sensitive points in this project has been carried out, with noise environment monitoring result shown as Table 7-2:

Table 7-2 Summary of Environmental Sensitive Point Noise Monitoring Result unit: dB(A)

No. of Monitoring Point	Name	Sept. 12		Sept. 13	
		Day	Night	Day	Night
1 [#]	Tongjili Community	52.8	42.2	51.0	43.5
2 [#]	Residential area of Dongxuanyuan Power Plant	54.2	44.4	52.2	42.6
3 [#]	Middle School No. 4	52.4	39.7	47.3	37.5
4 [#]	Primary School No. 5	54.0	43.4	49.4	44.1
5 [#]	Prefecture Kuytun Hospital	45.2	39.9	51.5	41.8
6 [#]	Middle School No. 7 of Kuytun City	43.6	38.8	46.1	40.7
7 [#]	Kuytun Hotel	43.0	40.2	45.7	42.4
8 [#]	Former Prefecture Architecture School	45.8	43.1	48.0	43.4
Limited value of Class I Area standard of Sound Environmental Quality Standard (GB3096-2008)		55	45	55	45
Result evaluation		Up-to-standard			

2. Road traffic noise monitoring

Monitoring of the completed 11 roads has been carried out, with monitoring result shown as Table 7-3:

Table 7-3 Summary of Road Traffic Noise Monitoring Result unit: dB(A)

No. of Monitoring Point	Road Name	Name of Section	Name of Monitoring Point	Sept. 12		Sept. 13	
				Day	Night	Day	Night
1 [#]	S.Tuanjie Street	Beijing Road —Railway Station	Xinyuan Hotel	67.7	61.7	68.3	60.8
2 [#]	E. Beijing Road	Manas Street —Shanshan Street	Kuytun Jinye Textile	66.6	60.4	65.2	60.2
3 [#]	E. Urumqi Road	Manas Street —Shanshan Street	Middle School No. 4	69.6	56.0	66.4	58.4
4 [#]	W. Qitai Road	Tacheng Street—Tuoli Street	Primary School No. 5	55.5	49.8	61.3	45.2
5 [#]	Tacheng Street	S. Ring Road —W. Beijing Road	Yelintao Building 31	67.7	63.2	68.9	56.9
6 [#]	Wusu Street	S. Ring Road —Urumqi Road	Bureau of Agriculture, Forestry, Fishery and Animal Husbandry	64.8	60.3	66.9	58.6
7 [#]	W. Urumqi Road	Tuoli Street—National Highway No.217	Distillery of Agricultural Regiment No.131	67.8	61.3	69.1	54.9
8 [#]	Korla Road	Tacheng Street—Tuoli Street	Former Prefecture Architecture School	63.6	58.6	62.5	54.1
9 [#]	Kashi Road	Tacheng Street—Tuoli Street	New public security bureau office building	60.2	46.5	62.2	48.2
10 [#]	Hefeng Street	Aksu Road —Urumqi Road	Artillery Regiment	62.7	47.2	58.8	46.8
11 [#]	Emin Street	S. Ring Road —W. Beijing Road	Meteorological Station	60.8	44.4	59.6	45.5
Limited value of Class 4a Area standard of Sound Environmental Quality Standard (GB3096-2008)				70	55	70	55
Result evaluation: up-to-standard during day. Over standard during night in some sections by 1.0-8.2dB(A). Environmental sensitive points involved include community, school, hospital and hotel, etc.							

7.3 Summary of monitoring

Through this site survey and environmental monitoring, Kuytun urban transport improvement project has been executed by adopting relevant environmental management measures according to requirements of project environmental impact report and the approval document, with the gained effect shown as Table 7-4:

