World Bank Loan Project

Ningxia Desertification Control and Ecological Protection Project

Social Assessment Report

Ningxia University

Yinchuan of China

2011-09-18

Prepared by: Ningxia University
Address: 489# Helanshan Xilu Road, Yinchuan, Ningxia, PRC
Telephone: 0086-951-2061661
Fax: 0086-951-2061661
Postal Code: 750021
Email：hlj1963@163.com
Person in Charge of Social Assessment: Huang Lijun
Staff in Social Assessment: Huang Lijun, Wang Yu, Bao Wanghu, Feng Xuejun, Yang Xiaoyan, Li Lijuan, Huang Yue, Ji Jingwen
Written by: Huang Lijun, Wang Yu, Bao Wanghu
Checked and approved by: He Quanfa

AL	Alternative Livelihood
AV	Administrative village
CYFNR	closed young forest for natural rehabilitation
DC	Desertification control
EE	Ecological economic
EF	Economic forest
FF	Forest farm
FGB	Free-grazing ban
HH	Household
LCP	the land conversion program
LSFD	land suitable for forestry development
NIFCC	Ningxia International Forestry Cooperation Center
SA	social assessment
SCVR	sandland closure for vegetation rehabilitation
T	Township
V	Village
UNCCD	United Nations Convention to Combat Desertification
	1 ha = 15 mu

Table of Contents

Summary

Entrusted by Ningxia Desertification Control and Ecological Protection Project (hereafter as the project) and Ningxia International Forestry Cooperation Center under Ningxia Forestry Bureau, the social experts of Ningxia University made social assessment (SA) in the 7 project counties from the 15th July to the 10th August 2010. The SA report was completed on the 15th Aug 2011. The SA report is composed of 2 parts: (i) assessment of the overall social impacts of the project and (ii) assessment of the project impacts on the stakeholders.

The project region is the marginal areas of the Maowusu Sandland at the east side of the Yellow River, the southern margin of the Tengeri Desert and the places along the Yellow River. The project area extends from Hong'aizi of Pingluo County at the north to Yingwanquan Railway Station in Zhongwei County at the southwest. The eastern boundary is Huamachi Township of Yanchi County at the east. The project will be implemented in 7 county units such as Pingluo County, Xingqing District, Lingwu City, Yanchi County, Litong District, Qingtongxia City and Zhongwei County. It is estimated that the project will directly benefit 500,000 people (99% rural people) in 12 townships and 14 state farms. Within the project area, one county is in the national list of poverty reduction.

In the preparation phase, the SA experts of the World Bank identified key social factors impacting the project implementation. They are:

- the social impacts of desertification control and ecological-economic forest development, covering the behaviors of the impacted people, livestock development, social participation, off-farm income generating, institutional arrangement, poverty reduction, participation willingness and capacity and so on;
- the social impacts of ecological protection forests, covering the livelihood of the impacted people, poverty reduction, participation willingness and capacity and so on;
- women and the Hui Muslims, relating with (i) the relevant policies of women and ethnic minorities, (ii) the features of population, society and culture of women and the Hui Muslims, (iii) learning the concrete requirements of women and the Hui Muslims through solicitation, (iv) seeking supports of the Hui Muslims for the project through solicitation; (v) proposing measures adaptive to the culture of the Hui Muslims to avoid or mitigate any negative impacts possible to the Hui Muslims.

Keeping in mind the above social factors and on the basis of the field social assessment, this report focuses on:

(1) The poverty-stricken people in the project area and the impacts of the project on the poverty-stricken people: None of the project activities will be related with land requisition. Sufficient considerations were made on the poverty-stricken rural people in the project design. Viewing from the following points, the current planning and design of the project will not generate problems of marginalizing the poverty-stricken people or resulting in new poverty, because (i) the project will help improve the ecological environment, livelihood and health of the poverty-stricken people; (ii) the project implementation will provide the poverty-stricken people with income generating opportunities; and (iii) the post-management of the project will provide the poverty-stricken people with livelihood rehabilitation and development opportunities.

(2) Involuntary resettlement in the project area: The project will not be involved with (i) house demolishment and resettlement or involuntary resettlement, (ii) any livelihood change or income decrease of the rural people impacted by land requisition, or (iii) any potential or long-term inconveniences in society, culture or psychology.

(3) Residents behavior in the project area and the protection of ecological environment: The report has made special consideration of the awareness of the impacted people of desertification control and ecological protection as well as the combination of the production and livelihood of the local people with the objectives of the project construction. It is observed that the ecological problems in the project area are closely related with the production and livelihood measures of the impacted communities in the project area.

(4) Participation of stakeholders: In the field investigations by means of meetings, interviews, drawing and ranking, the SA group conducted prophase information publicity in favor of stakeholder participation. The group discussed and analyzed with the stakeholders the issues of development, project requirements, project impacts and proposals. On the basis of this, the group formulated guidelines of stakeholder participation.

The SA group thinks the social-economic benefits of this desertification control and ecological protection project are mainly reflected in:

(1) This project of desertification control and ecological protection will be located at the east side of the Yellow River. It is a place where Ning Dong Energy and Chemical Base are located and it is also the place to host economic development, tourism development, flood prevention and ecological security in Ningxia. The Government of Ningxia has been paying lots of attention to forestry ecological construction. With the World Bank loan, the project is an important measure to build regional advantage ecology in favor of the local people and the economic-social rapid development in

Ningxia.

(2) Through the project implementation for desertification control and ecological protection, farmers' dependence on traditional production means in the project area will be gradually shifted to the adjustment of agricultural structures with integrated management. In the process of accelerating desertification control and improving ecological environment, the production structure in the desertified areas will be adjusted, new industries will be developed and new channels of income generating will be created for the local people in desertified areas. When the ecological-economic protective trees in the project reach the peak of fruit production, the farmers will have higher income and there will be a remarkable progress in local economic development for a beneficial cycle among "desertification control, agricultural increment and enterprise profit increase". Through participating in the project construction and technical training, the store of knowledge and concept of the project farmers will be remarkably enriched in favor of sustainable development. In addition, the project construction will make positive contribution to national unity and social harmonization.

(3) The project construction will have far-reaching effects pushing forward agricultural development and rural progress, including (i) improving ecological environment in the countryside; (ii) improving rural infrastructure; (iii) pushing forward the development of tourism, agriculture and service industry; (iv) increasing employment opportunities in the relevant industries during and after the project construction; and (v) laying a solid foundation for continuous desertification control.

(4) The project activities of desertification control and ecological construction will help optimize agricultural structure, and push forward the rapid development of sand industry, livestock raising and ecological tourism, in which the farmers will have higher income.

(5) The project implementation will help upgrade the capacity building of the ecological and environment protection institutions in the project area. Through importing advanced methods and systems of project management, the professionality of the ecological and environment protection staff will be upgraded. In addition, the project implementation will help upgrade the awareness of the project farmers in ecological protection.

(6) The project implementation will help improve the living environment, health conditions and living conditions of the poverty-stricken people. In addition, the project will provide them with some employment opportunities in favor of their income generating.

The potential social risks identified by the assessment group include:

(1) Conflicts between the water demands between the project and the surrounding agriculture and animal husbandry: Around one third of the project area will be located at the drylands at the central part of Ningxia, where the poverty-stricken people live in compacts and agriculture and animal husbandry are the leading industries.

(2) Conflicts between the ecological sustainability of the project and the livestock development of the local people: Most of the local people have recognized the importance in grassland protection and ecological environment improvement. They respect the governmental policy of free-grazing ban (FGB) and employ confined feeding in livestock development. However, limited number of farmers still follows a livestock development pattern of semi-grazing and semi-feeding to reduce production cost. There are many cases of night grazing or grazing in the farmland or windbreak shelter belts along roads damaging crops or trees.

(3) Deficiency in the project information publicity among the impacted people in the preparation stage: The SA group observed in the field investigation that most of the impacted households learnt not any information of the project.

(4) Risks in post-management of the project: Since a project of desertification control does not orient at economic benefit and even ecological effect can be hardly observed in short time, the post-management of the project will be very important.

(5) Farmers' recognition of desertification control and ecological protection as well as its impacts on their income: The SA group observed in the field investigations that the major stakeholders had not sufficiently recognized their due role in desertification control and ecological protection. They neither agreed that they were responsible for protecting the surrounding environment, they nor thought that they were one of the key bodies of environment protection. The group also observed that there was a remarkable gap between the governmental objectives of ecological protection and the income increase expectation of the farmers through the project vegetation building. This problem will impact the project objectives if the farmers' participation in desertification control and vegetation building is not out of their willingness.

Aiming at the above social risks possible, the SA group proposes:

(1) Optimizing design: Whenever possible, advanced technologies and facilities of water saving should be designed. The scales of supplementary watering and water storage facilities should be reasonably arranged.

(2) Formulating guidelines of beneficiary (major stakeholder) participation: The project beneficiaries will participate in the project throughout the whole process from

preparation, design, implementation to monitoring/evaluation.

(3) Strengthening the project information publicity: It should be designed that the project information publicity will be carried out throughout the project implementation (especially at the early stage), so that the impacted people will timely learn the project information in favor of the project participation and risk avoidance or mitigation.

(4) Providing employment opportunities: It is proposed that the project administrating agency, executing agency, forestry sector and ethnic administrating agency will cooperate to provide as many as possible the employment opportunities of unskilled works to the poverty-stricken people, women and ethnic minorities to help them benefit from the project.

(5) Establishing project post-management mechanism: It is proposed that the households and forest farm workers in the project area will be employed for the post-management. On the basis of the project implementation teams during the project construction, project post-management teams will be set up. The members of the post-management teams will be selected through voting by villagers and forest farm workers. The teams must have females and ethnic representatives.

(6) Carrying out educational training of policies of free-grazing ban, desertification control and ecological protection: For the smooth implementation and sustainability of the project, it is necessary to carry out educational training of the policies of free-grazing ban, desertification control and ecological protection so as to upgrade the awareness of the public of ecological improvement.

On the basis of the comprehensive analysis of the social factors in the project implementation for desertification control and ecological protection in Ningxia, the SA group has proposed required actions so as to minimize the negative impacts and make sure that the major stakeholders will benefit equally.

The term “Feng-Yu-Jin-Mu” is frequently used in this report. “Feng-Yu” means “closing mountains, grassland, sandland, wetland and other natural land resources for the rehabilitation of flora and fauna ”, while “Jin-Mu” means “free-grazing ban”. In the project area, “Feng-Yu” and “Jin-Mu” have the same objective. The only difference is they express from different viewpoints. Therefore, these two terms can replace one another in this report.

Foreword

The social experts of Ningxia University have been entrusted by Ningxia International Forestry Cooperation Center (NIFCC) under Ningxia Forestry Bureau for social assessment for Ningxia Desertification Control and Ecological Protection Project (hereafter as the project). The independent assessment is to assess the social impacts of the project and to propose countermeasures against the impacts under the precondition that the policies of the World Bank are highly respected. In addition, it is proposed to set up a monitoring and evaluation system for the project.

From the 15th July to the 10th August 2010 and from the 20th July to the 1st Aug 2011, the SA groups made field investigations in 7 project county units such as Xingqing District, Pingluo County, Lingwu City, Yanchi County, Litong District, Qingtongxia City and Zhongwei County.

The social assessment mainly aims at: (i) collecting basic information of the social-economic development in the project area and analyzing the major social factors impacting the project; (ii) identifying the main stakeholders, mobilizing their participation and analyzing their demands and requirements as well as the possible impacts on them; (iii) assessing the positive and negative impacts potential in the project and analyzing the social risks possible; (iv) integrating the related social factors into the project design and contributing countermeasure proposals to avoid or mitigating the negative impacts; and (v) deciding whether a plan of ethnic development is required in accordance with the World Bank policy OP4.10.

Aiming at the above objectives, the field investigations of 30 days was to collect all the available information required for social assessment by means of case studies, meetings, questionnaires, interviews, participatory rural appraisals and so on. From the 11th to the 15th August 2010, the collected information was analyzed. On the 20th august 2010, Social Assessment Report of Ningxia Desertification Control and Ecological Protection Project was drafted. From July to August 2011, the report draft was revised again in accordance with the recommendations of the World Bank experts.

The SA group would like to express its gratitude for the excellent supports of the officials in the World Bank Office, project offices of provincial and county levels, the project hosting units, the villagers and all the relevant units. We would extend our thanks to Dr. Lin (expert of the World Bank) and Mr. He (NIFCC) for their great contribution to preparing this social report.

1. Background

1.1. Background and Necessity of the Project Construction

1.1.1. Background of the Project Construction

Ningxia covers 66,400 squ. km (0.69% of national territory). However, almost all the most typical problems of ecology in north China can be observed in Ningxia, especially the climate dryness and desertification at the east side of the Yellow River. Maowusu Sandland at the east side of the Yellow River in Ningxia is one of the largest sandlands in China. The sandland covers 846,000 ha – amounting for 67.3% of the desertified land in Ningxia. The hazards of desertification and wind erosion not only threatens the production and livelihood of more than 2 million people around, but also threatens the ecological security of Ning Dong Energy and Chemical Base and the cities at the east side of the Yellow River. Therefore, the ecological improvement is urgent here.

In recent decades, Ningxia Government and people has made persistent efforts combating desertification. Historical achievements have been made that the area of controlled sandification exceeded the sandification spread. In an inspection tour in Ningxia in April 2007, President Hu Jingtao gave high positive remarks of the desertification control achievements in Ningxia. In September 2007, the State Council issued a document《Several Comments of the State Council on Further Promoting Economic and Social Development of Ningxia Hui Autonomous Region》. Ningxia was clearly nominated as a national demonstration zone of integrated desertification control so as to set up an example for the construction of the Three-North Shelterbelt System and similar key projects of ecological forestry development. Ningxia is a provincial unit in deficiency of economic resources, and the financial input to desertification control is limited. The national subsidy to ecological construction is generally at low rate. Therefore, there is a big gap in financial resources in the efforts combating desertification. This also impacts the technical extension combating desertification.

In order to improve the ecological environment along the Yellow River, push forward the regional economic sustainable development, improve the production and livelihood conditions of the local people and make sure of the ecological security of Ning Dong Energy and Chemical Base and the cities at the east side of the Yellow River, Ningxia Government has proposed the construction of Ningxia Desertification Control and Ecological Protection Project with the loan resources of the World Bank.

1.1.2. Necessity of the Project Construction

(1) The project is to satisfy the requirements for improving regional ecological environment and pushing forward the regional economic-social development.

Ningxia is located at the upper-middle reaches of the Yellow River and surrounded at 3 sides by Maowusu Sandland, Tengeri Desert and Wulanbuhe Desert. Desertified land covers 2,974,000 ha – amounting for 57.2% of Ningxia territory. Of the above, sandified land covers 1,183,000 ha amounting for 22.8% of Ningxia territory (or 5% above the national average). More than 3 million people in 13 county units are suffering from desertification and wind erosion. Through persistent efforts for 60 years, great achievements have been made combating desertification. Due to harsh climate, fragile ecology and deficient economic resources, the tendency towards further expanding of desertification in Ningxia has been contained on a general basis. However, in some areas, desertification is still increasing, and there is still a long way to go in combating desertification. In particular, there are 846,000 ha of sandified land at the margins of the Maowusu Sandland at the east side of the Yellow River. Of the above, 420,000 ha are covered with moving and semi-fixed sand dunes. At many places, there is a tendency towards further expanding of desertification, seriously threatening Ning Dong Energy and Chemical Base as well as the production and livelihood facilities along the Yellow River. It is of urgent need to consolidate and extend the achievements of desertification control and accelerate the ecological improvement in favor of the economic-social sustainable development in Ningxia.

To strengthen desertification control is to satisfy the need of pushing forward the improvement of economic development patterns as well as upgrading the production and livelihood in favor of the local people. Around 45% of Ningxia's rural people are living at desertified and sandified areas. Because the natural conditions are harsh, the economic-social development is backward and lots of people are living in poverty. Since long, the economic increment at drylands depends on traditional agriculture and animal husbandry, which frequently results in the exhaust of water resources, deterioration of vegetation coverage and land degradation. As a result, the regional economic sustainable development is seriously impacted. The project implementation of desertification control and ecological protection will help accelerate the adjustment of production structures at the desertified areas, push forward the development of ecological agriculture and protected agriculture, improve the economic increment patterns and guide the local farmer into an orbit of "production development, wealthy livelihood and improved ecology". All these will make great contribution to social stabilization, social harmonization and ecological civilization.

(2) The project is to satisfy the requirements for building an ecological protector in

northwest China for national ecological security.

Ningxia is fragile in ecological environment but is important in ecological position. Ningxia is one of the 4 largest sand sources of sandstorms in China and is located at one of the 3 largest passages of dusty currents towards the central part (such as Beijing and Tianjin) of China.

The Yellow River flows 397 km through Ningxia. There are along the river stretches of sand dunes and sandlands of Maowusu Sandland and Tengeri Desert only to input millions of tons of sand and silt into the river and to impact the flood prevention and ecological security downstream. Desertification not only serious restrains the economic-social healthy development in Ningxia, but is also related with national ecological security and long-term development. It has aroused high attention of the Central Government to combat desertification. President Hu Jingtao pointed out when he made an inspection tour in Ningxia that "sound ecological environment is essential for sustainable economic and social development", "efforts should be made to reverse the situation of 'human withdrawal as a result of desertification' , which would be replaced by 'sand withdrawal as a result of sand control by human being'", "I hope that Ningxia would do a good job in protection and construction of ecological environment, a major event capable of contributing to contemporary times and brings benefits for future centuries. Long term efforts should be made to constantly improve the ecological environment and contribute to the establishment of ecological shelterbelt in West China".

(3) The project construction is a concrete action to implement UNCCD and address to the global climate change.

