



Social Monitoring Report

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PRC: Gansu Heihe Rural Hydropower Development Investment Program – Dagushan Hydropower Project

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For Gansu Heihe Hydropower Development Company

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Asian Development Bank

**Loan 2408-PRC: Gansu Heihe Rural
Hydropower Development Investment Program
– Dagushan Hydropower Project**

**Resettlement and Social Impact
Evaluation Report**

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Abstract

In order to assess the general situation of Dagushan Hydropower Project, the evaluation group investigated the Dagushan Hydropower Station, interviewed the local herdsman, and met the managers of the company and township leaders, getting detailed information about the running conditions of Dagushan Hydropower Station, the management of the company, and the impact from the project construction on the local natural environment and the living condition of the herdsman. The results of the assessment which based on the information the evaluation group got earlier are as follows:

All the projects of the Dagushan Hydropower Company were finished in time as expected, and 3 generating sets have been put into use and start making profit. The compensation of the land acquisition has been done according to the compensation standard. The restoring work of the temporary occupied grassland is going on according to the plan. It has not been finished.

There has been a series of rules of management for the Dagushan Hydropower Company, especially focuses on the security of manufacture. The staff training plan has been established at the same time. But both the rules and the plan are not good enough, still need to be improved.

In order to promote the local development, Dagushan Hydropower Company gave great support to the local social undertaking, improved the local transportation and communication conditions, but the company has not brought up a detailed plan of the development of the minority.

The pollution from the Dagushan Hydropower Company to the pastoral areas and the herdsman has disappeared, but not that the pollution issue has been settled completely.

As to the current problems of Dagushan Company, the evaluation group gave the following suggestions:

Land acquisition and compensation needs a open and reasonable procedure. Informal land acquisition is not allowed, and a land acquisition agreement with both

sides signed on is a must each time.

To explore and establish a rational management system, and do better on manufacture security, improve the encouraging staff training system.

Pay constant attention to the pollution that the project construction brings.

Loan 2408-PRC: Gansu Heihe Rural Hydropower Development Investment Program – Dagushan Hydropower Project

Resettlement and Social Impact Evaluation Report

Authorized by Dagushan Hydropower Company of Zhangye of Gansu Province, the evaluation group did field investigation on the Dagushan Hydropower Station's operation, the Dagushan Company's management and the impact caused by the project construction on the local natural environment, economic and society. The evaluation group now submitted the assessment report based on field investigation.

1. The Field Investigation

1.1 Investigation of Dagushan Hydropower Station

The evaluation group, accompanied by the staff of Dagushan Company, inspected the management and support staff working and living area, tunnel and unit installation area, dam area. The purpose is to understand the construction of hydropower stations relationship with the surrounding environment in order to accurately grasp the impact that the construction may possibly cause to the surrounding environment.

1.2 Meeting the Management Layer of Dagushan Company

On December 2nd, the evaluation group met with the company's general manager Mr. Yang Xingmin of Dagushan to understand the company's current operating situation, the company's earnings, the company's management, staff

assessment measures and training programs, construction process dealing with pastoral relationship with the measures and principles, what Dagushan did on the local public welfare and other aspects.

1.3 Visiting the Local Herdsmen and Meeting the Township Leaders

The four affected herdsmen are still Xingshe Shang, Changlin Hu ,Xingwei Bai, Xingmin Hu interviewed. Interview by herdsman, the evaluation group got to know the herdsman of Dagushan project evaluation and attitude, and the herdsman of Dagushan's recommendations and expectations. During this period also learned about the horseshoe village Mayor Huang Dagushan projects on view.