Table 7-4 Summary of Environmental Management Implementation and Effect

S. No.	Pollution Source	Environmental Management Measures Adopted	Monitoring Description	Implementation Effect
1	Auto Tail Gas	(1) To develop gas vehicle to reduce tail gas pollution (2) To strengthen maintenance of road sections under construction and traffic management. (3) To greatly develop public transit and decrease automobile speed (4) To quicken cull-out of old vehicles (5) To formulate and perfect motor vehicle tail gas control regulations; to strengthen motor vehicle tail gas control management	TSP, NO ₂ , CO in surrounding environmental sensitive area up to Class II of Environmental Air Quality Standard(GB3095-1996)	On the premise of increase of traffic volume, degradation of environmental air quality in surrounding area not found
2	Road traffic noise	(1) To erect no tooting sign in relevant sections. (2) To prepare landscaping belts on both sides of road (3) To strengthen maintenance of road in progress and strengthen traffic management	Road traffic noise during daytime up to Class 4a area standard of Sound Environment Quality Standard (GB3096-2008); over standard during night	Surrounding area up to Class 1 area standard of Sound Environment Quality Standard (GB3096-2008)
3	Ecological environmental	(1) Landscaping: to strengthen vegetation reinstatement and road landscaping. (2) Road-related facilities: to guarantee cleanness of road-related facilities and enhance landscape harmony	Vegetation reinstatement and road landscaping have been completed.	No impact to surrounding ecological environmental

8. Monitoring Conclusions and Suggestions

This external environment monitoring of Kuytun urban transport and environmental improvement project with ADB loan shows that in improvement and expansion of the roads completed, relevant construction contractors have basically taken the environmental management measures as proposed in the environmental impact report, and attached sufficient importance to adverse impact to environment that may have during project implementation. According to the external environment monitoring results, corresponding measures have been taken during project implementation to minimize adverse impact to environment. Based on the above-mentioned considerations, the following conclusions on this external environment monitoring are drawn:

1. After taking corresponding environmental management measures, project implementation makes lower impact to atmospheric environment and sound environment of external environment and sensitive points;

2. Road traffic noise value is reported with over-standard record during night, with highest road traffic noise during night found in Tacheng Street, over relevant standard by 8.2dB, to which relevant parties should pay attention.

3. After completion of project, works have been done in time for site clearance and landscaping belt reinstatement, protecting surrounding ecological environment from damage.

Suggestions:

1. Strengthening maintenance of the road constructed; strengthening traffic management;

2. Formulating and perfecting motor vehicle tail gas control regulations to strengthen motor vehicle tail gas control management;

3. Controlling night road traffic noise of over-standard sections. (1) Erecting sound barrier in front of environmental sensitive points or taking other measures; regularly monitoring noise ; (2) Improving traffic management, strengthening road maintenance and vehicle maintenance, strictly limiting speed and perfecting public transit management; (3) Planting tree on both sides of the over-standard sections, particularly in place near environmental sensitive points(community, school, hospital and hotel, etc); improving landscaping ratio.

4. Erecting sign of No Tooting During Class Hour near school.

Appendix 1 Environmental Evaluation Standard and Standard Limited Value

Environmental Factor	Evaluation Standard		Monitoring Item	Standard Value	Unit
Atmosphere	Environmental Air Quality Standard	Class II	TSP	0.30	mg/m ³
			NO ₂	0.08	mg/m ³
			CO	4.00	mg/m ³
Noise	Sound Environmental Quality Standard	Class 1 area	Daytime	55	dB(A)
			Night	45	dB(A)
		Class 4a area	Daytime	70	dB(A)
			Night	55	dB(A)

**Xinjiang Urban Transport and
Environmental Improvement Project**

Loan No.:2526-PRC

**External Environment Monitoring Report
of Turpan City**

(1st)

November of 2011

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1. Task Source and Monitoring Purpose

According to environmental management plan and relevant requirement in environmental impact assessment report of the project of Turpan urban transport and environmental improvement with ADB loan and in Strategic Environmental Impact Assessment (SEIA) , daily monitoring should be carried out of environmental impact factors during construction and trial operation period after completion of the project, with a view to evaluating ① whether effect of environmental protection measures meets requirements of relevant laws and regulations; ② development trend of environmental impact; ③ overall effect of environmental management plan of the project during construction and the trial operation period, in accordance with the target of reducing negative impact of the project, on the basis of relevant national codes and standards as well as ADB's safety policy, and according to environmental impact monitoring and data analysis. Our station, as entrusted with the task of monitoring external environment of Turpan urban transport and environmental improvement project with ADB loan, carried out site survey and site monitoring in October 2011, and hereby prepared this Issue I Report for Monitoring of External Environment under the Project of Turpan Urban Transport and Environmental Improvement with ADB Loan on the basis of the survey and monitoring.