To strengthen desertification control and vegetation building is an effective measure to upgrade capacity addressing to the climate change. It has been proven that desertification is a process of carbon source while desertification control is a process of carbon sequestration. Of the 10 major factors resulting in climate change, desertification is ranked at the 6^{th} place. It was clearly required at the National Forestry Congress that forestry development must be taken as one of the strategic measures addressing to the climate change. The special position of forestry development has been further strengthened in addressing to the climate change. Ningxia is a place of large areas of desertified land and the potential of vegetation building is also remarkable. With the project implementation, additional 70,000 ha of vegetation will be built. In addition, the successful experiences will be spilt over to the similar efforts of desertification control national wide and worldwide. This is a concrete action to implement UNCCD and United Nations Framework Convention on Climate Change and address to the global climate change.

1.2. Objectives of the Project Construction

Through desertification control demonstration and extension, it is planned in 5 years to build 76,000 ha (or 1,140,000 mu) of vegetation at the margins of Maowusu Sandland along the Yellow River. The survival rate of the vegetation building in the project will be above 85% with the conserved rate of trees of 80%, and the vegetation coverage at the closed areas for natural rehabilitation will be over 50%. With the completion of the project along the Yellow River, the local ecological environment will be remarkably improved; stable plant communities will be basically established; an effective system of windbreak and sand fixation will be formed; primary windbreak belts will be built at the margins of the desertified areas; wind erosion will be significantly reduced; there will be less sand input into the Yellow River; the local tendency towards further expanding of desertification will be effectively contained; the living environment of the project people will be improved; the basic conditions and infrastructures of agriculture, animal husbandry and transportation as well as Ning Dong Energy and Chemical Base will be effectively protected in favor of economic-social sustainable development in the project area.

1.3. Social Benefits of the Project

After the completion of the project construction, the forest coverage in the project area will increase from 9.84% nowadays to 14.64% (an increment of 4.8%) with significant ecological benefits of windbreak, sand fixation, soil conservation, grassland protection, bio-diversity and so on. Through the project construction, the natural vegetation will be rehabilitated and improved, and the local tendency towards further expanding of desertification will be effectively contained, which will made great contribution to safeguard industrial and agricultural production, accelerate the adjustment of industrial structure, and quicken the pace of new countryside construction and living environment improvement. The successful experiences achieved and extended in the project will help upgrade the desertification control in Ningxia. The demonstration of these experiences will also help the similar efforts national wide and worldwide. The distribution of desertified land in Ningxia is illustrated in Fig 1-1, and the project construction tasks are illustrated in Table 1-1 and Fig 1-2.

Table 1-1. Project Construction Tasks (in mu; 1 ha = 15 mu)

No.	Project County	Construction Tasks			Total
		Land Desertification and Degradation Management	Protective Forest Construction	Infrastructure Construction	
1	Pingluo	199486		514	200000
2	Xingqing	69091	10065	844	80000
3	Lingwu	464292	14636	1071	480000
4	Yanchi	197347	2090	563	200000
5	Litong	15417	14542	41	30000
6	Qingtongxia	13056	36813	131	50000
7	Zhongwei	69975		25	100000
Total		1044681	92129	3188	1140000

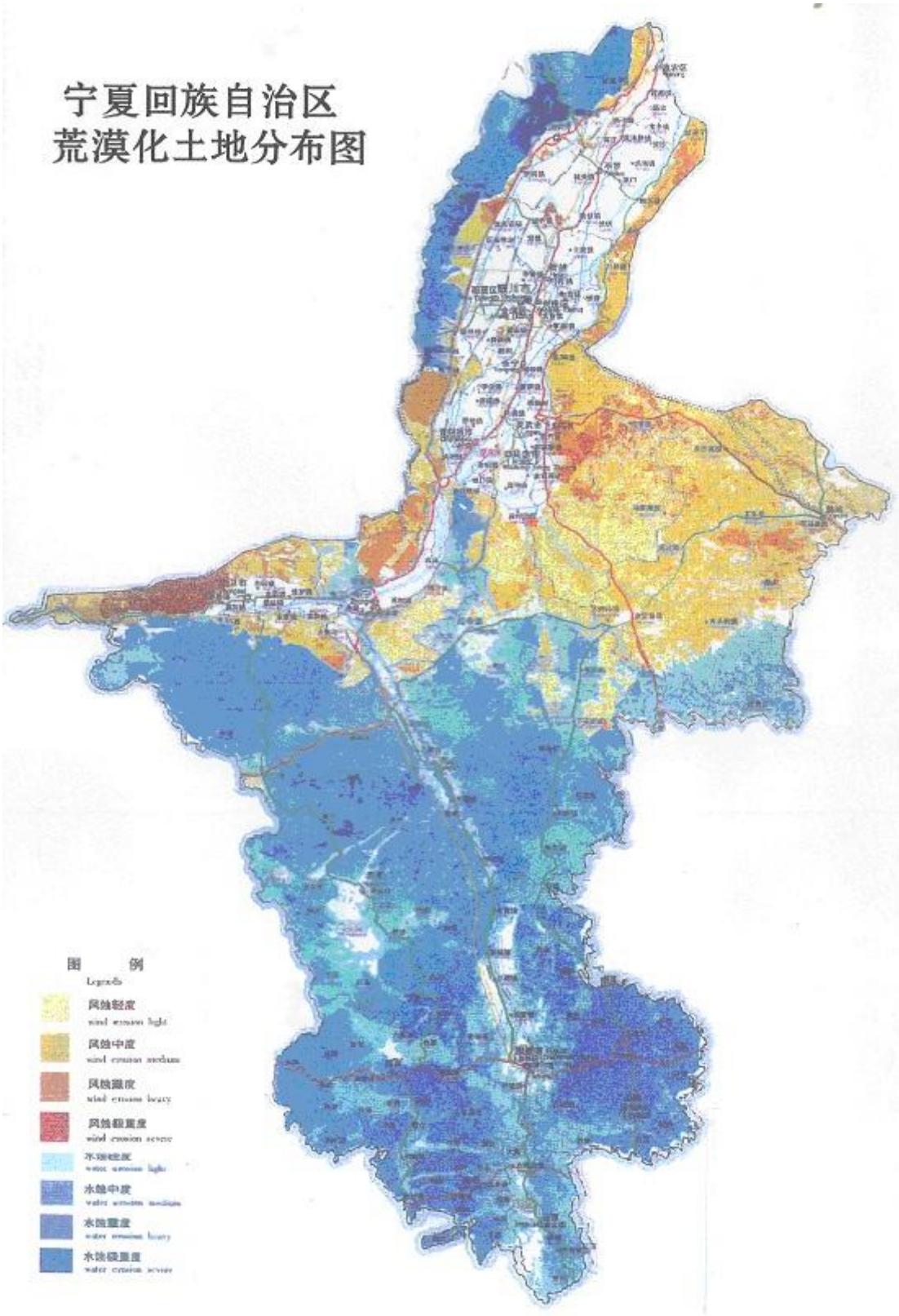


Fig. 1-1. Distribution Map of Desertified Land in Ningxia

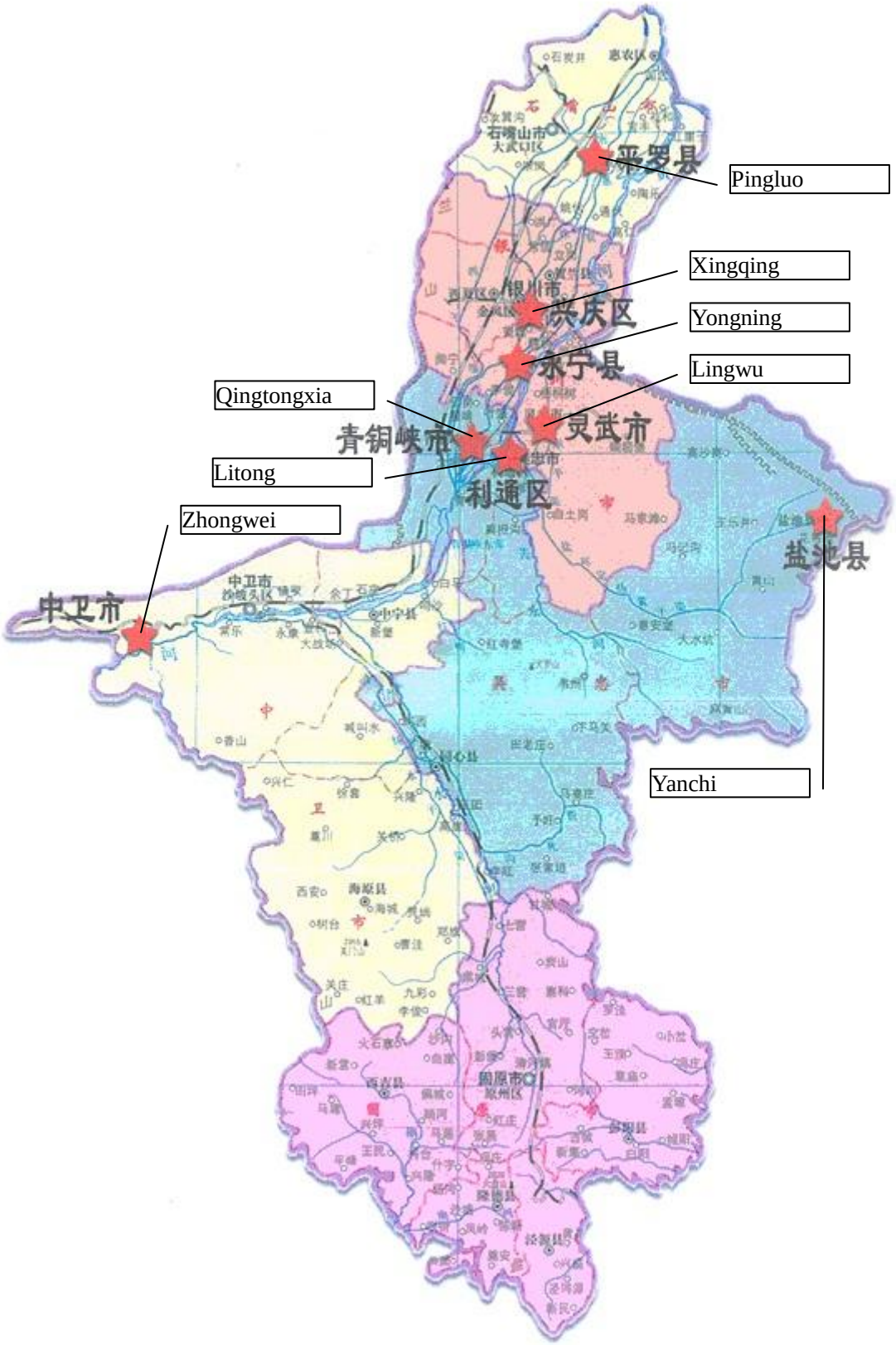


Fig. 1-2. Map of Project Distribution

1.4. Tasks, Importance and Scope of Social Assessment

1.4.1. Tasks of Social Assessment

The social assessment mainly aims at: (i) collecting basic information of the social-economic development in the project area and analyzing the major social factors impacting the project; (ii) identifying the main stakeholders, mobilizing their participation and analyzing their demands and requirements as well as the possible impacts on them; (iii) assessing the positive and negative impacts potential in the project and analyzing the social risks possible; (iv) integrating the related social factors into the project design and contributing countermeasure proposals to avoid or mitigating the negative impacts; and (v) deciding whether a plan of ethnic development is required in accordance with the World Bank policy OP4.10.

1.4.2. Importance of Social Assessment

As one of the methodologies of feasibility study, social assessment is one of the basic conditions of project design and implementation. It is also to supplement the economic, financial, technical and environmental analyses. Without social assessment, a project appraisal cannot be considered complete. Therefore, other forms of appraisal cannot replace social assessment.

In the Guideline of Social Assessment of the World Bank, social assessment is believed to be multivocal, because it is closely linked with the word “society”. Social assessment can be used to assess the stability of a project to make sure that the project input will generate positive contribution towards social-economic development. Social assessment can (i) be used to evaluate whether the operation of a proposed project is in line with the objectives of social development, (ii) provide methodology and strategy to help reach the objectives, and (iii) help the employer test the project sustainability.

1.4.3. Objectives of Social Assessment

One of the objectives of social assessment is to make sure that the stakeholders participate in the project implementation (the stakeholders including poverty-stricken people, ethnic minorities, women and so on) so as to identify the benefits from the project implementation through assessment. At the same time, social assessment can help avoid or mitigate negative impacts possibly from the project implementation. By means of social assessment, follow-up system of monitoring and evaluation can be set up. The concrete objective of the social assessment for this project is that the project activities must be in line with the overall development goal. To achieve this, the analysis must be made on the basis of the solicitation with the farmers, village heads, local administrative staff and environmental protection staff. The main contribution of

social assessment will include:

(i) providing information of the population composition and social-economic development in the project area, focus-evaluating 20% of the village collective land and HH-contracted land in the project area.

(i) providing information of the implementation of free-grazing ban policy in the project area.

(iii) probing whether the project implementation will result in potential negative impacts on the local people. On the basis of solicitation with the impacted people, countermeasures will be proposed (if applicable).

(iv) soliciting with the main stakeholders on the importance and practices of desertification control and eco-system management in the proposed project area, on the basis of which schemes to maximize the local environment improvement and productivity development are chosen and formulated.

(v) providing to the project designers the key factors and processes of social impacts as well as the methodology of how to achieve the objectives.

1.4.4. Contents of Social Assessment

To reach the above objectives, social assessment should include the following items:

(1) To submit a concise working plan to the project executing agency and the World Bank. The plan will include: description of the project strategic objectives, remarks of the project consultation, issues to be further considered and the measures to solve the problems (including interviews and meetings).

(2) To use the second-hand information from the project documents, relevant journals, government reports, policies of environment protection and ecological rehabilitation, social-economic statistics, census data and so on. By means of information analysis and stakeholder interviews, the main stakeholders of the project are determined. On the basis of this, case studies and field investigations for varieties of ecological environments are formulated.

(3) To identify the capacity of the project staff and institutions and train the SA staff and project staff. If the case of need, an evaluation handbook will be prepared by the project consultants as the training material. It is expected that the trained project staff will be capable enough to broaden the social assessment with participatory approach.

(4) To collect and analyze the first-hand information of the selected project sites by means of field investigations, participatory rural appraisal and case studies. Participatory procedures will be used in the project preparation process. In particular, sufficient attention should be paid to solicit with the local Hui Muslims so as to learn

(i) their awareness of ecological degradation, (ii) the strategic measures of environment protection they have taken and are taking, and their interest in environment protection. By means of social assessment,

(5) To submit a report on the implementation of free-grazing ban policy and land use structure in the project area. This is to analyze the negative impacts on environment possibly from the project and the countermeasures.

(6) To set up a project participatory management mechanism by means of social analysis of the project benefits and risks. The analysis of the project executing institutions, beneficiaries and the project mechanism should be recognized as the major measure of the project data analysis.

(7) To assess the key interactive factors impacting the project so as to reduce any possible risks in the project implementation and upgrade public participation on the basis of willingness.

1.5. Major Social Factors Impacting the Project

In the preparation stage of the social assessment, the SA experts of the World Bank identified the main social impacts:

(1) The main social impacts in the construction of ecological protective forests will include the production and livelihood behaviors of the impacted people, institutional arrangement, land tenure and forest ownership, poverty reduction, participation willingness and post-management capacity.

(2) The main social impacts in desertification control will include the production and livelihood behaviors of the impacted people, institutional arrangement, grassland tenure, poverty reduction, participation willingness and post-management capacity.

(3) In the aspect of the participation of ethnic minorities and women, the social factors in need of concern will include (i) applicable policies of ethnic minorities and women; (ii) population, social and cultural features of ethnic minorities and women; (iii) learning the concrete requirements and demands of ethnic minorities and women through solicitation; (iv) wining supports of the ethnic communities through solicitation; and (v) proposing measures that are applicable to ethnic culture and the production/livelihood conditions of women and the measures that will help avoid or mitigate any possible negative impacts on ethnic community and women.