2. The Natural Environment and the Social Economic Environment of the Affected Area

2.1 The Natural Environment

Dagushan station is located in Zhangye City, Gansu Province, horseshoe Sunan, rural township and recreation within the middle of Heihe Grand Canyon from the Zhangye City, about 120km.Power Station where Chief Dagushan high terrain southeast to northwest, with an average elevation of 3,000 meters, the highest about 5,000 meters above sea level, about 1,500 meters above sea level in low-lying areas; is a semi-arid areas, less rainfall and uneven, the average annual precipitation is 499mm,less in summer and other seasons; annual mean temperature 8.50C, the maximum temperature 32.40C, minimum temperature-330C, prone to cause frost damage. Rocky mountain to the main mountain, the soil layer is thin ,low ,density vegetation cover, showing alpine semi-desert state of soil once the damages is difficult to restore vegetation. Mountainous, high altitude, dry climate, poor ecological conditions are harsh natural conditions of the region's overall characteristics.

2.2 The Social Economic Environment

The total population of the project site which in Southern Yugur Autonomous, is 35,720 of 10 major nations, including Tibetan, Yugur, Han, Hui and

Mongolian.Horseshoe rural Tibetan village and recreational area is a direct impact on projects, which has 4708 people (1170) and 3766 people (940 households). In the horseshoe over 90% of rural population is Tibetans, in Leisure more than 80% of rural population Yugur. The nearest village from the project about 24 km in the Temple Lung village, located in Shandong, the other side, and its population of 218 people (March 2007). The project area has road access to the nearest village is banana Wan.Near the Black River valley in the project there are no permanent settlements.

Directly affected by the villagers of the project the main building for the Horseshoe Zi Township Township Village and Leisure Village, Temple Lung and Hongshiwo villages with a total population of 793 people (159) (2007). The main livelihood of the villagers in the steep dry mountain grasslands grazing sheep and a small number of other livestock (such as yaks, horses, donkeys, mules and goats, etc.) for a living, less than 10% of people with non-agricultural income, the majority family (90%) mainly rely on livestock and livestock products to support the family livelihood and as a source of family income. In the affected areas, the average household about 200 head of cattle, of which 3% for large livestock (yaks,cows horses,donkeys,mules), 97% of sheep. In addition and a small amount of food crops and forage species, the basic for self-sufficiency.

Project area where the project is no cultural heritage, historical buildings and religious artifacts and so on. Culture, the horseshoe-shaped village of Tibetans and recreation all believe in Tibetan Buddhism Yugur has its own language. Tibetan and recreation horseshoe Township Yugur still retain their nomadic customs, grazing is still the main livelihood of their livestock is still their main source of income.Harmonious ethnic relations in the region, in the community without any racial discrimination.

3. Brief Introduction of Dagushan Company and the Hydropower Station

Zhangye Dagushan Hydropower Company of Gansu province was built in 2007 by the Gansu Zangye Heihe Hydropower Development Co.,Ltd. shares the exclusive

investment and construction, which is Zhangye City "Eleventh Five-Year "Key investment projects.

Dagushan station is located in the middle of the Grand Canyon of Heihe River the fifth Cascade Hydropower Stations, which is a hydroelectric power, ferroalloy production, mechanical and electrical installation, power-related industrial development, electricity sales business. Hydropower station construction budget for the investment 470 million yuan, the design capacity of 6.5Mv, annual power output 220million kwh,of instailed capacity utilization hours 3094 hours,the design water flow rate 105m³/s,design head of 73m is a medium-sized third-class project.Diversion Project in the main power station, diversion tunnel, surge tank, high pressure pipeline, plant, booster station and other components.

Power station completed in july 2009 put into operation in 2009,generating 1.6228 million kwh,11 months of 2010 generated a total of 246 million Kwh, over plans to complete 40 million Kwh.

By now, in addition to water conservation, environment project check and acceptance,the electrical and mechanical equipment operation and stability,no major technology projects.