2. Description of the Project

2.1 Project background

Turpan City, located at the east of Xinjiang Uygur Autonomous Region, is the political, economic and cultural center of Turpan Basin, one of important cities in Urumqi economic circle, a famous historical, cultural and tourist city, and an ecological garden city and grape city characterized by altered “urban area and farmland”. The city was a key one on ancient Silk Road, and is now the hub for south-north Xinjiang land transport and transit, with Lanzhou-Xinjiang Railway, National Highway No.312 and Turpan-Urumqi-Dahuangshan Expressway passing through from the east to the west, and South Xinjiang Railway and National Highway No.314 going across from the south to the north, to initially form the two-transversal and two-longitudinal lattice structure transport network and further enhance its striking strategic position in transport. However, with further urban development, the city's infrastructure has lagged behind badly and become failed to meet the needs of current development. Main problems in the field are: due to limitation of financial resources, the

roads are characterized by low-standard structure design, poor subgrade bearing capacity and low-standard pavement design and rough construction, which lead to insufficient surface asphalt thickness on main roads, uneven pavement and bad vehicle driving conditions, seriously influencing road traffic capacity; pavement damage, serious ageing, incomplete road function, and insufficient traffic capacity with some externally radiating roads in urban area, restricting its linkage with other places; shortage of auxiliary facilities such as road lightings, landscapings, parking lot and traffic. Therefore, works must be done to newly construct and improve some roads, and lift current road traffic environment and residents' living environment, so as to make them concerted with urban construction and development.

2.2 Construction scale and description

The project construction mainly consists of road works, including construction of 12 urban roads and improvement of some lanes, including 3 roads (W. Wenhua Road, E. Ring Road and Yucai Road) in old town area, with total length of 3.1km; 9 roads(Huoyanshan Road, Sichou Road, Lvzhou Road, Chanyeyuan Road, New Gaochang Road, New Munar Road, New Xingfu Road, New Guangming Road and New Bezkelik Road) in new town area, with total length of 18.7km. This project will involve improvement of roads with total length of 21.8km, and construction of corresponding auxiliary facilities.

2.3 Organization

This project has the organization chart as follows:

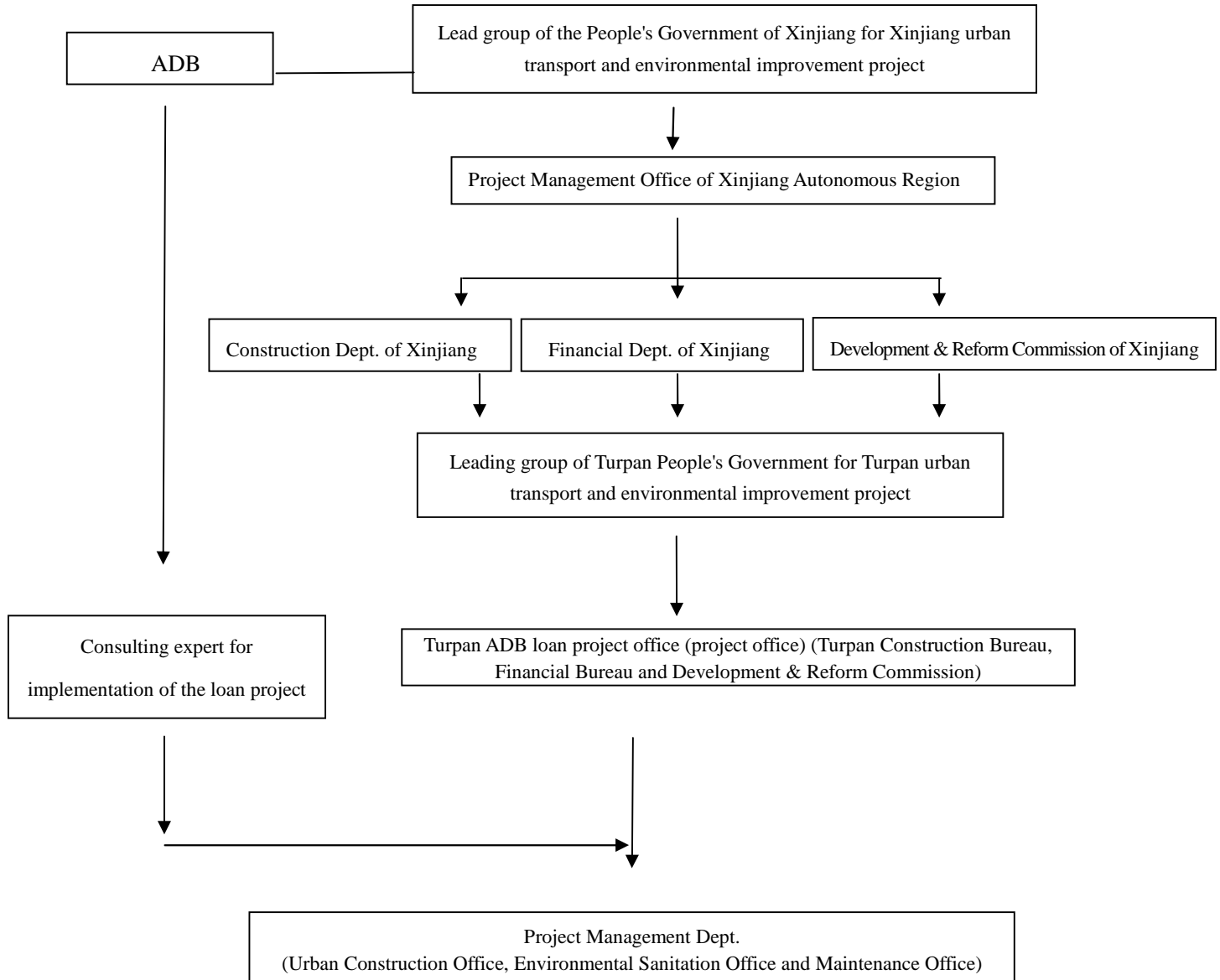


Fig. 2-1 ADB Loan Project Organization Chart

ADB Xinjiang Urban Transport and Environment Improvement Project
—Turpan City Environmental Monitoring Report

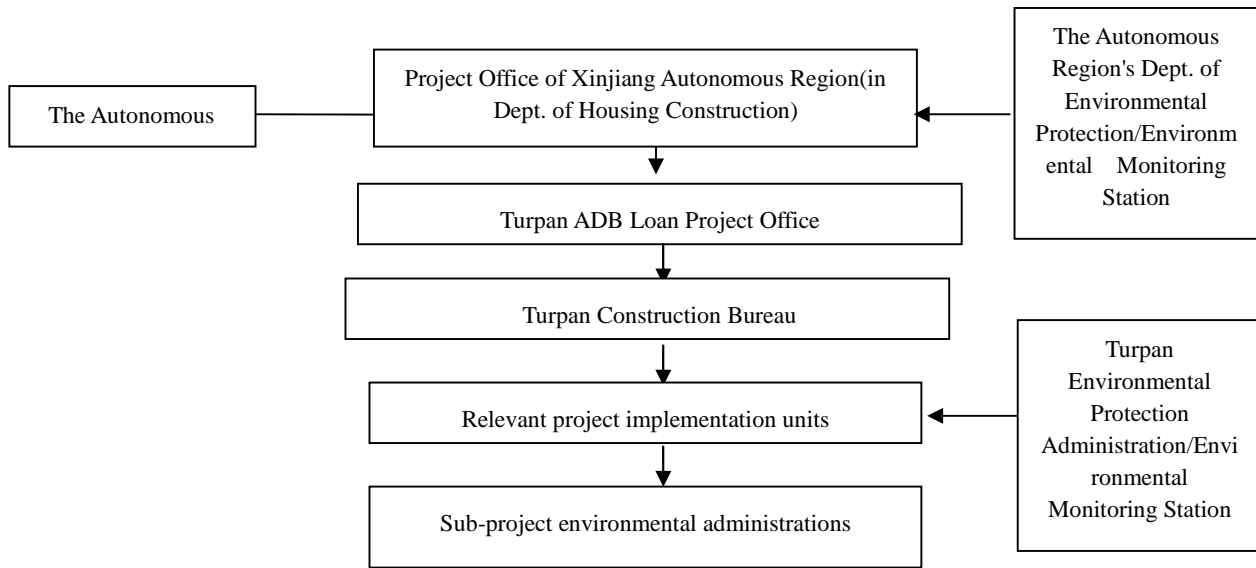


Fig. 2-2 Organization chart for environmental management

2.4 Project progress

Project progress by the end of Nov. 2011 is shown as following Table 2-1.