1.6. Basis of Social Assessment

In the project preparation, the following documents have been studied:

Table 1-2. Basis of Social Assessment

	Title	Date of promulgation
1	Policies of the World Bank	
1.1.	World Bank Operations Manual (OP/BP 4.12): Involuntary Resettlement	Dec 2001
1.2.	World Bank Operations Manual (OP4.10): Ethnic Minorities	July 2005
1.3.	World Bank Operations Manual (OP 4.00): Pilot system for processing by the borrower under the Bank-financed projects environmental and social security issues	March 2005
1.4.	World Bank Operations Manual (OP 4.11): Cultural Relics	Aug 1999
1.5.	World Bank Loan Project Resettlement Monitoring and Evaluation of China Business Guide	June 2000
2	Laws and Legal Regulations of China	
2.1.	Land Administration Law of the People's Republic of China	Aug 2004
2.2.	Seed Law of the People's Republic of China	July 2000
2.3.	Agriculture Law of the People's Republic of China	July 1993
2.4.	Environmental Protection Law of the People's Republic of China	Dec 1989
2.5.	Rural Land Contract Law of the People's Republic of China	March 2003
2.6.	Desertification Prevention Law of the People's Republic of China	Feb 2008
2.7.	Wild Animal Protection Law of the People's Republic of China	Aug 2004
2.8.	Women's Rights Protection Law of the People's Republic of China	Oct 1992
2.9.	Law of the People's Republic of agricultural technology promotion	July 1993
2.10.	Village Committee Organization Law of the People's Republic of China	Nov 1998
2.11.	Interpretation of the People's Supreme Court on Several Issues on Handling Criminal Cases of Damaging Forest Resources	Dec 2000
2.12.	Regulations of the People's Republic of China on Information Disclosure	Jan 2007
2.13.	Several Comments of the State Council on Further Promoting Economic and Social Development of Ningxia Hui Autonomous Region (the State Council)	No. 2008-29
3	Sectoral Documents	
3.1.	China Guideline of Social Assessment of Investment Projects (prepared by China International Engineering Consulting Corporation)	
3.2.	China Guideline of Feasibility Study of Investment Projects (prepared by China International Engineering Consulting Corporation)	
4	Project Planning Documents	
4.1.	National Ecological Environment Construction Plan	Nov 1998
4.2.	National Desertification Control Programme (2005-2010)	
4.3.	Grassland Management Regulations of Ningxia Hui Autonomous Region	Dec 1994
4.4.	The 11th 5-Year Plan of Ningxia Forestry Construction	
4.5.	Regulations of Nature Reserve Management in Ningxia	March 2006
4.6.	Desertification Control Program of Ningxia	
4.7.	Plan of the 4th Phase of the Construction of the Three-Norths Shelter Belt System in Ningxia	
4.8.	Implementation Scheme of the Natural Forest Protection in Ningxia	

4.9.	Plan of Ecological and Environmental Development in the 11th 5-Year in Ningxia	
4.10.	Master Plan of the Ecological-Economic Forest Construction of 6 Million Mu in Ningxia	Aug 2009
4.11.	Regional Distribution and Development Plan of Local-Advantage Forest Products in Ningxia	No. 2003-115
4.12.	Plan of the Construction and Development of One Million Mu of Protected Agriculture in Ningxia	2007
4.13.	Remarks on Accelerating the Ecological Environment Construction and Developing Livestock and Fodder Production at the Central Part of Ningxia	
4.14.	Notice on Prohibiting Indiscriminate Digging and Marketing Licorice and Ephedra	
4.15.	Notice of Free-grazing Ban on Grassland	
4.16.	Notice on Improving Grassland Contract System	
4.17.	Notice of Free-grazing Ban on Mountains	
4.18.	Regulations of Environment Protection in Ningxia	Jan 2010
4.19.	Master Plan of the Construction of National Integrated Desertification Control Demonstration Zones in Ningxia	
4.20.	Decision of Ningxia Government on the Pilot of Collective Forest Tenure Reform	No. 2009-02
4.21.	Decision of Ningxia Government on Further Accelerating Forestry Development	No. 2004-12
4.22.	Decision of Ningxia Government on Further Strengthening Desertification Control	No. 2007-137
4.23.	Master Plan and Strategy of Ecological Forest Development in Ningxia	Jan 2008
4.24.	Implementation Scheme of Fruit Development in Ningxia	No. 2003-103
4.25.	Regulations on Desertification Control in Ningxia	
4.26.	Master plans of the project county units	
4.27.	The 12th 5-Year plans of economic and social development in the project county units	
4.28.	Plans of environment protection in the 11th 5-year in the project county units	

1.7. Methods of Social Assessment

1.7.1. Methods of Investigations

By means of information collection and other measures of social study, the social assessment is to analyze and identify (i) the social factors that impact the project facilities and (ii) the impacts the project implementation could generate on the local society and the beneficiaries. In order to make sure that the conclusions of the assessment are reasonable and effective, multiple methodologies social study are employed to make sure that the information can support each other and the assessment results are correct. In the actual assessment, the following methodologies were employed:

(1) Document Collection and Information Analysis: Before field investigations, the SA group collected materials on the project from the project management office and all the provincial institutions relevant so as to have general pictures of the project

basic situation, objectives and construction contents. On the basis of this, investigation plan, questionnaire and interview outline were formulated. In the field investigation in the 8 project county units, social and economic information and other relevant materials from county level to village level were collected whenever possible.

(2) Interview: In the field investigations, interviews were done with all the stakeholders (e.g. project management staff, technicians, village heads, villagers), at all the levels (i.e. from county level to household level) with and without participating the project. The objectives were to collect first-hand actual information and solicited the interests, attitudes and concepts of the interviewers.

(3) Participatory Rural Appraisal (PRA): Varieties of information of production, livelihood and environment of the impacted areas can be collected by means of the participation if the local communities and individuals through PRA. With this interactive measure, the SA group were enriched with the knowledge of local community development, social network and resources structure as well as the information of local historical development and social-economic situation. In order to mobilize the project beneficiaries to participate in the social assessment in favor of the availability of first-hand true information, the measures in the field investigation also included: (i) formulating season calendar and gender time use matrix, (ii) discussing the labor distribution of farming activities and housework, (iii) the project construction for desertification control and ecological protection, and (iv) investigation by questionnaires.

(4) Field observation: The SA group carefully observed the appearance of the villages and the livelihood situation of the rural households for intuitionistic social implementation.

(4) Investigation by Questionnaires is one of the commonly used methodologies of information collection in modern social study. Its main advantage is to make it possible to collect lots of complete and objective information in a short time in favor of quantitative processing and analysis. Through large-scaled social investigations, the attitude of the local people towards the impacts of the project implementation on the social development is learnt to lay a foundation for further analysis in sociology and anthropology, so as to make sure that the financial resources of the WB project will be used to help the low-income and vulnerable groups on the principles of gender equality in social participation. To achieve the above objectives, a mechanism of social monitoring and evaluation will be set up. Therefore, the SA group prepared Social Assessment Questionnaire of Ningxia Desertification Control and Ecological Protection Project (Table 1-3).

Table 1-3. Sampling Investigation with Questionnaires

Items	Xingqing	Lingwu	Zhongwei	Pingluo	Yanchi	Litong	Qingtongxia	Total
Nr. of Questionnaires (HH)	0	60	15	59	42	22	10	223
Effective Questionnaires (HH)	0	54	14	54	39	21	9	205
Effectiveness of Questionnaires (%)		90	93.3	91.5	92.9	95.5	90	91.9

Information Source: the SA group from July to August 2010

(5) Photo-mapping: With the participation of the local people, maps of community distribution and community resources as well as the matrix of the daily production and livelihood were drafted. From the maps and matrixes, the overall situation of the communities and the changes the project will generate for the local people are directly observed.

1.7.2. 1.7.2. Methods of Social Assessment and Analysis

(1) Qualitative and Quantitative Analysis Approach: Qualitative measure is used to analyze the factors that are not possible to manage by means of precise calculation, the factors such as concept, consciousness and psychology. Through analyzing the logical relations, the impacts and consequence of the project implementation are analyzed and evaluated. Quantitative measure is used to calculate the impacts and consequence of the project implementation with mathematic methodologies.

(2) Comparative Analysis Approach: Through comparing the situations before and after the project implementation, the overall changes in the impacted areas are analyzed. Through comparing the situations with and without the project, the actual effects of the project implementation are analyzed. The changes generated by none-project factors are included in the before-after comparative analysis, so that the evaluation aims at the overall situation. However, the changes generated by none-project factors are excluded in the with-without comparative analysis, so that the evaluation aims at the actual effects from the project implementation itself.

(3) LogFrame Analysis Approach is used to analyze the contents and relations in a complex project by means of blocks of logframe. The project logframe is illustrated in Table 1-4.

Table 1-4. Project LogFrame

Description	Objective Indicators	Measures	Consumptions
Goal/Impact	Indicators for the goal	Measures of monitoring and supervision	Main conditions to achieve the goal
Objective/Function	Indicators for the objective	Measures of monitoring and supervision	Main conditions to achieve the objective
Output/Result	Quantitative indicator of the output	Measures of monitoring and supervision	Main conditions to realize the output
Input/Measure	Quantitative indicator of the input	Measures of monitoring and supervision	Main conditions to settle the input

(4) Stakeholder Analysis Approach is used to evaluate the positions and roles of the direct and indirect stakeholders in the project implementation through analyzing the

project impacts on them as well as their responses and impacts on the project, on the basis of which the interactions and adaptation between the project and the stakeholders are observed.

(5) Participatory Approach is composed of 2 aspects: participatory evaluation and participatory action. Through participatory evaluation in the whole process of the project construction, the actual requirements of the impacted people and the true information will be directly learnt in favor of enrich experts' store of knowledge, upgrading evaluation level and reducing social problems. Through participatory action, the contribution of the stakeholders to the project construction and the compensation for the losses of the stakeholders will be analyzed.

1.8. Steps of Social Assessment

1.8.1. Three Phases of Social Assessment

(1) Project identification phase: Mainly to preliminarily select social factors;

(2) Project preparation phase: Mainly to conduct detailed social evaluation and analysis; and

(3) Project implementation phase: Mainly to conduct social monitoring and evaluation.

Since the project is still at its early stage, this social assessment is only related with the first 2 phases. The concrete steps are illustrated in Table 1-5.

Table 1-5. Steps and Contents of Social Assessment

Project Phases	Concrete Steps and Contents
(1) Project identification phase	1. identifying key stakeholders of strategic importance
	2. identifying social factors important for scheme formulation and project implementation
	3. categorizing social key problems by project activities
	4. evaluating the necessity of the project implementation from the viewpoint of social assessment on the basis of the development priority ranking and objectives in the project area
	5. identifying social negative impacts possibly from the project
	6. identifying whether further detailed social analysis and evaluation are required.
(2) Project preparation phase	1. collecting local social, economic and environmental information
	2. soliciting the local stakeholders (i.e. farmer households, enterprises combating desertification and forest farms） for their attitudes, opinions and proposals of the project implementation for desertification control and ecological protection by means of questionnaires
	3. soliciting the villagers and village commissions for their attitudes, opinions and proposals on the livelihood.
	4. evaluating the compatibility between the project activities and the local needs
	5. evaluating institutional and organizational arrangements and identifying social resources of stakeholders' participation in the project

Project Phases	Concrete Steps and Contents
	6. formulating framework of the stakeholders' participation in the project (pay special attention to women, poverty-stricken people and vulnerable groups）
	7. designing framework of participatory mechanism for information share, consultation and concrete participation
	8. clarifying the concrete responsibilities of the stakeholders and monitorable project activities
	9. formulating schemes of the project implementation including institutional arrangement, capacity building, objective orientation, function ranking and incentive mechanism
	10. evaluating social benefits and social risks (including potential conflicts and costs)
	11. proposing measures of mitigating negative impacts of the project

Information source: SA group of the project, from July to August 2010

1.8.2. Locations and Steps of Field Investigations

It is planned to collect the natural, resources, economic and social information of the 7 project county units.

(1) The respondents were selected on the basis of the priorities of the project construction, the distribution of ethnic minorities and the importance of the geological locations. With discussions and consultations with NIFCC and Ningxia Forestry Bureau, the respondents were basically identified at the reference of the applications of counties, townships, forest farms and nature reserves.

Participatory approaches were employed in the social assessment. 2~3 administrative villages were chosen in each of the proposed project county units for field investigations. The villages included rich, average and poor villages in economy as well as villages of the Han people (ordinary Chinese) and villages of ethnic minorities. The investigations with questionnaire and interviews covered leaders and officials of 7 county units, 12 townships, 22 administrative villages, 6 desertification control forest farms and 1 nature reserve as well as 223 households and 60 stakeholder representatives. The questionnaire was designed to collect information of (i) the family members, housing condition, production and management, rural surplus labor and the arrangement, income and expenditures, agricultural structure and household labor distribution and decision-making, (ii) the knowledge, willingness, attitude and expectation of the project, and (iii) desertification control and its potential impacts, land tenure and land use, the recognition and participation of the local communities and households and possible measures of impact mitigation. In addition, the SA group mobilized 13 meetings of villager representatives with 405 participants and 8 meetings of forest farm worker representatives with 106 participants.

(2) Interviews were done with 32 households and individuals in 22 administrative villages. Each interview took 40 minutes by average. Females, poverty-stricken

households and ethnic minorities amounted for more than 30% of the total respondents. Through the field investigation and participatory consultation with the representative households, information of their project knowledge, willingness, attitude and expectation of the project was collected in favor of evaluating and improving the project scheme and measures of impact mitigation.

(3) Meetings were held with enterprise shareholders to identify their impact on the project implementation and the concrete measures.

1.8.3. Operation of Social Assessment

In mid-July 2010, "Social Assessment Outline", "Social Evaluation Questionnaire" and "Social Assessment Working Chart" for the project were formulated. Before the field investigations, the basic information of the project-impact areas and the respondent sites were collected and analyzed.

In mid-July 2010, a joint meeting was held among the SA group, Ningxia Forestry Bureau and the project office discussing the objectives, working procedures and site selection of the social assessment. According to the agreement concluded in the meeting, social investigations of 20 days were made in the field. The working procedures were:

- discussion with representatives of county units, townships, villages and villager groups;
- photo-mapping (maps of community and household distribution);
- ranking, including the positive and negative impacts of the project (i) on the local communities and people, (ii) on the local economic development, and on the target groups;
- investigations by questionnaires; and
- household interviews

In order to make sure that the information was objective, all the interviews and investigations by questionnaires were done by the SA group of Ningxia University. The SA group was guided by the village heads without any official of the local government so as to learn to real considerations and requirements of the project farmers.

1.8.4. Procedures of Field Investigations

At the same time the opinions and proposals of the local people were directly collected, the investigations by questionnaires also helped publicized basic information of the project. The details of the field investigations are illustrated in

Table 1-6.

Table 1-6. Frame of Field Investigation

No.	Description	Process of the Field Investigation
1	Ecological protective forest, ecological economic forest and desertification control in Pingluo County, Shizuishan Municipality	1. On the 25th July 2010, collecting information of the current economic-social situation of the project beneficiaries and the possible impacts of the project through field investigations; 2. On the 27th July 2010, interviewing with the representatives of the project-related institutions such as land administration bureau, agricultural and animal husbandry bureau, forestry bureau, agricultural comprehensive development office, poverty reduction offices, development and reform bureau, women's federation, financial bureau, auditing bureau and water resources bureau. Further learning the responsibilities and relations of the said institutions with the project. Mobilizing their attention to the project. 3. On the 28th July 2010, investigating and interviewing with the project-impacted townships and villages. Investigation by questionnaires and interviews with farmer households were to collect information of their supports, participation and requirements for the project. 4. On 29th July 2010, investigating and interviewing with the project-impacted enterprises were to collect information of their supports, participation and requirements for the project.
2	Ecological protective forest, ecological economic forest and desertification control in Yanchi County, Wuzhong Municipality	1. On the 30th July 2010, collecting information of the current economic-social situation of the project beneficiaries and the possible impacts of the project through field investigations; 2. On the 30th July 2010, interviewing with the representatives of the project-related institutions such as land administration bureau, agricultural and animal husbandry bureau, environmental protection and forestry bureau, agricultural comprehensive development office, poverty reduction offices, development and reform bureau, women's federation, financial bureau, auditing bureau and water resources bureau. Further learning the responsibilities and relations of the said institutions with the project. Mobilizing their attention to the project. 3. On the 31st July 2010, investigating and interviewing with the project-impacted townships and villages. Investigation by questionnaires and interviews with farmer households were to collect information of their supports, participation and requirements for the project. 4. On 31st July 2010, investigating and interviewing with the Habahu Forest Farm (Habahu Nature Reserve) were to (i) learn the attitudes of the forest workers towards the project, (ii) solicit their opinions of the impact of the desertification control project on the surrounding environment as well as the concrete measures. 5. Supplementary investigation: Respecting the recommendations of the WB experts, supplementary investigations will be done to collect more information such as the information and experiences of the China-Japan projects of ecological improvement in Yanchi County.
3	Ecological protective forest, ecological economic forest and desertification control in Lingwu City, Yinchuan Municipality	1. On the 1st Aug 2010, collecting information of the current economic-social situation of the project beneficiaries and the possible impacts of the project through field investigations. 2. On the 2nd Aug 2010, interviewing with the representatives of the project-related institutions such as land administration bureau, agricultural and animal husbandry bureau, forestry bureau, agricultural comprehensive development office, poverty reduction offices, development and reform bureau, women's federation, financial bureau, auditing bureau and water resources bureau. Further learning the responsibilities and relations of the said institutions with the project. Mobilizing their attention to the project. 3. On the 3rd Aug 2010, visiting Baijitan Forest Farm (nature reserve) and discussing with Mr. Wang Youde (national hero of desertification control and director of the forest farm). The investigations were to (i) learn the attitudes of the forest workers towards the project, (ii) solicit their opinions of the impact of the desertification

No.	Description	Process of the Field Investigation
		control project on the surrounding environment as well as the concrete measures. 4. On the 3rd Aug 2010, investigating and interviewing with the project-impacted townships and villages. Investigation by questionnaires and interviews with farmer households were to collect information of their supports, participation and requirements for the project. 5. Supplementary investigation: Respecting the recommendations of the WB experts, supplementary investigations will be done to collect more information.
4	Ecological protective forest, ecological economic forest and desertification control in Yinchuan Municipality	1. On the 5th Aug 2010, interviewing with the representatives of the project-related institutions such as land administration bureau, agricultural and animal husbandry bureau, forestry bureau, agricultural comprehensive development office, poverty reduction offices, development and reform bureau, women's federation, financial bureau, auditing bureau and water resources bureau. Further learning the responsibilities and relations of the said institutions with the project. Mobilizing their attention to the project. 2. On the 6th Aug 2010, visiting forest farms and agricultural enterprises in the proposed project area. The investigations were (i) learn the attitudes of the forest and agricultural workers towards the project, (ii) solicit their opinions of the impact of the desertification control project on the surrounding environment as well as the concrete measures.
5	Ecological protective forest, ecological economic forest and desertification control in Litong	1. On the 6th Aug 2010, interviewing the project beneficiary households to learn their economic-social situation and the possible impacts of the project; 2. On the 6th Aug 2010, interviewing with the representatives of the project-related institutions such as land administration bureau, agricultural and animal husbandry bureau, forestry bureau, agricultural comprehensive development office, poverty reduction offices, development and reform bureau, women's federation, financial bureau, auditing bureau and water resources bureau. Further learning the responsibilities and relations of the said institutions with the project. Mobilizing their attention to the project. 3. On the 7th Aug 2010, visiting forest farms in the proposed project area. The investigations were to (i) learn the attitudes of the forest workers towards the project, (ii) solicit their opinions of the impact of the desertification control project on the surrounding environment as well as the concrete measures.
6	Ecological protective forest, ecological economic forest and desertification control in Qingtongxia	1. On the 7th Aug 2010, collecting information of the current economic-social situation of the project beneficiaries and the possible impacts of the project through field investigations. 2. On the 8th Aug 2010, interviewing with the forestry bureau. Further learning the responsibilities and relations of the said institutions with the project. Mobilizing their attention to the project. 3. On the 8th Aug 2010, visiting forest farms in the proposed project area. The investigations were to (i) learn the attitudes of the forest workers towards the project, (ii) solicit their opinions of the impact of the desertification control project on the surrounding environment as well as the concrete measures. 4. On the 8th Aug 2010, investigating and interviewing with the project-impacted townships and villages. Investigation by questionnaires and interviews with farmer households were to collect information of their supports, participation and requirements for the project. 5. Supplementary investigation: Respecting the recommendations of the WB experts, supplementary investigations will be done to collect more information.
7	Ecological protective forest, ecological economic forest and desertification control in	1. On the 28th March 2011, collecting information of the current economic-social situation of the project beneficiaries and the possible impacts of the project through field investigations. 2. On the 28th March 2011, interviewing with the forestry bureau. Further learning the responsibilities and relations of the said institutions with the project. Mobilizing their attention to the project. 3. On the 29th March 2011, investigating and interviewing with the project-impacted townships and villages. Investigation by questionnaires and interviews with farmer

No.	Description	Process of the Field Investigation
	Zhongwei Municipality	households were to collect information of their supports, participation and requirements for the project. 4. Supplementary investigation: Respecting the recommendations of the WB experts, supplementary investigations will be done to collect more information.