4. The Company's Operation Situation

Dagushan Hydropower station began to be constructed in March 2007, and the three generators put into operation in July, 2009. 2.2 million kwh electricity is generated a year, and 5000 billion yuan income was achieved. Profit tax is 1600 billion yuan. CDM project of Dagushan Hydropower station have an agreement with Eco Financial Group of UK about buying carbon-reduction. Benefit period is three and a half years, Total revenue is expected to 6650 billion yuan.

By November 2010, the main business income of Dagushan Hydropower station is 47,140,128.85 yuan, profit on sales is 27,544,541.59 yuan, operating profit is 12,338,885.67 yuan, gross profit is 12,318,885.67 yuan, finance cost are 11,360,504.09 yuan. Taxes are 8,729,262.27 yuan. The station works normal and starts to get profit now. Its tax is the third in enterprises of Zhang Ye.

5. The Company's Management

5.1 Security Management

According to the relevant requirements, safety evaluation should be carried out in generate-electricity manufacture. Therefore, invited by Dagushan Hydropower station, Lanzhou Electrical Supervisor's Office sent a group of experts to evaluate the safety condition for Dagushan Hydropower station. The items which were pointed out by the evaluation group should be rectificated to achieve the requirement of the project.

According to the actual situation, Dagushan Hydropower station singled out the vehicle security system from other security systems, and formulated and issued a special vehicle safety management system that requires the vehicles must be checked before departure, routine checked monthly and the checked sheets should be filled every time.

5.2 Manufacturing Management

To generate more electricity, Dagushan Hydropower station details the generation task. At the beginning of every year, according to the task of the yearly, electricity generation capacity was disassembled to every month,, and reasonably assigned to teams and groups. By means of process control, the company staged the work tasks to ensure the annual production goals.

The maintenance department organizes the team leaders and productive workers to report the production and operation condition every month. To improve generation efficiency, many measures were used, such as changing the generators promptly and raising the water head ect. At the same time, by improving the work efficiency in frontline to make up the generation shortage that caused by dry season or the generators output was not enough. According to maintenance work standards and monthly work plan, maintenance workers work on spot from 19:00-22:00 each day to discover and eliminate the hidden danger of the equipments in order to reduce the numbers of generator downtime and the unnecessary power loss.

Dagushan Hydropower station also coordinated with the upper Three Bay

Hydropower Station and EHC to maintain the same start and stop time of the two power stations. According to the variation of water volume to adjust and select the appropriate generators to work.

5.3 Staff Training

According to the training plan at the beginning of the year, the training and check-up system was set up. There are a group leaders meeting and a staff meeting every month. Leadership in workshop and director of technical mastery staff will answer any questions that the workers don't understand to ensure the workers understand completely.

Maintenance workers work and learn at the same time. They mainly use the opportunity of the machine heavy repair and machine detection time to enhance their actual operation and experience on maintenance and improve their working ability.

Every half a year , staffs have a professional exam. And the exam results will be post in the bulletin boards. The unqualified workers will be punished in economic. By all these ways, the professional quality and capacity of workers were improved.

The company focuses on staff training, including inside and outside, training inside is general. Some of the peoples were selected to send to universities and colleges to take part in a three months off-job training to enrich the company's technical strength.

6. The Grassland Acquisition and Compensation

All grassland which is occupied by Dagushan Hydropower project is the pasture of the residents, including permanent and temporary acquisition land. The permanent acquisition land is used to build factory and residential district, temporary acquisition land is mainly used to put building materials and rubbish. All grassland occupied by Dagushan Hydropower station is 281.544 mu, compensation payments is 173832.4 yuan(according to the occupying agreement of Dagushan Hydropower station),showed on chart 1.

According to "Grassland Law" and "Sunan Grassland Management Ordinance and Regulations" of the People's Republic of China, the grasslands compensation

which caused by Dagushan Hydropower project were imposed by Sunan County Grassland Management and return to the residents as required by law, The grassland compensation standard is 600 yuan per mu. Group has verified with the resident whose grassland was occupied and found out that all herdsmen now have received compensation fully according to the standard. As time passed, herdsmen think the compensation is lower.