Table 2-1 Project Construction Progress

S. No.	Name of Road	Implementati on Time	Progress by the End of Nov. 2011	Stage	Investment Completed (ten thousand yuan)	Schedule 2012
1	Lvzhou Road	April 2011	Main traffic lane asphalt pavement completed, and opened for traffic	Construction period	500	To be all completed
2	Huoyanshan Road	April 2011	Main traffic lane asphalt pavement completed, and opened for traffic	Construction period	1500	To be all completed
3	New Guangming Road	April 2011	Main traffic lane asphalt pavement completed, and opened for traffic	Construction period	900	To be all completed
4	New Gaochang Road	April 2011	Main traffic lane asphalt pavement completed, and opened for traffic	Construction period	1200	To be all completed
5	Chanyeyuan Road	April 2011	Main traffic lane asphalt pavement completed, and opened for traffic	Construction period	700	To be all completed
6	Sichou Road	April 2011	Main traffic lane asphalt pavement completed, and opened for traffic	Construction period	990	To be all completed
7	New Xingfu Road	April 2011	Main traffic lane asphalt pavement completed, and opened for traffic	Construction period	750	To be all completed
8	New Munar Road	April 2011	Main traffic lane asphalt pavement completed, and opened for traffic	Construction period	510	To be all completed
9	New Bezkelik Road	April 2011	Main traffic lane asphalt pavement completed, and opened for traffic	Construction period	250	To be all completed
10	E. Ring Road	April 2011	Main traffic lane asphalt pavement completed, and opened for traffic	Construction period	520	To be all completed
11	Yucui Road	April 2011	All completed, and opened for traffic	Construction period	100	To be all completed
12	W. Wenhua Road	April 2011	Demolition not completed, works not started	Tender completed	0	To be all completed

3. Environmental Management Measures

3.1 Purpose of environmental management

Carrying out project management of sub-projects under this project to prevent environmental pollution during construction period and operation period, minimize negative impact to environment during implementation of the project, and finally achieve the goal of urban environment improvement of Turpan City.

3.2 Implementation of environmental management measures

3.2.1 Environmental management during construction period

Table 3-1 Environmental Management Measures During Construction Period

Environmental Problem	Environmental Management Measures During Construction Period
Dust/air pollution	1) Spray water as necessary during construction period, at least twice a day; meeting more residential areas around construction site, spraying frequency should be higher(mainly in lane construction). During subgrade filling, it will be needed to spray so as to compact materials; after the materials are compacted, spray water regularly to control dust.
	2) Powder raw materials such as cement and lime pile should be covered with awnings. In main transportation road into and out of sand and stone yards and construction site, sprayer should be prepared to spray water regularly and at fixed time, so as to reduce dust from handling and transportation of sand and stone.
	3) During construction, subgrade should be compacted layer by layer, and attention should be paid to spraying for dust control. Pipeline laying should be constructed section by section as far as possible. After completion, pipeline trench should be buried in time, so as to resume traffic service as soon as possible, avoid traffic jam and prevent dust from excavation.
Construction camp	1) Sufficient measures should be taken in construction camp, such as providing dustbins and sanitary treatment facilities and removing toilet wastes regularly.
	2) Rubbish should be collected in dustbins in fixed places and removed regularly.
Noise	1) Strictly execute industrial enterprise noise standard, so as to protect construction workers from noise hurt. Workers near high noise source should be given proper protection, and their working hours should be limited.
	2) For construction near residential area, high-noise construction will be prohibited; Machinery that is fixable should be placed far away from residential area.
	3) Strengthen maintenance of machinery and vehicle, to make them keep lower noise.
Ecological environment	1) Reduce excavation and backfilling as far as possible.
	2) Strengthen training of construction workers about environmental protection; works should be done to strictly prohibit waste discharge and vegetation damage.
Water and soil loss	1)Strengthen subgrade protection, and construct road drainage works.
	2)After spoil is placed, the site should be leveled to reinstate vegetation in time.
Accident risk	1) In order to guarantee construction safety, provisional lighting equipment and safety signal device should be erected along the road during construction period.
	2) Take effective safety and warning measures to reduce accident.
Traffic and transportation	1) Make use of local construction materials as far as possible, so as to avoid long-distance transportation of construction materials, particularly earth and stone.
	2) Take sufficient traffic guide measures after consultation with traffic and public security departments when meeting traffic jam during construction period.
	3) Prepare relevant materials in advance during seasons with less traffic jam.