Information source: SA group of the project, from July to August 2010

1.8.5. Selection of Investigation Sites

The main criteria of selecting respondent places for social assessment are:

(1) covering project beneficiaries and negatively impacted people (including poverty-stricken people, women and other vulnerable groups.

(2) paying attention to the core zone of the negatively impacted (in particular, the farmer households impacted by free-grazing ban).

(3) covering the places with ethnic minorities living in compacts in the project area.

(4) economic development at different levels.

In accordance with the above criteria, the social assessment was done in 13 townships, 7 farms and 2 nature reserves. In the above scope, 22 natural villages were determined as the key respondents. The details are illustrated in Table 1-7.

Table 1-7. Selection of Investigation Sites

Municipality	County Unit	Investigation Sites		Reason of Chosen
Shizuishan	Pingluo	Hong'aizi T	Wangjiagou V	medium economic situation, core zone impacted by the project implementation
			Sankeshu V	relatively poverty-stricken, core zone impacted by the project implementation
			Shuiquanzi V	relatively poverty-stricken, core zone impacted by the project implementation
			Hong'aizi V	relatively poverty-stricken, core zone impacted by the project implementation
			Wuduizi V	medium economic situation, core zone impacted by the project implementation
		Taole T	Zhisha FF	Meetings and interviews, with relatively large quantity of the project implementation
			Shijiataizi V	medium economic situation, core zone impacted by the project implementation
Yinchuan	Xingqing	Hongdunzi FF		Meetings and interviews, with relatively large quantity of the project implementation
		Yueyahu FF		Meetings and interviews, with relatively large quantity of the project implementation
	Yongning	Shengli T,	Shengli V	medium economic situation
		Lijun T	Dongtai V	medium economic situation, core zone impacted by the project implementation
			Leitai V	medium economic situation, core zone impacted by the project implementation
	Lingwu	Ningdong T	Dongwan V	Good economy, core zone impacted by the project implementation
		Baitugang T	Changliushui V	relatively poverty-stricken, Hui Muslim village, core zone impacted by the project implementation
			Xinhong V	medium economic situation, core zone impacted by the project implementation
			Xinhuo V	medium economic situation, Hui Muslim village, core zone impacted by the project implementation
		Baijitan FF (nature reserve)		Meetings and interviews, with the largest quantity of the project implementation
		Rencundu FF		Meetings and interviews, with relatively large quantity of the project implementation

Municipality	County Unit	Investigation Sites		Reason of Chosen
Wuzhong	Yanchi	Qingshan T	Liuyaotou V	relatively poverty-stricken, core zone impacted by the project implementation
		Huamachi T	Wanjigo Vu	relatively poverty-stricken, core zone impacted by the project implementation
		Habahu Nature Reserve		Meetings and interviews, with the largest quantity of the project implementation
		Wanglejing T	Ya'ergou	poverty-stricken, core zone impacted by the project implementation
			Langdonggou	poverty-stricken, core zone impacted by the project implementation
			Zhengjiapu	poverty-stricken, core zone impacted by the project implementation
		Shaquanwan Desertification Control Demonstration Station		Meetings and interviews, with the largest quantity of the project implementation
	Litong	Biandangou T	Xigou'ai V	relatively poverty-stricken, Hui Muslim village, core zone impacted by the project implementation
		Sunjiatan T	Zhaojiagou V	relatively poverty-stricken Hui Muslim village, core zone impacted by the project implementation
	Qingtongxia	Shaogang T	Ganchengzi V	Good economy, core zone impacted by the project implementation
		Shuxin FF		Meetings and interviews, with the largest quantity of the project implementation
Zhongwei	Zhongwei	Xijiao FF		Meetings and interviews, with the largest quantity of the project implementation
		Changliushui V		medium economic situation, core zone impacted by the project implementation

Information source: the SA group

1.8.6. Information Sources

(1) Official statistics and the information from Ningxia Forestry Bureau such as China Statistical Yearbook 2009, Ningxia Statistical Yearbook 2009, Feasibility Study Report of Ningxia Desertification Control and Ecological Protection Project, Statistics of Ningxia Forestry Development and the Related Industries in 2008 and 2009, as well as the statistics and economic handbooks of the project areas, townships and villages.

(2) Local chronicles

(3) Materials of field investigations including the records of workshops, meetings, interviews, questionnaire investigation results and so on.

(4) Information from internet such as from the website of Ningxia Government

information, the governmental websites of the project county units, the website of Ningxia Forestry information, NIFCC information.

Three principles were respected when using the above literatures: (i) using the latest data whenever possible, (ii) concerning to the information of village statistics, the first-hand data from field investigations should be the first choice to make sure that the data are objective and correct, and (iii) I analyzing problems, the opinions and remarks of farmers and all levels of local governments and institutions should be integrated in order to make sure that the conclusions are as close to the fact as possible.

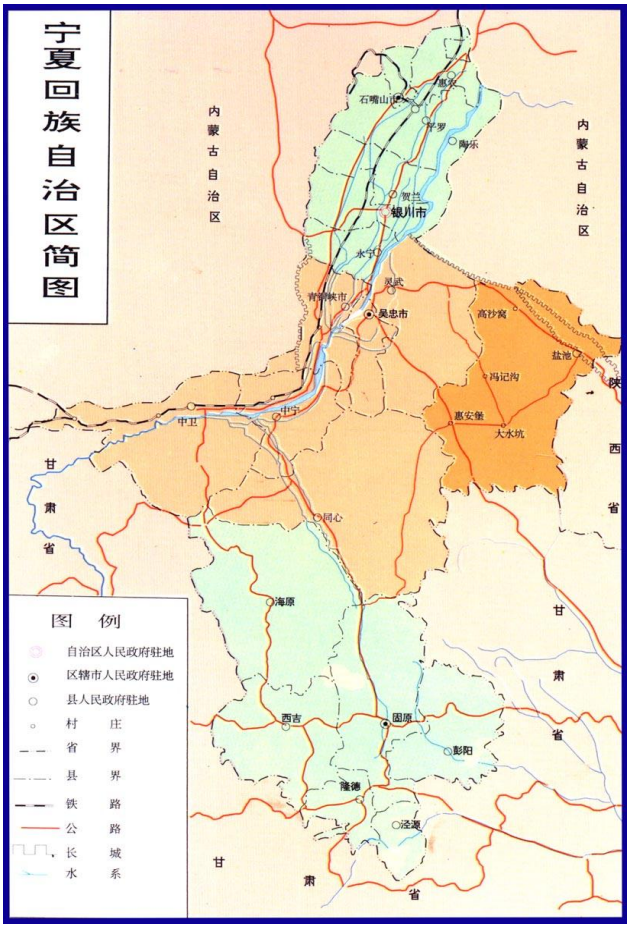
1.8.7. Report Structure

This report is composed of 8 chapters: (i) Background, (ii) Social-Economic Situation in the Project Area, (iii) Investigations of the Impacted Households and Communities, (iv) Analysis of Social-Economic Impacts, (v) Analysis of Adaptive Social Interaction, (vi) Identification and Control of Social Risks, (vii) Strategy of Community Participation and (viii) Conclusions, Proposals and Actions.

2. Social-Economic Situation in the Project Area

2.1. General Information of the Project-Impacted Area

Ningxia Hui Autonomous Region (hereafter as Ningxia) is located in northwest China. The territory covers 66,400 sq km. Of the population of 6.1 million people, the Hui Muslins amount to 2.18 million (36%). The Hui Muslim in Ningxia amounts for 1/5 of the national total.



Ningxia is rich in energy resources, agricultural resources and tourism resources. The coal reserve in Ningxia takes the fifth place in China. In terms of the quantity of coal mining and electricity generation per capita, Ningxia is the top in China. The proven coal reserves only in Ning Dong coal mines at the east side of the Yellow River amount to 27 billion tons.

The farmland in Ningxia covers more than l5 million mu (or 2.5 mu per capita). Thanks to the Yellow River flowing through Ningxia by 397 km, irrigated fertile farmland with high and stable production amounts to more than 6 million mu. Ningxia Plain irrigated by the Yellow River is one of the 4 largest irrigation zones and one of the 12 commercial grain production bases in China. In addition, large areas of arable barren ground are available. The main agro-products in Ningxia include halal beef and

mutton, wolfberry, winery grapes, watermelon, potatoes, licorice and paddy rice.

The natural attractions of tourism resources in Ningxia can be enjoyed at Shapotou, Sand Lake, Qingtongxia, Mt. Liupan and Xinghai Lake, while historical and cultural landscape can be seen at Xixia Kingdom Mausoleums, West China Film Studio and Hui Islamic Park.

Since the free-grazing ban on the 1st May 2003, the ecological environment in Ningxia has been remarkably improved. For instance, the grass production over natural grassland has increased by 30%, wile the vegetation coverage increased by 20~50%. The tendency of grassland desertification and degradation has been effectively contained. What's more, the local livestock development is not adversely impacted by free-grazing ban. On the contrary, it stimulated the development of intensive feeding in stables. The number of sheep has increased from 8.21 million before the free-grazing ban to 11 million nowadays – an increment of 34%.

In Sep 2008, Several Comments of the State Council on Further Promoting Economic and Social Development of Ningxia Hui Autonomous Region was promulgated. In accordance with this important document, the key points of Ningxia development will be: the construction of water-saving society, poverty reduction at the desertified land in the central part and the mountainous areas in the southern part, agricultural stable development, upgrading industrial structure, comprehensive development of transportation and modern service industry, pushing forward ecological construction and environmental protection, accelerating social development.

2.2. Basic Information of the Social-Economic Situation in the Project Municipalities

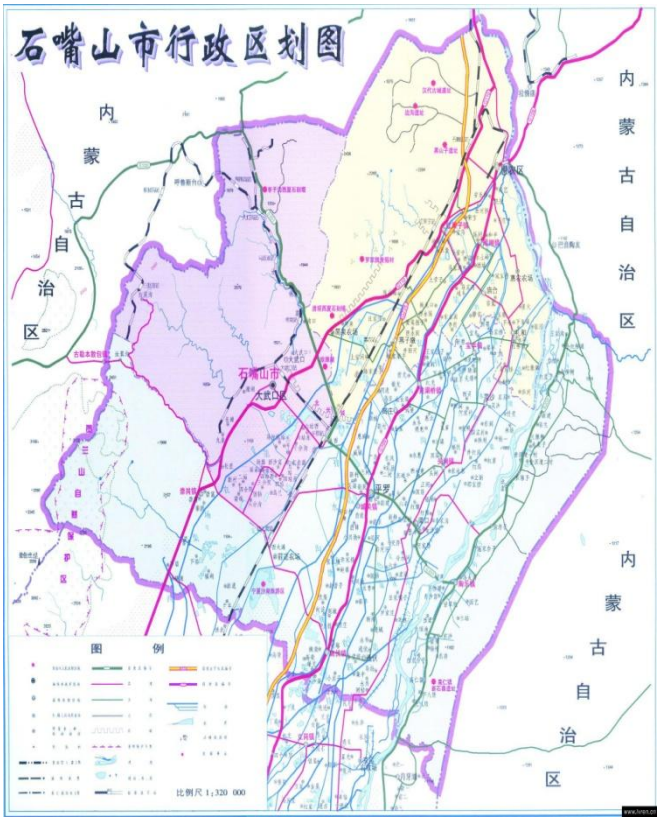
2.2.1. Yinchuan Municipality

Yinchuan Municipality is located at the central part of Ningxia Plain. It neighbors the Erdos Plateau to the east and Mt. Helan in the west. Yinchuan City is the capital of Ningxia. The Yellow River flows through Yinchuan Plain, making this piece of flat land with fertile soils and convenient irrigation in addition to plentiful sunshine. Since long, Yinchuan Plain has been a place of well developed agriculture, forestry, animal husbandry and fishery. The natural secondary forests on Mt Helan cover 12,300 ha, and the forest vegetation coverage is 22.8%. In addition to more than 40 species of medicinal plants, there are 32 species of valuable and rare wild animals. The climate, soil and geographical conditions along the east piedmont of Mt. Helan are close to and even better than those of the famous place of winery grape production of Bordeaux in France. This has become one of the best ecological zones of winery grape production in the world.

The GDP of Yinchuan Municipality in 2009 amounted to RMB 57.815 billion – a year-on-year increment of 13% in terms of the constant price. The added value from

the primary industry amounted to RMB 3.233 billion (an increase of 6.9%), the added value from the secondary industry amounted to RMB 28.579 billion (an increase of 15.1%), and the added value from the tertiary industry amounted to RMB 26.003 billion (an increase of 11.5%). In terms of resident population, the per capita GDP in Yinchuan Municipality amounted to RMB 34,453. The proportion of the primary, secondary and tertiary industry is 5.6:49.4:45.0 with the contribution rate to economic increment of 2.8%, 56.5% and 40.7%, respectively.

2.2.2. Shizuishan Municipality



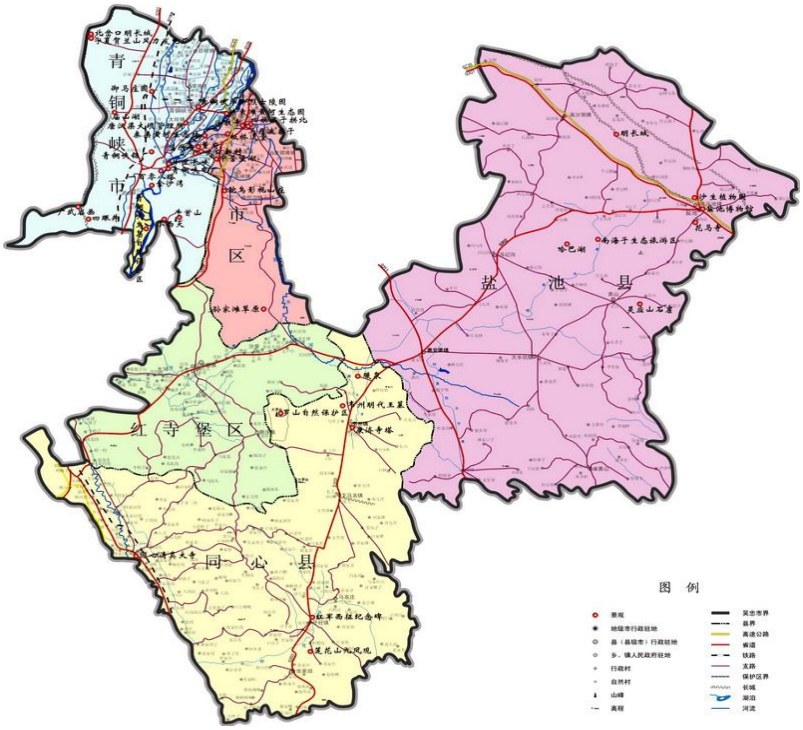
Shizuishan Municipality is located at the northern part of Ningxia. It is a place of industries. It is composed of Dawukou District, Huinong District and Pingluo County with total population of 740,000 people and a total area of 5310 sq km.

In 2009, the GDP of Shizuishan amounted to RMB 23.644 billion – a year-on-year increment of 14.4% in terms of the constant price. The per capita GDP was RMB 31951 – a year-on-year increment of 13.9% in terms of the constant price. The added value from the primary industry amounted to RMB 1.367 billion (an increase of 6.9%) with the contribution to GDP by 3.1%, the added value to the secondary industry amounted to RMB 17.121 billion (an increase of 15.6%) with the contribution to GDP by 71.4%, and the added value of the tertiary industry amounted to RMB 5.156 billion (an increase of 13.2%) with the contribution to GDP by 25.5%.

In 2009, the agricultural output value amounted to RMB 2.46 billion – a year-on-year

increase of 9.2%. Of the above, the increase from farming was 10.8 %, forestry -- 21.7%, livestock development -- 0.6%, aquiculture -- 13.3%, and agricultural service -- 13.1%. The sowing area was 93,700 ha in total (an increase of 6.3%), including 67,100 ha of grain crops (a decrease of 0.6%), 15,200 ha of vegetables (an increase of 2.0%) and 7,200 ha of oil crops (an increase of 110%). The annual production of grains totaled to 418,300 tons (an increase of 1.8%). With the steady development of agro-machinery modernization, the total power of the agricultural machines 958,500 kwh (a year-on-year increase of 1.6%). Of the above, there were 4,000 sets of medium and big tractors (an increase of 7.0%), and 43,300 sets of small tractors (an increase of 0.9%). The consumption of rural electricity was 73,570,000 kwh (an increase of 5.3%), and the consumption of chemical fertilizers (in-kind quantity) amounted to 142,300 tons (a decrease of 2.1%). The area of effective irrigation covered 78,500 ha (an increase of 0.5%).