Otherwise, material dreg factory of Dagushan Hydropower station bury the road to a river, lead to Hu Xinmin's sheep can't water through it. Dagushan Hydropower station should help rebuild a new road to the river.

Chart1. The grassland acquisition and Compensation details of the Dagushang Hydropower Project

Village	Name	grassland acquisition (mu)	Compensation (yuan)	Notes	Agreed time
Louzhuangzi village	Mao Huai ren	4.83	2898	600yuan/mu	2010.01.15
	Xu Xingfa	14.32	12792	600yuan/mu, compensation of temporary acquisition land is 4200yuan.	2010.01.15
	He Xuecheng's' commom grassland	33.6	20160	600yuan/mu, deducting 20 % management fee of Grassland Management and paying off one-time	2009.06.30
	Du Xuedong	22.6	13560	600yuan/mu, deducting 20 % management fee of Grassland Management and paying off one-time	2009.06.30
		33.418	20050.8	600yuan/mu , grassland of Erzilonggou	2007.12.05
	Hu Changlin	3.0	2500	600yuan/mu , compensation of 4	2007.10.24

Yangfangzi village is

				700yuan.	
		1.0	600	600yuan/mu	2007.05.25
	Hu Xingmin	8.046	4827.6	600yuan/mu, occupation of factory buildings.	2007.12.05
		4.17	2502	600yuan/mu	2010.1.15
Sidalong village	Lan Heying	19.5	81942	600yuan/mu	2006.11.15
Hongshiwo village	Shang Xingshe	18.9			
Louzhuangzi village	Wang Xiaoping	12.86			
	Hu Zhengli	60.93			
	Mao Huaiaren	24.37			
Hongshiwo village	Collective grassland	20.0	12000	600yuan/mu , collective grassland of Dagangou village	2007.05.25
Total		281.544	173832.4		

As the construction of Dagushan hydropower projects has been finished, the temporary acquisition and compensation are no longer the issue. And the past issues of the temporary acquisition and compensation have fully settled. It is no longer any dispute about the acquisition.

The acquisition is mostly temporary, because herdsmen around are few. Dagushan hydropower station recommend they compensate grassland through private consultations with herdsmen and herdsmen think private consultation better. The reasons are about two points, the first, herdsmen think national compensation is too low, they can get some more compensation through private consultation. The second, compensation is issued by Grassland Management, with 20% management fee through issued process.

7. The Major Impact of the Project on the Local Area

7.1 Economic Effect of Land Acquisition on the Herdsmen

During the interviewing process, the assessment team interviewed with the herdsmen Shang Xingshe and Hu Xingming, they both said the number of their own sheep in 2010 has less than 2009, and Shang Xingshe is considered that the project affect the number of his sheep raising. The other three household considered that the Dagushan project had no effect on the number of their sheep. The assessment team noted that the number of grassland owned by local herdsmen reach to the thousands even tens of thousands mu. Considering the project affect the number of sheep raising, Shang Xingshe only has 20 mu grassland occupied permanently by Dagushan project, the main reason of the reduced sheep raising number is he has more than 150 mu fall grassland was submerged by Xiaogushan Hydropower station.

The four persons affected mostly by Dagushan project are Shang Xingshe, Hu Changlin, Bai Xingwei, Hu Xingming. According to their situation can be inferred that Dagushan project had no significant effect on the number of the local sheep raising. Chart 3 is the sheep number about respondents herdsmen in 2009、2010 and the livestock income、household expenditure of 2010

Table 3: The sheep number about herdsmen in 2009、2010 and family income and expenditure of 2010

Name	Sheep raising Number		Sold In 2010	Unit price	Other Income	Total Income	Total Expenditure
	2009	2010					
Shang Xingshe	More than 600	400	200	250	Cashmere	About 50,000	30,000-40,000
Hu Changlin	200	200	100	390	Wool More than 7,000	About 46,000	About 10,000

Bai Xingwei	150	150	Lamb 110	370	None	About 45,500	Not mention
			Sheep 10	480			
Hu Xingming	More than 300	300	Lamb 270	380	Wool etc.	About 120,00 0	About 40,000
			Sheep 30	500			

In addition, the general Yang, the president of the Dagushan company said the company has ever provided some job opportunities to the local herdsman, but those are temporary work, with the completion of the project construction, these job opportunities will be less and less.