3.2.2 Environmental management during operation period

Table 3-2 Environmental Management Measures During Operation Period

Environmental Problem	Environmental Management Measures During Operation Period
Transportation management	1)Transportation of toxic and harmful chemicals should be subject to three licenses as issued by transport department — transportation permit, driver's license and escorting permit. All vehicles for transportation of hazardous articles should be marked with uniform signs as stipulated by the Ministry of Communications. 2)Public security and transportation management authorities and fire-control department shall specify special transportation route for vehicles transporting hazardous articles, and vehicle with hazardous articles can only stop in the specified parking lot.
Vehicle management	1)Strengthen vehicle management, and vehicles on the road must conform to national auto tail gas emission standard, and be subject to annual check and regular check. 2)Strengthen education of the public of vehicle air pollution, noise and relevant laws and regulations.
Road maintenance	1)Strengthen road maintenance to guarantee normal driving of vehicles, reduce auto tail gas and noise emission and avoid traffic jam. 2)Reasonably arrange for pavement maintenance time to avoid construction during rush hour.
Noise	According to monitoring results to erect noise shield or carry out traffic control in areas with over-standard noise.
Drainage system maintenance	Regularly desilt drainage system, so as to guarantee normal service of drainage system.
Environmental supervision	1) Arrange for full-time members for road cleanness, to remove surface barriers in time and guarantee traffic safety, which is under the responsibility of the city's environmental sanitation team. 2)Regularly maintain and check road sign, warning board and lighting system, to guarantee smooth driving. 3)Protect greening belt; take measures to keep trees in isolation belt and sidewalk growing properly; landscaping plants should keep graceful shape, evergreen and luxuriant, which is under responsibility of the Garden Administration Office.

3.3 Compliance status of loan covenant and institutional development

1. Project implementation unit has strictly followed all applicable national and local environmental laws and regulations, ADB's Environmental Policy (2002), and other laws, regulations and standards of the state, Xinjiang and local government for environmental protection, health, labor and occupational safety, to construct, operate, maintain and monitor project facilities, execute project design and construction contract, operation guiding principle and all environmental alleviation and monitoring measures as detailed in the approved environmental impact assessment report, formulated and implemented environmental monitoring and environmental management measures.

2. Training and capacity development: in order to properly implement this ADB Project, Turpan City has established corresponding sub-project office, with full-time member to be

responsible for environmental affairs of the project, and worked out relevant management system. During Nov. 3 to 5, 2009, ADB Beijing Office offered business training of environmental protection for Xinjiang Project, making project management personnel of Xinjiang at various levels further understand and get familiar with relevant provisions and execution procedures of ADB loan environmental protection policy and improve business quality. In Oct. 2010 Xinjiang Project Office organized personnel of sub-project areas to attend the two-and-a-half-day "Symposium for Best Practice in Sustainable Development of Asian-Pacific Cities" held in Shanghai by ADB East Asia Bureau and the School of Architecture and Urban Planning, Tongji University, carry out exchange of knowledge about sewage and sludge treatment, energy efficiency, urban planning case and urban management, and pay a visit to Zhujiajiao Town, Shanghai reputed as one of best planning cases, to the sewage control project Phase II of Shanghai environmental project with ADB loan, and to sub-project of Bailonggang sludge treatment project. In Jan. 2011 Xinjiang Project Office organized all sub-project units to have training in Urumqi about environmental monitoring in ADB loan project .