2.2.3. Wuzhong Municipality



Wuzhong Municipality is located at the central part of Ningxia, consisting of 5 county units such as Litong District, Qingtongxia City, Yanchi County, Tongxin County and Hongsipu District.

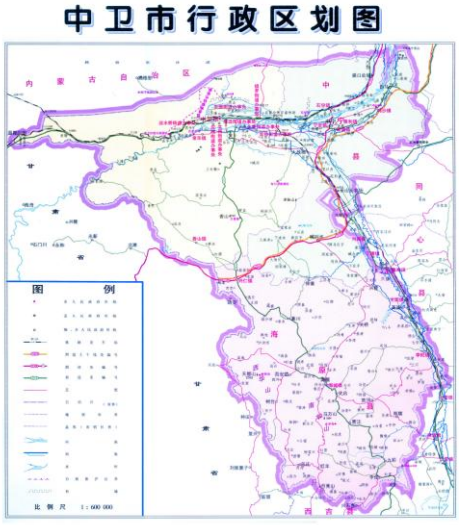
In 2009, the GDP of Wuzhong Municipality amounted to RMB 18.589 billion – a year-on-year increase of 13% in terms of constant price. Of the above, the added value of the primary industry was RMB 2.99 billion (an increase of 6.4%), the added value of the secondary industry – RMB 9.954 billion (an increase of 15.9%), and the added value of the tertiary industry – RMB 5.645 billion (an increase of 11.1%). The

proportion of the primary, secondary and tertiary industry was 16.08:53.55:30.37.

In 2009, the agricultural output value of Wuzhong Municipality amounted to RMB 6 billion (a year-on-year increase of 6%). The sowing area totaled 271,200 ha (a year-on-year increase of 12,900 ha, or 5%). Of the above, the sowing area of grain crops covered 194,900 ha (a year-on-year increase of 6.1%), vegetables – 12,400 ha (a year-on-year increase of 18.8%), and fruits – 37,200 ha (a year-on-year increase of 26.3%). The grain production amounted to 863,100 tons (a year-on-year increase of 1.8%), vegetables – 450,900 tons (a year-on-year increase of 8.9%), fruits – 153,300 tons (a year-on-year increase of 20.6%). The number of big livestock in stable was 248,700 heads (a year-on-year decrease of 7.9%). The number of pigs in stables was 234,000 heads (a year-on-year decrease of 2.4%). The number of sheep in stables was 2,048,700 heads (a year-on-year increase of 2.4 %). The total power of agro-machinery amounted to 1,728,000 kwh (a year-on-year increase of 6.2%. There were 47,100 sets of tractors (a year-on-year increase of 1.3%) and 37,900 sets of rural vehicles (a year-on-year increase of 2.5%). The rural consumption of electricity amounted to 271 million kwh (a year-on-year increase of 6.6%) and the consumption of chemical fertilizers was 221,000 tons (a year-on-year increase of 5.2%). The area of effective irrigation covered 126,400 ha (additional 6826 ha and a year-on-year increase of 5.7%).

In 2009, the per rural capita net income was RMB 4390.7 (a year-on-year increase of 7.4%) and the per rural capita livelihood expenditure was RMB 3410.5 (a year-on-year increase of 7.9%). The Engel Coefficient of rural people was 39.4%. The floorage per rural capita was 29.5 sq m (a year-on-year increase of 8.8%).

2.2.4. Zhongwei Municipality



Zhongwei Municipality is located at the central-western part of Ningxia (longitude 104°17'~106°10' E; latitude 36°09'~37°43'E). It is around 130 km from east to west, while 180 km from south to north.

The elevation varies from 2955 m at southwest to 1100 m at northeast. The land resources are (i) alluvial plain along the Yellow River 1000 sq km (5.9%), (ii) table land 600 sq km (3.5%), (iii) desert 1200 sq km (7%), (iv) mountainous areas and hills 14,245 sq km (83.6%). Due to the typical continental climate at this arid and semi-arid place, the sunshine is plentiful and the temperature difference between daytime and night is remarkable. The annual accumulative temperature amounts to 3720℃, the annual mean temperature is 7.3℃~9.5℃, the annual relative humidity is 57%, the frost-free period is 158~169 days, the annual precipitation varies from 180 to 367 mm, and the annual evaporation varies from 1930 to 2172 mm.

In 2009, the GDP amounted to RMB 13.574 billion – an increase of 13.8% in terms of constant price. The added value from the primary industry was RMB 2.633 billion (an increase of 7.7%), that from the secondary industry – RMB 5.945 billion (an increase of 19.4%), and that from the tertiary industry – RMB 4.996 billion (an increase of 11.0%). Calculated on the basis of resident population, the per capita output value was RMB 11977 – a year-on-year increase of 12.8% in terms of constant price.

2.3. Distribution of Social-Economic Resources and Ethnic Minorities

2.3.1. Social-economic Brief of the Project Area

Ningxia is composed of 21 county units in 5 municipalities. The population is mainly the Han people (ordinary Chinese) and the Hui Muslims. The population in the project area is illustrated in Table 2-1.

Table 2-1. Population in the Project Area (2009)

Municipality	Project County Unit	Total Population (10,000)	Rural Population (10,000)	Rural Population (%)	Hui Muslims (10,000)	Hui Muslims (%)
Shizuishan	Pingluo	28.89	21.18	73.3	9.48	32.8
Yinchuan	Xingqing	57.1	6.4	11.2	9.7	19.52
	Lingwu	23.7	12.1	51.1	12.2	51.3
	Yongning	21.15	15.36	72.6	4.06	19.19
Wuzhong	Yanchi	16.5	13.2	80.0	0.4	2.4
	Litong	37.39	20.9	55.9	21.74	58.15
	Qingtongxia	27.01	19.18	71.0	4.61	17.07
Zhongwei	Zhongwei	116.65	88.91	76.2%	39.91	34.2%
Information source: Governmental statistics 2009						

In 2009, the GDP of Ningxia amounted to RMB 133.456 billion – a year-on-year increase of 11.6% in terms of constant price. The increase was 2.9% more than the national average. Of the above, the added value from the primary industry was RMB 12.713 billion (an increase of 7.2%), that from the secondary industry – RMB 68.02 billion (an increase of 14.4%), and that from the tertiary industry – RMB 52.723

billion (an increase of 9.4%). The per capita output value amounted to RMB 21,475 -- an increase of 10.3% in terms of constant price. The proportion of the added value from the 3 industries changed from 9.9：50.7：39.4 in 2008 to 9.5：51.0：39.5 in 2009 with the contribution to economic development by 5.6%, 60.0% and 34.4%, respectively.

In 2009, the per rural capita net income was RMB 4048 – a year-on-year increase of RMB 367 or 10%, while the per rural capita livelihood expenditure was RMB 3348 – a year-on-year increase of 8.2%. The Engel Coefficient of rural households was 41.7% -- a year-on-year increase of 0.1%. The per capita net income of the 20% high income rural households was RMB 9168 元, while that of the 20% low income rural households was RMB 955. The floorage per rural capita was 24.5 sq m – a year-on-year increase of 1.4 sq m. The economic development of the project county units is illustrated in Table 2-2.

Table 2-2. Economic Development in the Project Area (2009)

Municipality	Project County Unit	GDP (RMB 100 mln)	Economic Increment (%)	Per Capita Output Value (RMB)	Per Rural Net Income (RMB)	Proportion among the Primary, Secondary and Tertiary Industries
Shizuishan	Pingluo	60.8	14.1	21147	5005	15.3：64.3：20.4
Yinchuan	Lingwu	105.6.5	29.8	44746	5733	5.2：84.1：10.7
	Yongning	47.86	7.2	22711	5127	15：62：23
	Xingqing	210.02	10.4	36842	6040	1.88：31.74：66.4
Wuzhong	Yanchi	19.7	12.4	11595	3288	18.3：39.8：41.9
	Litong	57.13	17.7	15467	5813.22	16.1：50：33.9
	Qingtongxia	78	9.7	29019	5831	11.9：66.2：21.9
Zhongwei	Zhongwei	135.74	13.8%	19453	5325	19.2:44.6:35.2

Information source: Governmental statistics 2009

2.3.2. Situation of Ethnic Minorities in the Project Area

On the project counties, the population of Hui Muslims amount for more than 50% in Litong and Lingwu, while that in Qingtongxia and Yanchi amount for 17.07% and 2.4%, respectively. More details are illustrated in Table 2-3.

Table 2-3. Population of the Project Counties (2009)

Project County	Total Population (10,000)	Rural Population (10,000)	Rural Population (%)	Hui Muslim People (10,000)	Hui Muslim People (%)
Pingluo	28.89	21.18	73.3	9.48	32.8
Xingqing	57.1	6.4	11.2	9.7	19.52
Lingwu	23.7	12.1	51.1	12.2	51.3
Yanchi	16.5	13.2	80.0	0.4	2.4
Litong	37.39	20.9	55.9	21.74	58.15
Qingtongxia	27.01	19.18	71.0	4.61	17.07
Zhongwei	116.65	88.91	76.2%	39.91	34.2%

Information source: Year Book 2009 of the relevant counties

2.3.2.1. Brief on Hui Muslim

Nowadays, there are about 9.6 million of Hui Muslims in China, living in compacts mainly in Ningxia, Gansu, Qinghai, Henan, Shandong and Yunnan provinces/autonomous regions. Hui people speak Chinese, mainly engaged in agriculture, aquaculture, trade, crafts and food and beverage industry and other aspects of development very well. China and other Muslim countries by promoting trade between, cultural and transportation, played in the history of an active role.

The Hui believe in Muslim, which links all the layers of the Hui society, guides the spiritual life of the Hui and serves as the life principle of the Hui. As a result, the peculiar culture and habit of the Hui has been established. The Hui dress quite similar to the Han. The main difference is in the wear on the hair. Men often wear a small white cap, while a woman with a scarf covering some of her face and complete shoulders, leaving only the face exposed. The color and length of the turban changes with age. The turbans of girls are usually green, those of middle-aged women are black and those of older women are white. The scarfs of girls and middle-aged women are short, only reaching the shoulders, while those of the older women are longer, hanging behind his back. According to Muslim dietary rules, Muslims are ot allowed to eat pork, dog, horse, donkey, mule meat and other birds and wild beasts. They are also not allowed to eat animal blood and or all the animals of natural death. Muslims are not allowed to drink alcoholic beverages. These originate from all the provisions of Islam. All edible poulty and animals must be approved by the killing of imam. When the animals were slaughtered, it must be chanted. Otherwise, the meat can not be eaten. Muslims like to drink "Gaiwan Tea". It is a mixture tea of sugar, tea, red dates, longan and wolfberry together.

Mosque is always built in the Muslim community center. It is a place for religious activities and also a religious education school. Hui Muslim prayer 5 times a day and have shower in mosque every day. They held Friday Prayers there every Fridayin addition to Eid al-Fitr and other important festivals. Since the formation of Hui, the importance of business and commodity economy have been emphasized. "The Hui is a master of doing business" is a traditional saying. Trade is part of their culture. It includes not only the domestic business and also internartional trade. Through trade, their contact with other cultures helps their own economic and cultural development.

2.3.2.2. Implementation of the Policy on Ethnic Minority

The general principles on ethnic minorities are mainly (i) to adhere to ethnic equality and national unity; (ii) to implement ethnic regional autonomy; (iii) to develop medical care, education and culture in minority areas; (iv) to bring up ethnic minority cadres; (v) to respect and develop minority languages; (vi) to respect the freedom of

ethnic minorities in their religious customs and belief; and (vii) to provide the ethnic minorities with more favorable policy in the birth control.

The economic principles on ethnic minorities are mainly:

(i) Implementation of Favorable Policy: At the same time the Central Government provides the places of ethnic minorities with varieties of favorable policies such as of financial subsidy and development foundation, the places of ethnic minorities are encouraged to develop their local economy on the basis of the reality. Enterprises and trades of ethnic minorities enjoy favorable conditions in crediting, investment, tax, commodity supply and so on. Specially subsidized loans are available for the construction of ethnic minority trading networks and the technical upgrading in the enterprises of ethnic minority goods.

(ii) Transfer Payment System: In the Measures of Transfer Payment in the Transitional Period (2005), special policy of transfer payment was promulgated in favor of Ningxia and other 4 autonomous regions in addition to Yunnan, Guizhou and Qinghai provinces and the municipalities of ethnic minorities in other provinces. In accordance with the governmental policy, the transfer payment to the places of ethnic minorities amounted for half of the national total transfer payment.

(iii) Poverty Reduction in the Places of Ethnic Minorities: Since ever, the places of ethnic minorities are the key points in the national program of poverty reduction. China Outline of Poverty Reduction and Development in the Countryside began to be implemented in 2001, in which the places of ethnic minorities were once again recognized as the key points of special support in poverty reduction. In 2008, the State Council issued a document "Several Comments of the State Council on Further Promoting Economic and Social Development of Ningxia Hui Autonomous Region (No. 29)", in which it was required to solve the problems of poverty, improve the basic conditions of livelihood and provide the farmers with more opportunities of incoming generating in the mountainous areas in the south and the drylands at the central part of Ningxia.

For example, Hongyazi Village of Hongyazi Township in Pingluo County is composed of 7 natural villages with 1494 people in 416 households. The ethnic people (including 471 Hui Muslims and 3 Mongolians) amounted for 33.3% of the total population. Of the total area of 73 square kilometers, the total cultivated area is 7440 mu (5.2 mu per capita). The main crops are wheat, maize and sunflower oil-seeds. In addition, there is limited cultivation of licorice, watermelon seeds,

vegetables and desert mustard. The livestock development is mainly by small tail tan sheep. Agriculture and livestock development are the main income sources of the village. With the development of market economy and mechanization, off-farm income generating and transportation are becoming new sources of income. In 2009, the per capita net income amounted to 5143.36 RMB.

In the project-impact area, the ethnic minorities with the Hui Muslims as the main part enjoy the same position as the Han people (ordinary Chinese). There is not any restraints, difference or discrimination against ethnic minorities. It is impossible for this project to exert any adverse impact on ethnic minorities. On the contrary, after the project completion, the ethnic minorities will benefit from the project in the terms of employment and economic development. Generally speaking, the ethnic minorities (mainly the Hui Muslims) in the project area expressed their high supports to the project. They believe that the project will help lay a good foundation in favor of their production and livelihood and provide them with more opportunities of income generating.

2.4. Economic Situation in the Project Area

The poverty-stricken rural population in this report refers to the people whose per capita annual net income is lower than the rural poverty line of the project county units. Since the West China Development in the recent decade, the per rural capita net income in Ningxia increased from RMB 1053 to RMB 2577 nowadays (an increase of RMB 1524). In accordance with the original poverty reduction standard*, the poverty-stricken population in Ningxia has decreased by 1,118,000 people. Nowadays, Ningxia has 9 county units in the national list of poverty reduction. They are Xiji, Haiyuan, Yuanzhou, Longde, Jingyuan, Pengyang, Yanchi, Tongxin and Hongsipu.

Generally speaking, all the project sites and impacted areas are not the poverty-stricken in the project county unit, and some of them are even the local economic developed areas. Only limited project sites are arranged within the scope of national poverty reduction. With horizontal comparison among the project sites, the difference between the poor and the rich is remarkable. This is related with the overall situation of the regional economic development of the project sites. For instance, most of the project sites in Wuzhong Municipality is backward in economic development,

* Nowadays, Ningxia's absolute poverty line has risen from RMB 785 to RMB 1350 of per capita annual net income. Calculated with this standard, the poverty-stricken rural population in Ningxia amount to 1,116,400 people (26.65% of the rural total population), which is over 5 times the absolute poverty-stricken population (178,200 people) calculated with previous standard. The new poverty line (i.e. RMB 1350 of per capita annual net income) was proposed in 2009. The decade of West China Development refers to the period of 1999~2008. By then, the new standard was not applied, and the statistic comparison of the poverty reduction offices is on the basis of the old standard.

compared with the other project county units. Besides, it is related with the geographic locate of the project site. Generally speaking, the places closer to urban district or more convenient in transportation are the places with better economic development. This project will benefit 1000 rural poverty-stricken people (or 3.6% of the project beneficiaries. The situation of economic development and poverty reduction in the project areas is illustrated in Table 2-4.

Table 2-4. Economic Situation of Ningxia's Counties in the National List of Poverty Reduction (2008)

County Unit	Per Capita Annual Net Income in 2007 (RMB)	Per Capita Annual Net Income in 2008 (RMB)	Year-on-Year Increase (%)	Poverty-stricken People in 2007 (10,000)	Poverty-stricken People in 2008 (10,000)	Rate of Poverty Incident in 2008 (%)
Yanchi	2623.61	3002.29	14.43	0.07	0.50	3.76
Tongxin	2213.66	2576.85	16.41	5.06	1.42	5.49
Yuanzhou	2241.10	2666.98	19.00	6.95	3.87	9.76
Xiji	2215.43	2590.38	16.92	3.93	1.41	3.45
Longed	2175.00	2603.54	19.70	1.24	0.53	3.38
Jingyuan	2064.09	2424.16	17.44	1.11	1.00	8.87
Pengyang	2266.42	2663.35	17.51	1.23	1.47	6.36
Haiyuan	1920.09	2290.68	19.30	6.96	6.64	18.45
Total	2190.52	2577.3	17.7	26.55	16.84	7.61

Information source: Ningxia Poverty Reduction Office

2.5. Rural Women Employment in the Project Area

With the implementation of West China Development program, land conversion program, free-grazing ban policy and ecological protection policies, most of the project constructors and beneficiaries have become women, the old and children, since strong laborers (especially the young and males) do off-farm income generating activities almost all year around and off-farm activities have become the main source of income.