Overall, assessment team believes that Dagushan Hydropower project on the local herdsman direct impact of income is weak. But not to say that project had no effect on local economic development. The significance of local economic development made by Dagushan Hydropower Company is reflected in local transportation, communication and other infrastructure construction.

7.2 Effect on the Local Transportation

In the early stages of the project, Dagushan Hydropower project was taking the road from urban areas through Dayekou, Louzhuangzi village belong to Mati township, and other parts of the village. After the start of the project, Dagushan Hydropower company, Xiaogushan Hydropower company, Erlongshan Hydropower company and other related companies widen the existing road, covered with stones. After that, the bus through the village to the urban areas are increased, a round trip from the original three classes one week into every day intervals. Because of shorten the time to go into urban areas, herdsman to urban shopping, medical care has become more convenient, at the same time, facilitating the sale of animal husbandry products and their children go to the city school.

In the early stages of the project, the traffic pose a threat to the security of the herdsman and their sheep, traffic noise and dust cause great pollution on the local environment. In order to reduce the environmental pollution of pastoral areas, also

convenient for the related company's access to the hydropower station, Dagushan Company financing combined with other hydropower companies built another road opened in 2008 to avoid to through the pastoral areas. Therefore, the project in environment pollution of pastoral areas has been greatly decreased, result can be very slight. But Hu Xingming also reflects that Dagushan、Xiaogushan and other companies do not take the road maintenance, because they take the newly built road, not always take the road through the pastoral areas. However, the road through the pastoral areas has been held down bumpily by some truck, became very difficult to walk. So we recommend that Dagushan Company can continue to maintain the road. But the Dagushan company also pointed out that the road through the pastoral areas now has a very large improvement than before, the current problems about the road is that the local herdsmen do not take good care of the road, some herdsmen destroyed the road to irrigate lawn or dig ditches in the road. Assessment team members also met some small ditch dug by herdsmen, causing damage to the road.

Assessment team consider that this problem should be resolved by the government、hydropower companies and herdsmen through consultation. The company should bear some responsibility for road maintenance, however, the government and the herdsmen should also bear some responsibility for maintenance.

7.3 Effect on the Local Communication System and Electric Power

According to assessment team members understand that there is no signal tower until the Dagushan hydropower station established here. At that time, herdsmen contact with outsiders only by the fixed-line telephone, it is very inconvenient to link once go out for grazing. After the start of the project, Dagushan and other hydropower companies invited China Mobile, China Telecom and other communication service providers to build signal towers in the local mountains; this makes local communication has great improvement.

According to the introduction of the interviewed herdsmen, since the communication companies build signal towers, each adult herdsmen owns two mobile phones except the fixed-line telephone, one is China Mobile or China Unicom's

mobile phone, the other is China Telecom's CDMA450. Because of the power of China Telecom's mobile telephone base station is stronger than China Unicom and China Mobile's, so the CDMA450 become the best choice when grazing in the mountains. Now,

Herdsmen could keep in touch with their family members or outsiders all times, no matter at home or grazing.

7.4 Effect on the Local Ecological Environment

Assessment team evaluates the effect of the Dagushan hydropower project for the local environment from two aspects: environmental destruction and governance. Environmental destruction can be divided into two aspects of environmental pollution and grassland destruction.