4. Goal of Environmental Protection:

According to the environment sensitive goal as specified in ADB's Xinjiang urban transport and environment improvement project —— Turpan Prefecture environment impact report, and on the basis of actual construction progress (except for Yucai Road and New Huoyanshan Road having been opened for operation, the other 10 roads are under construction and do not involve in environmental sensitive point),our station has carried out actual site survey and environmental monitoring of the two road(Yucai Road and New Huoyanshan Road) in operation period under the project, with implementation of relevant environmental protections is shown as following Table 4-1:

S. No.	Environmental Factor	Environmental Protection Goal	Environmental Function
1	Atmospheric environment	Xiangxieli Community	Environment Air Quality Standard(GB3095-1996)Class II
		New Huoyanshan Road residential area	
2	Sound environment	Xiangxieli Community	Class 1 Area standard of Sound Environmental Quality Standard (GB3096-2008)
		New Huoyanshan Road residential area	

5. Specific Contents of this Environmental Monitoring:

All roads for construction are in urban area and near suburb. Site survey shows that the project construction does not involve natural reserves and scenic spot, but involves the noise and atmospheric environmental sensitive points arranged on both sides of the roads.

According to project-influenced area's environmental characteristics and project's environmental impact features, this project plans to have necessary environmental monitoring carried out only in the construction period and operation period.

5.1 Description of the environmental monitoring in this project:

1. Specific point and time for monitoring in operation period should be determined according to the project's actual progress, site items and relevant route.

2. Monitoring points should be mainly placed in more sensitive areas such as residential area and school.

5.1.1 Atmospheric environment monitoring

Monitoring item: TSP, NO₂, CO.

Monitoring point: atmospheric environmental sensitive points near Yucai Road and New Huoyanshan Road.

Monitoring period: Oct. 27 —Oct. 29, 2011, for three days continuously; TSP sampling time no less than 12h per day, NO₂ sampling time no less than 18h per day; at least 45 min per hour for sampling; CO sampling by 500ml, once a day.

5.1.2 Noise environment monitoring

Monitoring item: equivalent sound level A (Leq).

Monitoring point: residential area noise environment sensitive point near Yucai Road and New Huoyanshan Road.

Monitoring period: Oct. 27 -Oct. 28, 2011, once per day and per night, for one day in total.

Monitoring method and evaluation standard:

According to relevant national technical specifications and contents of ADB Xinjiang urban transport and environment improvement project ——Turpan Prefecture environment impact report, analysis method and evaluation standard for this environmental monitoring are shown as Table 5-1.

Table 5-1 Summary of Monitoring Analysis Method and Evaluation Standard

Environmental Factor	Sampling and Analysis Method	Evaluation Standard
Atmospheric	Determination of Total Suspended Particulates in Environmental Air, gravimetric method. (GB/T15432—1995).	Environment Air Quality Standard(GB3095-1996)Class II
	(HJ479-2009)Determination of Nitrogen Dioxide in Environmental Air)-N-(1-naphthyl)ethylene diamine dihydrochloride spectrophotometric method	
	(GB9801-1988)Air quality--Determination of Carbon monoxide--Non- disperisive Infrared Spectrometry	
Noise	Sound Environment Quality Standard 》 (GB3096-2008)	Class 2 Area standard of Sound Environmental Quality Standard (GB3096-2008)

5.2 Environmental monitoring results and evaluation

5.2.1 Atmospheric environment monitoring results

Results of atmospheric monitoring during operation period is shown as Table 5-2:

Table 5-2 Summary of Atmospheric Monitoring Results Unit:mg/m³

Monitoring Point	Monitoring Date	TSP	NO ₂	CO
In Xiangxieli Community	Oct. 27	0.245	0.010	0.4
	Oct. 28	0.256	0.009	0.4
	Oct. 29	0.278	0.008	0.5
In residential area by New Huoyanshan Road	Oct. 27	0.238	0.013	0.3
	Oct. 28	0.241	0.012	0.3
	Oct. 29	0.257	0.013	0.2
Class II limited value in Environment Air Quality Standard(GB3095-1996)		0.30	0.12	4.0

According to the monitoring results in the above summary, daily average of TSP, NO₂, CO with atmospheric environmental sensitive points near Yucai Road and New Huoyanshan Road during operation period conform to Class II standard Environmental Air Quality Standard(GB3095-1996), and no over-standard value is found.