Considering the fact that women have become the main participants in rural social affairs and the main rural labor force, women's federations have organized a series of information publicity activities aiming at poverty reduction and women development. In 2009, Ningxia Women's Federation mobilized "Business and Employment Promotion Actions throughout Ningxia to intensify supports in favor of women in terms of policy, fund, project, training and information. The actions included: (i) establishment of women's bases of business, employment and training, (ii) skill (1~2 items) training, (iii) supporting urban women to set up and manage small business, (iv) supporting rural women with better development activities.

With the joint efforts Ningxia Finance Department, Human Resources and Social Security Department, Yinchuan Branch of People's Bank of China and Ningxia Women's Federation in 2009, program of micro loan with discount interest for income generating declared its commencement. The rural items are for protected agricultural development, wolfberry cultivation, livestock development, dairy development, potato

production, melon and vegetable cultivation, aquiculture, viniculture, jujube plantation, fodder production, apple production and herbal medicine cultivation. The procedures of micro loan application are (i) submitting application by individual, (ii) recommended by women's federation, (iii) checking guarantee and (iv) evaluation and consultation. Since women can do these works without leaving house and their traditional excellence of looking after home is not impacted, these are suitable items of development for women. Women population in the project area is illustrated in Table 2-5.

Table 2-5. Women Population in the Project Area (2008)

	Xingqing	Zhongwei	Lingwu	Pingluo	Litong	Yanchi	Qingtongxia	Ningxia
Female People	253067	57000	113519	133427	182388	133654	77801	3023288
Female %	44.32	48.9	48.7	48.7	48.8	48.4	48.7	48.9

Information source: governmental statistics 2008

In the project-impacted area, women share equal position as men. There is not serious discrimination in gender issue. Important things are decided by discussion among family members at equal position. It is impossible that this project will have any adverse impact on women. On the contrary, women's position will be further upgraded in terms of employment and economic development after the completion of the project. Generally speaking, the project women give high supports to the project. They believe that the project is to lay a good foundation to their future production and livelihood and the project will help build sources of income generating.

3. Community Investigations of Free-grazing Ban and Alternative Livelihoods

3.1 Present Situation of Free-grazing Ban in the Project Area

Ningxia is one of the 10 most important places of animal husbandry in China. The natural grassland of 36,650,000 mu cover 47.2% of Ningxia territory. Ningxia Government highly respects Grassland Law of the People's Republic of China and Recommendations of the State Council on Grassland Protection and Construction. For the harmonious and sustainable development among economy, society and ecology, Ningxia Government decided to implement a policy of free-grazing ban throughout Ningxia since the 1st May 2003. Through painstaking efforts, the tendency of grassland degradation has been effectively held back, and the grassland vegetation has been significantly rehabilitated. It has been proven that it was a wise decision to implement free-grazing ban for vegetation rehabilitation and ecological protection under the natural conditions in Ningxia. To support the free-grazing ban, grassland fences were constructed and enrichment measures were taken, so that there is a remarkable vegetation improvement. The vegetation coverage increased from 30% before the free-grazing ban to over 50% nowadays.

To further strengthen the free-grazing ban in forestry area, Ningxia Forestry Bureau issued "Emergency Notification on Strengthening Free-grazing Ban at Forestry Areas (2009)". Mr. Wang Zhengwei (Chairman of Ningxia Government) pointed out: the free-grazing ban should only be tightened but not be loosened. On the 7th Jan 2011, Regulations of the Ningxia Hui Autonomous Region on Free-grazing Ban was approved by Executing Committee of Ningxia People's Congress.

The land resources of the 7 project counties amount to 1,749,700 ha, including 891,200 ha of sandified lands and 93,100 ha of lands in desertification tendency. In the project area, the land resources for forestry development amount to 730,300 ha including 33,900 ha of trees, 2,400 ha of woodland, 223,200 ha of shrubs, 99,867 ha of young forest, 15,600 ha of closed young forest for natural rehabilitation (CYFNR) and 355,600 ha of land suitable for forestry development (LSFD). The details are illustrated in Table 3.1 and 3.2.

Table 3.1. Present Situation of Forestry Land Resources in Project Area in 2011

(in 10,000 ha)

	Total Area	Forestry Land	Forest	Woodland	Shrubs	Young Forest	CYFNR	LSFD
Total	213.38	87.04	3.6	0.24	23.41	11.4534	2.05	46.21
Pingluo	30.47	5.45	0.39	0.03	0.93	0.16	0.19	3.75
Xingqing	7.69	2.07	0.15	0.00	0.14	0.14	0.00	1.64
Lingwu	44.95	18.75	0.65	0.03	4.35	4.3	0.25	9.17

Litong	6.05	2.59	0.21	0.00	0.71	0.0267	0.46	1.19
Qingtongxia	19.19	4.68	0.62	0.03	1.13	0.18	0.53	2.21
Yanchi	58.33	36.50	0.96	0.14	13.90	5.1267	0.12	16.25
Zhongwei	46.70	17.00	0.62	0.01	2.25	1.52	0.50	12.00

Information source: Feasibility Study Report of Ningxia Desertification Control and Ecological Protection Project

Table 3-2. Basic Information of the Villages Involving in Free-grazing Ban in the Project Area

	Pingluo	Xingqing	Lingwu	Yanchi	Litong	Qingtongxia	Zhongwei
Free-grazing Ban (mu)	125704	63036	310398	112386	8750	4242	40037
Nr. Of Villages	9 administrative villages (AV) and 1 forest farm (FF)	1 FF	3 AV and 2 FF	9 AV	2 AV	1	1 FF
Nr. Of Households	3585	76	602 rural HH and 578 HH of forest workers	3752	107	9	160 HH of forest workers
Population	12427	324	2335 people, 819 forest workers	13130	428	26	430

3.2. Relation between Grassland Ecological Construction and Alternative Livelihood

Sen and Cham bers and Conway in the 1980s and early 1990s put forward the sustainable livelihoods approach. In addition to the studies of the poverty in traditional sense due to income, they put special emphasis on the poverty due to development capacity, namely the capacity deficiency in choosing and completing the activities for basic livelihood. They believed that sustainable livelihood should be sustainable, be able to cope with external pressures and emergencies and be able to recover from the stresses, be able to maintain or enhance its capabilities and assets, and be able to provide opportunities of sustainable livelihood for the next generations. In this concept and on the basis of the international development institutions and NGOs in summarizing the past research and experience, it is proposed to solve the problems of poverty, natural resource management and environment protection and other issues in rural communities by means of alternative livelihood. The alternative livelihood means: under the context of exteranl condition changes or external intervention, the main body of livelihood implementation actively approaches to a new livelihood in order to adapt itself to the external changes and to promote the community livelihoods and the sustainability of communities in political, economic and cultural aspects. The success of alternative livelihood is the result of integration and interaction of the multiple stakeholders.

Free-grazing ban is proposed under the context of sustainable development in China. There are quite some discussions on the rational contents of this measure in academic society. Grassland ecological construction is a general concept referring to all the activities in protecting, rehabilitating and improving grassland ecological environment in a certain space-time context on the principles of ecology and ecological economics. Its core includes all the measures (i) to restrict or abolish all the natural and artificial interference that cause degradation of grassland ecosystems, (ii) to make full use of the system self-healing capabilities so as to successfully rehabillitate as soon as possible the structures, functions and ecological potentials of grassland ecosystem to a certain or even higher levels of the original process and (iii) to re-construct grassland ecosystem at possible places and to promote the healthy development of grassland ecosystems.

Because of differences on research interests and goals, scholars understand the concept of livelihood differently. The concepts of livelihood are integrated in the certain technical conditions and resource environment to to push forward production activitie. Accordingly, “alternative livelihoods" refer to the production and management patterns in the adaptation to the resource environment and technical conditions within the scope of system and policy permission when it has become difficult for resources and environment to carry the existing production pattern or when the existing production and operation patterns have been or are disruptive in the environment. In this approach, the alternative livelihood is taken as a solution to the actual situation when the implementation of free-grazing ban caused changes in land use as well as the right and behavior of resource development and utilization. It is also an effective measure to address social and economic problems, improve the quality of local livelihood and push forward economic development in the premise of not harm the environment.

The concept of grassland ecological construction is closely linked with that of alternative livelihood. On the one hand, ecological construction is a driving force for alternative livelihood. Firstly, the ecological construction would cause changes in the utilization of land and other resources in the process of protecting, rehabilitating and re-constructing grassland resources such as establishing nature reserves, converting marginal lands for ecological improvement and regulating grassland resource development, so that the natural capital in the concept of livelhood is changed. Secondly, the right of exploiting the local resources is restrained in the process of establishing nature reserves, converting marginal lands for ecological improvement and implementing the policy of free-grazing ban, so that the right and behavior in the concept of livelihood is changed (or a change of livelihood pattern). In these 2 aspects, people are forced to seek for new models of development and alternative livelihoods

of sustainable use of resources.

On the other hand, the implementation of alternative livelihoods can support ecological construction for smooth implementation by means of eliminating the negative impacts and solving the economic and social problems in the ecological construction. Varieties of factors are considered in the schemes of alternative livelihoods, such as resource conditions, knowledge, capacity, rights and so on. Comprehensive evaluation of alternative livelihoods for the protection and sustainable use of grassland resource in harmony with nature is a key point for benficial interaction betwee grassland ecological system and the socio-economic system surrounding. It is also a key to ensure that the objectives of grassland ecosystem construction is achieved. The relation between free-grazing ban and alternative livelihood is illustrated in Fig 3.1.

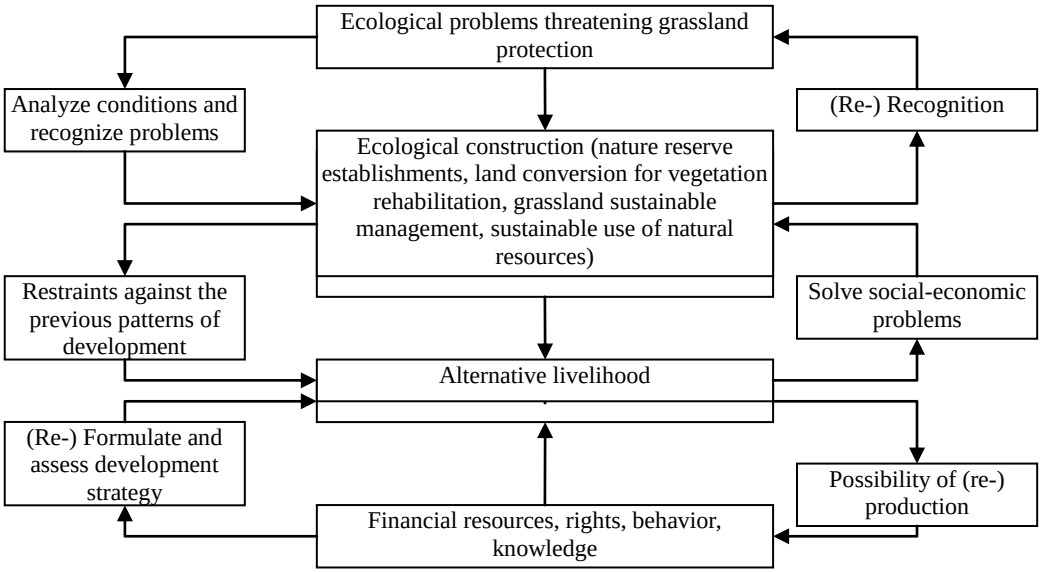


Fig 3.1. Relation between Grassland Ecological Construction and Alternative Livelihood

3.3 Analysis of Livelihood Structure before Free-grazing Ban

To satisfy the demands of the project design, the SA group in July 2011 made baseline investigations of the project area with free-grazing ban. The objective was to analyze and assess farmers' demands of alternative livelihood and its feasibility. The details are illustrated in Table 3-3.

Table 3-3. Basic Information of Key-point Villages of Free-grazing Ban in the Project Area

Project Area	Area (mu)	Degradation Control			Township	AV	HH	Population	Natural Village	HH	Population
		Check Boards	Shrubs	SCVR							
Lizhuangzi	98300	9330	67135	45037	Gaoshawo	Lizhuangzi	454	1426	Lizhuangzi	102	356
									Haugnjichang	66	226
									Yujigou	114	428
					Wanglejing	Langdonggou	410	1456	Donggou	105	420
									Xigou	92	330
									Zhujiayao	97	348
									Xuguangtan	66	207
						Ya'ergou	337	1150	Ya'ergou	109	410
									Qijiaqu	90	310
									Sandaogou	85	300
Weizhuangzi	6000	4650	4650	1282	Gaoshawo	Yingxi	305	1212	Weizhuangzi	109	344
									Hezhuangzi	55	260
Erdaohu				4068	Qingshan	Haojitai	287	1192	Haojitai	95	331
									Er'daohu	56	233
Yehujing	59000	5700	5700	53254	Qingshan	Haojitai			Liujiyaotou	54	160
						Yue'erquan	525	1864	Lujihongzhuangzi	56	196
									Zhaojitang		
					Wanglejing	Bianjiwa	397	1330	Yehujing	98	400
						Shishanzi	451	1562	Zhouzhuangzi	72	375
Nanhaizi	11000	8436	8436	2475	Wanglejing	Nanhai FF	248	800	Nanhaizi		
Wanjigou	15500	4100	4100	6271	Huamachi	Wanjigou	338	1138	Wanjigou	31	87
									Nanwangjuan	36	137
									Beiwangjuan	34	122
									Yangzhaizi	68	270
Total	189800	32216	90021	112386							

3.3.1. Analysis of Livelihood Structure in the Project Villages in Yanchi County

3.3.1.1. Description of Livelihood Structure in the Project Villages

(1) Maotouliang Administrative Village of Qingshan Township is located at central-southern part of Yanchi County. It covers 81 km^2. Of the farmland of 7949 mu, 2600 mu are irrigated. There are 1260 people (all the Han) in 329 HH. All the young people do off-farm work for income generating, while the people above 50 years old do farming or feed livestock at home. The main crop irrigated is maize with a yield around 400 kg/mu. There are 100 sets of greenhouses for fruits and vegetables. Many HH sold out their sheep because of the free-grazing ban since 2003.

(2) Haojitai Village of Qingshan Township in Yanchi County covers 95 km^2. The land resources are made of 8,888 mu of farmland (incl. 2,642 mu irrigated) and 91,600 mu of deserty grassland (40 mu per capita). The 1,196 people (all the Han) are living in 287 HH in 7 natural villages. Due to limited precipitation, desertification is serious.

Farming is the main industry, while off-farm work for income generating is limited. Because of free-grazing ban, the HH of livestock development is becoming less in recent 3 years. Irrigated farmland is distributed mainly in 5 natural villages – Haojitai, Baimafang, Zhaojifang, Liuzhaungtan and Jingkeng. The main crop is maize with a yield around 550 kg/mu. There are 171 sets of greenhouses for fruits and vegetables mainly in Haojitai. The rate of governmental subsidy is 2200 RMB/mu.

(3) Bianjiwa AV of Wanglejing Township is made of 5 natural villages – Bianjiwa, Majizhang, Yeji, Liliangzi and Yehujing. The land resources are 110,000 mu. The farmland of 14,000 mu include 500 mu of irrigated (mainly in Liliangzi and Yehujing). The water tariff is 125 RMB/mu. Grassland covers 90,000 mu (40 mu per capita). The population of 1280 people are living in 400 HH. Around 2/3 of the laborers do off-farm work for income generating. The agricultural income is from farming and livestock development half to half. The crops are oil-plants, millet and buckwheat with a yield of 75 kg/mu at good year and 15 kg/mu at dry year. There are 4000 sheep in the village.

Personnel Resources

Baseline investigations were made in the above mentioned 3 villages -- Maotouliang, Haojitai and Bianjiwa. Of the 43 interviewees, 28 had an education of primary school (65.1%), 11 – junior middle school (25.6%) and only 4 – senior middle school (9.3%). The details are illustrated in Table 3-4.

Table 3-4. Educational Status of the Interviewees

Educational Status	Nr. of Interviewees	%
Primary school and below	28	65.1
Junior middle school	11	25.6
Senior middle school	4	9.3
Total	43	100

As can be observed from Table 3-4, the educational status of the said 3 villages is generally low, which increases the difficulties in alternative livelihood.

Social Resources – Social Network and Mutual Aid System

It was learnt in the investigations that most of the rural HH (79.1%) would not contract out-source labor even at their busiest time. This indicates: at the current pattern of livelihood, the amount of required labor force is limited and it is not necessary to get paid mutual aid. The information of labor hiring is illustrated in Table 3-5.

Table 3-5. Labor Source at Peak Season

Labor Source	Nr. of HH	%
Out-source labor not necessary	34	79.1
Recruit out-source labor	3	7.0
Get help from relatives and friends	6	13.9
Total	43	100.0

Capital of Production and Livelihood

The results of questionnaire analysis are illustrated in Table 3-6. 74.42% of the HH were with contract responsibility system of grassland (maximum 1000 mu/HH and minimum 20 mu/HH). Generally speaking, the more the family members, the bigger the land share in the family. As can be observed in Table 3-7, the main income source of the interviewee HH is farming – mainly wheat and maize (44.2%). The contribution of livestock development and off-farm work for income generating to family income was 34.9% and 20.9%, respectively.