Dust pollution, noise pollution and solid waste pollution were the mainly problems during the project construction. These pollution problems had a direct impact on local herdsmen before the new road opened up. For example, the herdsman Bai Xingwei mentioned that there were so many people passed here over the past, they left a lot of garbage, many people also defecated indiscriminately, these acts take some adverse impact on the local environment. Besides, the noise of truck seriously disturbs the herdsmen's lives. The dust has polluted the surrounding grassland and water, and brought some threats to the diet of, sheep, especially stomach illness. However, these problems have been solved with the new road opening.

Because of the local climate is arid, the soil layer is thin, grassland is difficult to restore after destroy, so the temporary grassland occupied by Dagushan company have been damaged to varying degrees. According to assessment team members understanding, now most of the grassland occupied temporarily has been restored by the way of landfill、overburden. This work is not completed, and could pass the acceptance of environmental protection departments after the future. Hu Xingming said the local grassland damaged easily, but difficult to restore. He said they probably have to wait several years before the grassland had been requisitioned to restore the previous appearance. Therefore, the grassland restoration work of Dagushan Company still has a long way to go. Dagushan company need to attract attention is

that we do not affect the daily lives of herdsmen is not equal we completely solve the problem of environmental pollution. Whether the project is built on the herdsman inhabitation, environmental protection, pollution prevention is the constant theme.

8. Dagushan Company's Contribution to the Local Public Welfare

In addition to the above-mentioned behavior such as repairing roads or circuit, Dagushan company also carried out some other local public welfare projects, for example ,they build water cellars、laying water pipes、plant trees、and build pagoda for Louzhuangzi village.

According to the introduction made by responsible person of Dagushan Company, the company invested 90,000 yuan for the construction of the water cellars and water pipe for Louzhuangzi village between 2009 to 2010, which spent more than 60,000 for water pipe revision, 30,000 for water cellars construction. Except these, since early 2010,the company spent 76,000 for trees planting on local areas. Since the vast majority of Mati village is Tibetans, belief in Tibetan Buddhism. Dagushan Company built a 9-meter-high white pagoda in the one side of dams' hillside in order to facilitate shrine of households nearby. And this pagoda spent nearly 30 million from construction to invited the Lama to Buddhist activities.

While doing the above public welfare, Huang, the mayor of Mati village, most concerned about the development of local minority. For example, carrying out Sino-Tibetan bilingual education、 protection of Tibetan customs and culture、 the development of local economy、 herdsmen single source of income change, etc. Perhaps in the future, the company can develop a number of local tourism projects.

9. Summary and suggestions

Zhangye Dagushan Hydropower Station has been put into use and started to make profit. The company's operation, producing and management are going steadily, and gradually achieve both economic and social benefit. The present situation of Dagushan Company can be summarize as follows:

1. The hydropower station was built and start generating power. Economic benefit has appeared. The generating system is running well, and the developing potential is

optimistic.

2. The company established a series of management system, and it is gradually improving. The manufacture security has been put on agenda.
3. In order to improve the quality of the staff, a plan of staff training is established and will be carried out on time.
4. The pollution problem that the project brought has been solved completely
5. By carrying out social public charities, the company established a close relationship with the local government and herdsman.
6. The hydropower station promoted the development of the local transportation, communication and social undertaking.

However, because the Dagushan company is newly opened, some problems are exist. For example, every management system is not detailed, and it is inflexible to encourage staff only by imposing a fine; there is not a development plan for minority.

To solve the present problems, the evaluation group suggested that a complete modern management system should be established, to making management scientific and standard. The details are as follows:

1. To enrich the way that training the staff and change the unreasonable part. To explore new forms of staff training to improve the quality of the staff.
2. it is necessary to increase input on environment protection, and solve the pollution problem which caused by the project as soon as possible. Meanwhile, to protect the local grass land, and restore the grassland which has been destroyed.
3. To establish a development plan for minority, and help with developing the local economic and cultural undertaking, trying to achieve social benefit as well as economic benefit.