5.2.2 Noise environment monitoring results

This noise monitoring has been carried out day and night at noise environmental sensitive points with Yucai Road and New Huoyanshan Road during operation, with monitoring results shown as Table 5-3:

Table 5-3 Summary of Noise Environmental Monitoring Results Unit :dB(A)

Monitoring Point	Description	Noise Monitoring Value	
		Day	Night
△1 [#]	Xiangxieli Community	48.5	44.9
△2 [#]	New Huoyanshan Road residential area	52.1	47.9
Limited value in Class 2 Area standard of Sound Environmental Quality Standard (GB3096-2008)		60	50

According to the current environmental noise monitoring results it can be found that day and night noise of main sensitive points with Yucai Road and New Huoyanshan Road during operation conforms to Class 2 Area standard of Sound Environmental Quality Standard (GB3096-2008).

6. Monitoring Conclusions and Suggestions

6.1 Conclusion

Results of this external environment monitoring under ADB Xinjiang urban transport and environment improvement project — Turpan Yucai Road and New Huoyanshan Road during operation period conform to the limited value as specified by relevant national standard.

6.2 Suggestions

(1) Separation sound-insulation comprehensive treatment should be carried out for buildings near environmental sensitive point according to actual situations , for example, the first row building near road badly influenced by noise must be given separate sound-insulation comprehensive treatment by erecting double-layer-glass sound-proof windows, etc according to actual situations.

(2) Sound-proof facilities on both sides of the roads must be maintained and repaired regularly, road surface should be maintained properly and damaged pavement should be repaired in time.

(3) Proper traffic safety precautions should be taken during operation period; signboards should be erected with the environmental sensitive points along the roads, to strictly prohibit vehicles transporting chemical hazardous articles from parking near by, and eye-catching signboards or warning boards indicating first-aid telephone number, etc should be erected in sections with frequent accidents, so as to avoid traffic accident and help accident treatment as far as possible.

(4) During road operation, vegetation reinstatement should be continued, and vegetation landscaping should be carried out in urban and township road sections along the route. Works should be done to clear and level traffic short-cut, workers' camp, material yards and borrow and spoil places, for better vegetation reinstatement.

Site Pictures(1)



New Guangming Road



E. Ring Road



Chanyeyuan Road



New Lvzhou Road

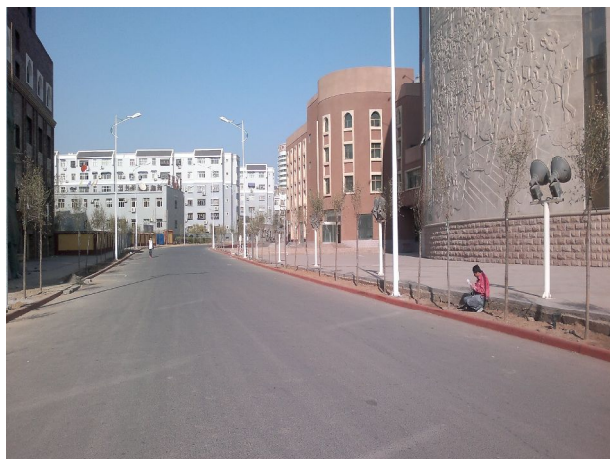


New Xingfu Road

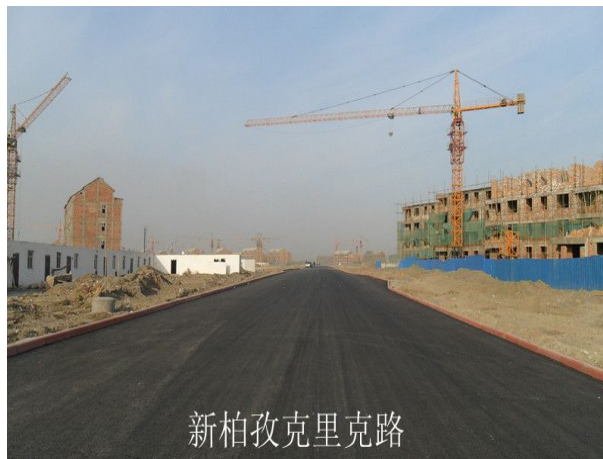


New Gaochang Road

Site Pictures(2)



Yucai Road



新柏孜克里克路

New Bezkelik Road



新木纳尔路

New Munar Road



丝绸路

Sichou Road



火焰山路

Huoyanshan Road