Table 3-6. Grassland under HH Contract Responsibility System (in mu)

Nr. of HH	Min (mu/HH)	Max (mu/HH)	Average (mu/HH)	Standard Difference (mu/HH)	% in Interviewee HH
32	20	1000	260.37	213.186	74.42

Table 3-7. Main Source of Income

Main Source of Income	Nr. of HH	%
From farming	19	44.2
From livestock development	15	34.9
From off-farm work for income generating	9	20.9
Total	43	100.0

3.3.1.2. Social, Economic, Technical and Environmental Feasibility Study of Types of Alternative Livelihood (AL)

On the basis of solicitation with the villagers, the following are the possible types of alternative livelihood in the said 3 villages – confined livestock development, grazing animal husbandry, off-farm work for income generating, trading, cultivation of wheat and maize, cultivation of other crops and raising other livestock (grassland chickens). These types are the candidates for the farmers to choose for alternative livelihood. With the help of the villagers, feasibility study of the economic, social, environmental and technical features of the AL types was made (Table 3-8).

Table 3-8. Feasibility Study of the Alternative Livelihood Types

AL Types	Economic Feasibility	Social Feasibility	Technical Feasibility	Environmental Feasibility	Total Score	Ranking
confined livestock development	2.7	3.3	3.5	4.6	14.0	2
grazing animal husbandry	4.3	4.3	3.8	0.6	13.0	3
off-farm work for income generating	3.9	4.0	3.8	3.3	15.0	1
Trading	3.5	3.2	3.0	3.3	13.0	3
cultivation of wheat and maize	2.4	2.4	2.4	4.7	11.9	5
cultivation of other crops	3.1	2.4	3.6	3.6	12.7	4
raising other livestock (grassland chickens)	1.3	0.9	2.4	2.3	6.9	6

Notes:
(1) The total score for each factor is 5; and
(2) The social feasibility mainly refers to the maximization of the social benefits such as poverty reduction, women employment opportunity and so on.

Table 3-9. Results of SWOT Analysis

Livelihood Type	Advantage	Disadvantage	Opportunity	Risk
Off-farm work for income generating	income generating fast	Short of technology or skill	Good policy environment, prosperous in labor market	Illness
Confined livestock development	Availability of experience and labor	High cost of fodder and feed	Governmental subsidy to fodder and feed as well as supports in technical service	Illness
Grazing animal husbandry	Availability of experience. Cost decrease remarkably	Restrained and prohibited by Government	Governmental subsidy to fodder and feed as well as supports in technical service	Illness and penalty on the basis of the regulations of free-grazing ban

The feasibility analysis of the economic, social, environmental and technical factors was to assess the varieties of livelihood types in the aspects of (i) economic input and output, (ii) environmental adaptability and the impact of ecological environment, (iii) access to technology and/or skill, and (iv) social equality. The score for each factor ranges from 0~5 points. The total score of the feasibility was 20 points. The economic feasibility was assessed on the basis of the ratio between input and output. The environmental feasibility was assessed on the basis of environmental adaptability and the impact of ecological environment. The technical feasibility was assessed on the basis of whether the technology is easy to learn. The social feasibility was assessed on the basis of the scopes and sizes of the target groups. Finally, the summarized points were managed by ranking.

As can be observed from the investigation results, the livelihood types of the 43 investigated HH are relatively simple. The importance of their livelihood types is ranked in the order of off-farm work for income generating, livestock development

(part-time mixed among these 2 types), trading, farming and so on. This indicates that the local farmers prefer off-farm work for income generating and are used livestock development. This is because: (i) off-farm work for income generating and livestock development are encouraged by the Government, and (ii) the local environment for production and livelihood is harsh. In order to be adaptable to the new environment in the free-grazing ban, the farmers have begun to adjust and change the traditional livelihood type.

3.3.1.3. Demand Assessment of Alternative Livelihood

Investigations were done on the planned livelihood of the 43 HH when the project is implemented. The results are illustrated in Table 3-10. The choice of 19 HH (44.2%) was farming + livestock development, the choice of 14 HH (32.6%) was livestock development (sheep), and the choice of only 2 HH was off-farm work for income generating. This indicates that most of the farmers hope to continue their traditional livelihood types of farming and livestock development on the basis of ready experiences. They prefer partially alternative livelihood.

Table 3-10. Planned Labor Distribution

Livelihood Type	Nr. of HH	%
Farming	4	9.3
Livestock development	14	32.6
Farming + livestock development	19	44.2
Trading	3	7.0
Off-farm work for income generating	2	4.7
Others	1	2.3
Total	43	100.0

In AL assessment and SWOT analysis, differences are observed among the farmers, because of the marketing and natural risks in farming and livestock development. Besides, the farmers have realized that their farming is rain-fed and un-reliable and it is beyond their capability to overcome the difficulties due to frequent natural hazards. The risk against livestock development comes from the shortage of technology and in particular the remarkable increase in the cost of confined feeding after the free-grazing ban. This risk can be mitigated by means of technical training, governmental subsidy and the supports from fodder processing enterprises. There are more and more uncertainties in off-farm work for income generating. For instance, the requirement of employers for the educational and technical level of employees is upgrading. Considering the ready availability of land resources, from the viewpoint of short-term benefit, the farmers give their selection priority to farming and livestock development (sheep).

3.3.2. Analysis of Livelihood Structure in the Project Villages in Lingwu

3.3.2.1. Description of Livelihood Structure in the Project Villages

(1) Changliushui Village of Baitugang Township has 499 people in 148 HH (474 Hui Muslims and 25 the Han). The land resources are made of 1422 mu of farmland and 80,000 mu of grassland. The economic income is mainly from farming and livestock development. With the development in recent years, livestock development contributes over 70% of the net income to the farmers.

(2) Xinhong Village of Baitugang Township has 493 people in 122 HH (142 Hui Muslims and 351 the Han). There are nowadays 818 mu of farmland. In the Land Conversion Program, the converted farmland, forest land and grassland for vegetation rehabilitation amount to 1118 mu, 303 mu and 260,000 mu, respectively. The leading industries are farming and livestock development. Livestock development contributes over 70% of the net income to the farmers. Around 30% of the HH have more than 300 sheep. The economic condition of the village is generally good.

(3) Xinhuo Village of Baitugang Township has 1343 people in 332 HH of 4 natural villages (all Hui Muslim people). There are nowadays 2911 mu of farmland. In the Land Conversion Program, the converted farmland, forest land and grassland for vegetation rehabilitation amount to 3295 mu, 12991 mu and 350,000 mu, respectively. The leading industries are farming and livestock development. Livestock development contributes over 60% of the net income to the farmers. The village is well equipped with infrastructures.

Personnel Resources

Baseline investigations were made in the above mentioned 3 villages – Changliushui, Xinhong and Xinhuo. Of the 27 interviewees, 4 had an education of primary school (14.8%), 20 – junior middle school (74.1%) and only 3 – senior middle school (11.1%). The details are illustrated in Table 3-11.

Table 3-11. Educational Status of the Interviewees

Educational Status	Nr. of Interviewees	%
Primary school and below	4	14.8
Junior middle school	20	74.1
Senior middle school	3	11.1
Total	27	100.0

As can be observed from Table 3-11, the educational status of the said 3 villages is generally low (88.9% at educational status of junior middle school and below), which increases the difficulties in alternative livelihood.

Social Resources – Social Network and Mutual Aid System

It was learnt in the investigations that around 55.6% of the HH would contract out-source labor at their busiest time, 33.3% of the HH (9 HH) expressed the un-necessity of out-source labor and 12.5 of the HH would get help from their relatives and friends. This indicates: at the current pattern of livelihood, the amount of required labor force is relatively much and it is necessary to get paid mutual aid. Most of the HH get information of production and livelihood from relatives and friends as well as from TV and newspaper. The information of labor hiring is illustrated in Table 3-12.

Table 3-12. Labor Source at Peak Season

Labor Source	Nr. of HH	%
Out-source labor not necessary	9	33.3
Recruit out-source labor	15	55.6
Get help from relatives and friends	1	3.7
Get help from friends	2	7.4
Total	27	100.00

Capital of Production and Livelihood

The results of questionnaire analysis are illustrated in Table 3-13. 74.1% of the HH were with contract responsibility system of grassland (maximum 2000 mu/HH and minimum 10 mu/HH). Generally speaking, the more the family members, the bigger the land share in the family. As can be observed in Table 3-14, the main income source of the interviewee HH is livestock development (sheep) (48.1%). The contribution of farming and off-farm work for income generating to family income was 40.7% and 11.1%, respectively. The crops are mainly wheat and maize.

Table 3-13. Grassland under HH Contract Responsibility System (in mu)

Nr. of HH	Min (mu/HH)	Max (mu/HH)	Average (mu/HH)	Standard Difference (mu/HH)	% in Interviewee HH
20	10	2000	472.50	676.857	74.1

Table 3-14. Main Source of Income

Main Source of Income	Nr. of HH	%
From farming	11	40.7
From livestock development	13	48.1
From off-farm work for income generating	2	11.1
Total	27	100.00

3.3.2.2. Social, Economic, Technical and Environmental Feasibility Study of the Livelihood Types

On the basis of solicitation with the villagers, the following are the possible types of alternative livelihood in the said 3 villages – confined livestock development, grazing animal husbandry, off-farm work for income generating, trading, cultivation of wheat and maize, cultivation of other crops and raising other livestock (grassland chickens). These types are the candidates for the farmers to choose for alternative livelihood. With the help of the villagers, feasibility study of the economic, social, environmental and technical features of the AL types was made (Table 3-15).

The feasibility analysis of the economic, social, environmental and technical factors was to assess the varieties of livelihood types in the aspects of (i) economic input and output, (ii) environmental adaptability and the impact of ecological environment, (iii) access to technology and/or skill, and (iv) social equality. The score for each factor ranges from 0~5 points. The total score of the feasibility was 20 points.

Table 3-15. Feasibility Study of the Alternative Livelihood Types

AL Types	Economic Feasibility	Social Feasibility	Technical Feasibility	Environmental Feasibility	Total Score	Ranking
confined livestock development	3.9	3.9	3.1	4.0	14.9	1
grazing animal husbandry	3.6	3.5	4.3	2.5	13.9	2
off-farm work for income generating	2.6	1.6	2.0	2.3	8.4	4
Trading	2.9	2.4	2.9	2.9	11.1	3
cultivation of wheat and maize	2.7	2.4	3.0	3.0	11.1	3
cultivation of other crops	1.2	0.4	0.8	0.8	3.2	5
raising other livestock (grassland chickens)	0.6	0.3	0.5	0.8	2.2	6

Table 3-16. Results of SWOT Analysis

Livelihood Type	Advantage	Disadvantage	Opportunity	Risk
Off-farm work for income generating	income generating fast	Short of technology or skill	Good policy environment, prosperous in labor market	Illness
Confined livestock development	Availability of experience and labor	High cost of fodder and feed	Governmental subsidy to fodder and feed as well as supports in technical service	Illness

As can be observed from the investigation results, the livelihood types of the 27 investigated HH are relatively simple. The importance of their livelihood types is ranked in the order of livestock development, off-farm work for income generating, trading, farming and so on. This indicates that the local farmers are used their traditional livelihood type of livestock development. This is because: (i) confined livestock development are encouraged by the Government, and (ii) the local production environment is suitable for livestock development. After the free-grazing

ban, the traditional livelihood type have not much change.

Case Study: Mr. Wang, male, 54 years old, in Xinhuo Administrative Village

The leading business of my village at civil construction and off-farm work for income generating. The engineering teams nowadays possess more than 60 sets of machines and absorb around 50% of the village laborers. Confined livestock development is another business, mainly sheep and beef cattle.

3.3.2.3. Demand Assessment of Alternative Livelihood

Investigations were done on the planned livelihood of the 27 HH when the project is implemented. The results are illustrated in Table 3-17. The choice of 22 HH (81.5%) was livestock development (sheep and beef cattle), and the choice of the remaining HH (18.5%) was farming. This indicates that the farmers hope to continue their traditional livelihood types of livestock development and farming on the basis of ready experiences. They prefer partially alternative livelihood.

Table 3-17. Planned Labor Distribution

Livelihood Type	Nr. of HH	%
Farming	5	18.5
Livestock development	22	81.5
Total	27	100.0

In AL assessment and SWOT analysis, differences are observed among the farmers, because of the marketing and natural risks in farming and livestock development. Besides, the farmers have realized that their farming is rain-fed and un-reliable and it is beyond their capability to overcome the difficulties due to frequent natural hazards. The risk against livestock development comes from the shortage of technology and in particular the remarkable increase in the cost of confined feeding after the free-grazing ban. This risk can be mitigated by means of technical training, governmental subsidy and the supports from fodder processing enterprises.

3.3.3. Analysis of Livelihood Structure in Taole Township of Pingluo County

3.3.3.1. Description of Livelihood Structure in the Project Villages

(1) Mataigou Village of Taole Township has 836 people in 27 HH of 5 natural villages (all the Han). The land resources of 15,000 mu include 8300 mu of irrigated farmland. Farming is the main industry. There are 4600 sheep and one processing factory. Of the 510 laborers, 160 people do off-farm work for income generating. The per capita annual net income amounts to RMB 5800.

(2) Shijiataizi Village of Taole Township has 1440 people in 420 HH. The land resources of 62.79 km^2 include 7232 mu of farmland. Miaomiao Lake is located in the

village as a tourism resort. There are 2 planting parks, covering 900 mu. The main business is vegetable production and sheep development (7000 heads). More than 40% of the farmland is used for seeds multiplication. The per capita annual net income in 2009 was RMB 4631 – above the county average.

(3) Dongyuan Village of Taole Township has 896 people in 240 HH in 6 natural villages. The land resources of 36,000 mu include 3900 mu of farmland. The main business is farming (maize, paddy rice, oil sunflower) in addition to 100 mu of greenhouses. The other properties include 5000 heads of sheep, pigs, 2 processing factories, 4 shops and 2 sets of chicken farms (6000 in each).

(4) Dongsha Village of Gaoren Township has 1570 people (incl 560 laborers) in 460 HH in 6 natural villages. The land resources of 20,000 mu include 12,000 mu of irrigated farmland. The main business is farming (wheat, maize, watermelon, oil sunflower) in addition to 2000 heads of sheep. 200 laborers do off-farm work for income generating all year around, while half of them seasonally.

Personnel Resources

Baseline investigations were made in the above mentioned 4 villages – Mataigou, Shijiatai, Dongyuan and Dongsha. Of the 31 interviewees, 12 had an education of primary school (38.7%), 9 – junior middle school (29%) and 10 – senior middle school (32.3%). The details are illustrated in Table 3-18.

Table 3-18. Educational Status of the Interviewees

Educational Status	Nr. of Interviewees	%
Primary school and below	12	38.7
Junior middle school	9	29.0
Senior middle school	6	19.4
Technical secondary school	4	12.9
Total	31	100.0

As can be observed from Table 3-18, the educational status of the said 4 villages is generally OK (1/3 of the main laborers are at educational status of senior middle school and above), which increases the possibility in alternative livelihood.

Social Resources – Social Network and Mutual Aid System

It was learnt in the investigations that most of the HH needed out-source laborers at peak season. Around 38.7% of the HH would contract out-source labor at their busiest time, while 32.3% of the HH would get help from their relatives and friends. This indicates: at the current pattern of livelihood, the amount of required labor force is not much and it is not necessary to get much paid mutual aid. Most of the HH get

information of production and livelihood from relatives and friends as well as from TV and newspaper. The information of labor hiring is illustrated in Table 3-19.

Table 3-19. Labor Source at Peak Season

Labor Source	Nr. of HH	%
Out-source labor not necessary	9	29.0
Recruit out-source labor	12	38.7
Get help from relatives and friends	10	32.3
Total	31	100.0

Capital of Production and Livelihood

The results of questionnaire analysis are illustrated in Table 3-20. 77.42% of the HH were with contract responsibility system of grassland (maximum 250 mu/HH and minimum 5 mu/HH). The main natural resources of the village are land resources. In particular, lots of the farmland is access to irrigation. Generally speaking, the more the family members, the bigger the land share in the family. As can be observed in Table 3-21, the main income source of the interviewee HH is farming (96.8%). The main crops are wheat, maize and paddy rice. The contribution of off-farm work for income generating to family income was 3.2%.

Table 3-20. Grassland under HH Contract Responsibility System (in mu)

Nr. of HH	Min	Max	Average	Standard	% in Interviewee
24	5	250	34.25	69.302	77.42

Table 3-21. Main Source of Income

Main Source of Income	Nr. of HH	%
From farming	30	96.8
From off-farm work for income generating	1	3.2
Total	31	100.0

3.3.3.2. Social, Economic, Technical and Environmental Feasibility Study of the Livelihood Types

On the basis of solicitation with the villagers, the following are the possible types of alternative livelihood in the said villages – confined livestock development, grazing animal husbandry, off-farm work for income generating, trading, cultivation of wheat and maize, cultivation of other crops and raising other livestock. These types are the candidates for the farmers to choose for alternative livelihood. With the help of the villagers, feasibility study of the economic, social, environmental and technical features of the AL types was made (Table 3-22).

The feasibility analysis of the economic, social, environmental and technical factors was to assess the varieties of livelihood types in the aspects of (i) economic input and

output, (ii) environmental adaptability and the impact of ecological environment, (iii) access to technology and/or skill, and (iv) social equality. The score for each factor ranges from 0~5 points. The total score of the feasibility was 20 points.

Table 3-22. Feasibility Study of the Alternative Livelihood Types

AL Types	Economic Feasibility	Social Feasibility	Technical Feasibility	Environmental Feasibility	Total Score	Ranking
confined livestock development	3.9	4.1	3.7	4.0	15.7	2
grazing animal husbandry	2.9	2.1	3.7	3.0	11.7	4
off-farm work for income generating	3.8	4.2	3.7	4.0	15.7	2
Trading	3.2	2.4	2.0	3.0	10.6	2
cultivation of wheat and maize	4.5	3.9	4.1	4.0	16.5	1
cultivation of other crops	4.2	2.9	3.5	4.0	14.6	3
raising other livestock	1.5	1.6	1.3	3.3	7.7	5

As can be observed from the investigation results, the livelihood types of the 31 investigated HH are relatively simple. The importance of their livelihood types is ranked in the order of farming (wheat, paddy rice and maize), livestock development (sheep), off-farm work for income generating, trading and so on. This indicates that the local farmers are used their traditional livelihood type of farming. This is because: (i) the farmland is access to irrigation; and (ii) confined livestock development are encouraged by the Government. After the free-grazing ban, the traditional livelihood type have not much change.

Case Study: Mr. Zhang, male, 67 years old, in Sankeliu Administrative Village of Hong'aizi Township

The village has 7000 mu of farmland, all irrigated. The total population of 1300 people (including 300 laborers) are in 286 HH. The main crops are wheat and maize. There are 3600 heads of livestock. Of the 4 factories, 2 sets are for vegetable processing. Farmers do seasonal off-farm work for income generating. The 10,000 mu of grassland has be divided into the HH management responsibilities.

3.3.3.3. Demand Assessment of Alternative Livelihood

Investigations were done on the planned livelihood of the 31 HH when the project is implemented. The results are illustrated in Table 3-23. The choice of 16 HH (51.6%) was farming with part-time livestock development, and the choice of the remaining HH (48.4%) was farming. This indicates that the farmers hope to continue their traditional livelihood types of farming and livestock development on the basis of ready experiences. They prefer partially alternative livelihood.

Table 3-23. Planned Labor Distribution

Livelihood Type	Nr. of HH	%
Farming	15	48.4
Farming with part-time livestock development	16	51.6
Total	31	100.00

In AL assessment and SWOT analysis, it can be observed the farmer stick to their traditional livelihood of farming, since their farmland is access to irrigation.

3.4. Case Study Free-grazing Ban and Land Use Structure in Yanchi Country

Yanchi County is located at the west of Maowusu Sandland. It is a transitional place between farming and animal husbandry. Yanchi County is facing problems of environmental deterioration, ecological un-equilibrium and soil erosion in addition to economic backwardness. Yanchi is one of the 266 national animal husbandry counties, and also one of the counties suffering from serious desertification in China. Yanchi County neighbors Dingbian County of Shaanxi Province to the east, Huanxian County of Gansu Province to the south, Lingwu City and Tongxin County to the west and Inner Mongolia Autonomous Region to the north. The geographic coordinate is situated between the east longitude 106°3 ' ~107°47 ' and the north latitude 37°4 ' ~38°10 '. Yanchi governs 679 natural villages of 99 administrative villages in 16 townships with a total area of 7130 km^2. As an inland place, Yanchi County is in the zone of typical temperate continental monsoon climate. In the northern part, the annual temperature is 7.7℃, while the southern part -- 6.7℃. The north annual mean precipitation is 296.4 mm, while the south is 355.1 mm. The soils are mainly gray calcium soil, wind-blown sandy soil, black humus soil an salt-effected soil. The vegetation at the northern part is desertified grassland, while the vegetation at the southern part is steppe. Vegetation of low coverage is made mainly of perennial grasses with some shrubs (such as Caragana) and semi-shrubs. Animal husbandry is the leading industry in Yanchi County.

3.4.1. Analysis of the Current Situation of Free-grazing Ban

Yanchi County has the biggest natural grassland in Ningxia. It is also a place suffering from serious problems of land desertification and grassland degeneration. The grassland of 557,000 hectares covers 64.6% of Yanchi territory. Of the above, approximately 473,000 hectares are utilizable. Serious degenerated grassland is approximately 173,300 hectares -- 36.6% of the utilizable. Since the free-grazing ban policy in October, 2002, 367,000 hectares of grassland have been split into the contract responsibility of individual households, fencing network has covered 366,000 hectares, enrichment has done over 87,000 hectares, and artificial fodder grass

growing has extended over 35,000 hectares, which amount for 77.5%, 77.3%, 18.4% and 7.4% of the utilizable grassland, respectively. According to the investigation in 2007, the vegetation coverage of the grassland increased from 30% before the free-grazing ban to 65% nowadays and the fresh grass output enhanced from 720 kilograms/hectares before the free-grazing ban to 2520 kilograms/hectares nowadays. The vegetation over 80,000 hectares of grassland has been restored completely; 133,000 hectares of desertified grassland are under the varying degree management, and 33,000 hectares of moving sand dunes have been basically fixed. Yanchi has forest around 286,000 hectares. The vegetation coverage increased from 5% before 2001 to the present 35%.

Ecological construction and animal husbandry development are 2 contradictory entities in one body. To properly settle these 2 contradictory entities, the existing problems in policy implementation and animal husbandry actual development should be clearly identified. From the policy viewpoint, if the governmental policy of ecological protection is not equipped with corresponding measures of economic compensation (i.e. purely the ecological improvement at the sacrifice economic development), the impacted farmer households at the basic level of agricultural production will inevitably become the victims. After the implementation of free-grazing ban policy, the impacted farmers lost their original production means – grassland, but no alternative measures were taken to help the farmers with higher income. Thus, new contradictions between ecological policy and the economic interest of the impacted farmers were generated.

The contradictions were mainly reflected in: (i) At the same time of implementing the free-grazing ban policy, Yanchi County Government made its best to help such as to adjust the pattern of livestock development and cropping structure, to promote artificial grass growing, to extend technical service in confinement feeding, to support feeding other livestock and poultry, and to encourage off-farm income generating activities with supporting measures of employment searching and skill training. However, most of the investments flowed to the fixed assets including the construction of livestock stables, the procurement such as of fodder choppers the construction of fences. Only limited financial resources were used for fodder development. As a result, most of these investments were unable to generate direct and long-term economic benefits. After trying many ways, the farmers driven by livelihood pressure had to illegally graze for reducing fodder cost. (ii) Compared with LCP, the subsidy for free-grazing ban was low and not assured. As was often learnt, it was easy to implement LCP and difficult to carry out the policy of free-grazing ban. At this transitional place of farming and animal husbandry, there is a traditional concept of “farming for grain food and sheep raising for cash”. The grain subsidy

from LCP has helped provide farmers with grain ration, but the implementation of free-grazing ban policy cut off the most important economic income of most of the local farmers. Since the farmers cannot find alternative livelihood in short-term, the policy of free-grazing ban cannot be obtained the support and it is very difficult to upgrade their awareness of ecological protection under economic pressure.

From the viewpoint of livestock development, the contradictions were mainly reflected in: (i) the livestock development infrastructures have been gradually improved with the finance support of the government, but the fodder intensive processing industry development is still very slow. Nowadays, chopped straw stalk has been generally accepted as fodder. But chopping is only helpful for upgrading intake rate, and the digestible rate must be improved by chemical and biological treatments such as ammonization, silaging and fermentation. (ii) Feed nutrition must been balanced so as to solve problems of the deficiency in mineral substance, microelements and vitamins at the condition of confined feeding. Feed efficiency must be upgraded, especially in the practices of lamb cultivation and adult fattening. (iii) Most of the farm households are low in livestock management. Mixed feeding among goats and sheep, lambs and adults will have varieties of impacts on the intake rate and marketing cycles. (iv) Fodder production must be strengthened. As Yanchi is a place of semi-arid area, grains are produced often at the sacrifice of the scarce and valuable resources of farmland and fresh water and even ecological degradation. Taking grains as feeding materials is one of the courses of the high feeding cost in animal husbandry. Compared with grain production, the production of fodder grass is less impacted by natural conditions. It is especially the case at the context of climate change. Therefore, strengthened development of fodder grass will help cut down the consumption of grain feed and thus the cost of livestock development. In addition, the achievement of free-grazing ban can be better consolidated.

3.4.2. Analysis of Land Use Structure

The social assessment group has analyzed the land utilization changes about more than 60 years in Yanchi County, after their on-the-spot investigations and data study. The findings are as follows:

(1) The land utilization types are getting more and more complicated. The land use structure is shifting from the structure of animal husbandry land utilization in 1995s to the structure of farming production as the main at the combination with animal husbandry land use nowadays. In the early 50 years, land utilization caused the land degradation gradually; while in the recent 10 years, land resources are being restored rapidly. The cultivated land increased remarkably from 1950s to 1990s. With the lift irrigation from the Yellow River, the total grain production has increased as much as

3.71 times of that before the lift irrigation, and most of the rainfed farmland is given up. The major factor of farmland expansion in the early 50 years was the remarkable increase of population, while the major factors of farmland decrease in the recent 10 years is the construction of lift irrigation as well as fertilizers and improved crop varieties.

(2) Both the area and quality of grassland kept reducing until the implementation of free-grazing ban in 2003. In terms of the vegetation index and grass species of the grassland, the present restoration has not yet achieved the situation before mid 1950s. The continuous deterioration of grassland resources from late 1950s to 1990s mainly resulted from the remarkable increase of grazing sheep and the improper policy of grassland management, in addition to farmland reclamation and herbal medicine collection over grassland. The main factors that have resulted in the area reduction of grassland in recent years are the policy of free-grazing ban, the subsidy of LCP and the rich outputs due to lift irrigation by the yellow River.

(3) Generally speaking, the forestry development in Yanchi in recent 60 years is relatively slow, except the windbreak networks on the lift-irrigated farmland by the Yellow River as well as the Caragana forests of LCP. The main factors of promoting forest development are the improvement of site conditions and forest management.

(4) The area and seriousness of desertification kept increasing from 1950s to 1990s. With the policy of LCP and free-grazing ban in recent years, the desertification area has been greatly reduced. The main factor of continuous desertification is the increase of the land utilization rate, while the main factor that helps reduce desertification is mainly the implementation of ecological protection policies.

3.4.3. Social-Economic Impacts of Free-grazing Ban

In Yanchi County, the early 50 years witnessed land resources degradation and the recent 10 years has witnessed land resources improvement. This tendency towards improvement should be further kept. Good practices are to relieve the pressure over land resources and to improve protective land use. From the viewpoint of physical geography process, the land use structure must be advantageous in water and soil conservation. From 1960s to 1970s, the sub-wetland and night wetland disappeared. In addition to the climatic change, it is also related with the changes in land use structure.

From the viewpoint of economic-social process, the farmers' livelihood has changed in Yanchi County. The structure of farmers' income has been changed from the previous status of taking the income of agriculture and animal husbandry as the main to the present income generating of multiple management. In accordance with the

field investigations of 42 farmer households, their income structure in 2009 was: the wage income 35.75%, income from livestock development 32.27%, the income from planting crops 24.78% and the income from governmental subsidy 7.20%. The improvement of farmers' livelihood structure has greatly reduced to the land use pressure. In the 42 investigated households, 17.1% of the population do off-farm income generating works all year around, the structure of rural community is changing to the aging, and human activity and ability in the countryside is weakening. As a transitional place between farming and animal husbandry, the farmers in Yanchi have strong voice asking for grazing, which indicates that it is necessary searching for proper measures of grassland use.

3.4.4. Policy Environment and Countermeasure Proposals

With free-grazing ban, the cost of livestock development increases remarkably. The major restraints against livestock development are the shortages of fodder and laborers, in addition to financial resources. When the cost of livestock development increases about 20%, it seems that the livestock development suffers from too high a cost pressure if the analysis is made only on the basis of cost. In fact, since confined livestock development can absorb old and weak laborers who are not likely to serves as normal laborers, the actual labor cost is much lower than the official calculation of the labor cost for livestock development.

Therefore, confined livestock development is profitable for some of the rural households. In the investigations, it was observed that some farmers achieved good profit through technical improvement and production scale expansion. For the farmers of livestock development + farming with the former as the main, they have to change or adjust their production structure. In order to protect livestock development and encourage farmers in livestock development, the relevant authorities should consider two things: (i) the problem of fodder shortage should be solved by constructing fodder production bases; and (ii) farmers should be encouraged in intensified management of livestock development from the viewpoint of economies of scale. The institutions of scientific research and technical extension should strengthen their efforts on feed research, fodder cultivation/production and livestock management for higher efficiency.

3.4.4.1. Policy Environment

(1) With the free-grazing ban throughout Ningxia, if the ecological compensation to the impacted farmer herdsmen is deficient, the administrative cost of managing and supervising the free-grazing ban will increase remarkably and it is difficult to make sure that the grassland ecology will effectively protected. Therefore, proper criteria of ecological compensation should be formulated as soon as possible.

To effectively protect grassland ecology, the key point is to change the traditional concept of the farmer herdsmen on livestock development and to implement the contract responsibility system of grassland. Under the combination with the local programs of agriculture, forestry, livestock development, irrigation construction and poverty reduction, the local governments in the project area can in advance use the project resources and finance to help the farmer herdsmen with grassland construction and stable improvement, in addition to technical training/service, herd improvement and the construction of fodder bases. For instance, In the recent program of livestock development in Lingwu, 24 demonstration zones of mutton production have been constructed, a silage station of 30,000 cubic meters has been built, and advanced management approaches have been employed in the zones. In addition, the farmers in Baitugang, Linghe and Ciyaopu townships are encouraged to construct standardized stables and silage tanks for 100 Tan sheep per HH. With this as demonstration, the farmers in other places are encouraged for an objective of livestock development of 200,000 Tan sheep.

(2) With different levels of capitals such as income status and the area of farmland and grassland, the behavior responses to the free-grazing ban differ remarkably from farmer to farmer. Impacted by the free-grazing ban, the production structure of the resources available to the farmers has to adjusted accordingly. The farmers with higher level of available capital can more freely adjust the production structure, while those with lower level of available capital are more dependant on natural resources and have less capability to implement the policy.

Farmers' behavior responses to the free-grazing ban differ remarkably from place to place. The production pattern of livestock development at irrigated plains differs from that in mountainous areas, in addition to the differences in technology and experiences. Compared with those in the mountainous areas, the farmers in the irrigated plains are relatively easy to transform their production concepts and technical experiences and their production and livelihood is impacted by the free-grazing ban not as much. When implementing the free-grazing ban, the compensation should be different considering the geographical conditions and income status of the target groups.

(3) Technical training and service is another factor in relation with farmers' behavior responses to the free-grazing ban, in particular the farmers in the mountainous areas who are urgently in need of technical training and service on confined livestock development. In addition, local governments should push forward cooperation between the plain areas and mountainous areas in fodder development and production.

(4) The free-grazing ban is a strategic measure of ecological rehabilitation in favor of economic-social sustainability, it needs the participation, cooperation and supports of

the whole society. For this, supportive and safeguarding regulations and policies relevant should be improved.

To further consolidate the achievements of the free-grazing ban for the sustainability of grassland and forestry development, Regulations of the Ningxia Hui Autonomous Region on Free-grazing Ban was approved by Executing Committee of Ningxia People's Congress on the 7th Jan 2011. It became effective on the 1st March 2011. among the others, the FGB Regulations include the following irrigation: "The free-grazing ban is a management measure to protect ecological vegetation. In a certain period, it is forbidden to graze any herbivorous livestock such as cattle or sheep at designated places such as grassland on mountain and slopes and along rivers as well as artificial grassland"; "The herbivorous livestock such as cattle or sheep in FGB areas should be raised in stables. Governments above county level shall provide subsidies and supports in the form of grains, finance, technology and so on to confined livestock development"; "Government above county level should give compensation or reward of ecological protection to the units or individuals in the FGB areas in accordance with the relevant regulations of the Central Government or Ningxia Government"; "Government above county level should increase inputs to grassland and forestry construction and support and encourage units and individuals to rehabilitate the grassland and forest vegetation by means of enrichments and fencing" and "The agricultural and forestry authorities in government above county level as well as township governments are authorized to penalize any event violating FGB Regulations".

Around 6 million mu of artificial grassland have been constructed in addition to the enlargement of fodder maize cultivation. Farmers are encouraged to harvest fodder grass in FGB areas.

On the 5th June 2011, Ministry of Finance and Ministry of Agriculture co-declared in Beijing that subsidy and reward mechanism for grassland ecological protection would be implemented in 8 provincial units of grassland and animal husbandry and the Xinjiang Production and Construction Corps. They are the Inner Mongolia, Xinjiang, Tibet, Qinghai, Sichuan, Gansu, Ningxia and Yunnan. This is the most important policy of grassland ecological protection ever since the founding of PRC in 1949 in the terms of financial support, coverage area and subsidy items. From 2011, the Central Government will annually arrange special fund to subsidize for FGB, reward balances between livestock development and fodder production, subsidize farmer herdsmen for production and implement performance-based incentive mechanism. For the places with very harsh ecological environment and seriously degraded grassland that normal grazing is impossible, the Central Government will provide the impacted

farmer herdsmen with FGB subsidy at rate of 6 RMB/mu. For the places outside FGB area that normal grazing is possible, the Central Government will provide the impacted farmer herdsmen with rewards for the balances between livestock development and fodder production at rate of 1.5 RMB/mu. For the grazing intensity is within the local limit of carrying capacity. In Ningxia, the FGB-impacted farmers will get annual subsidy of 6 RMB/mu in addition to 10 RMB/mu for grass growing. Besides, three counties with livestock development as their main industry will have a comprehensive subsidy of 500 RMB/HH for production means. They are Yanchi, Tongxin and Haiyuan counties. For the above events of grassland ecological rehabilitation, the Central Government will provide around RMB 400 million.

To implement the national policy of subsidy and reward mechanism for grassland ecological protection, Ningxia Finance Department and Agriculture and Animal Husbandry Department co-organized a working meeting with participants from 22 related counties, and co-issued a document "Notification on Preparation for Subsidy And Reward Mechanism For Grassland Ecological Protection". In accordance with the meeting, Ningxia Grassland Supervision Center will be responsible for (i) the daily work of implementing subsidy and reward mechanism for grassland ecological protection; (ii) formulating "Ningxia Scheme of Implementing Subsidy and Reward Mechanism for Grassland Ecological Protection"; (iii) investigating the HH number with the contract responsibility system of natural grassland, the area of artificial grassland and the household number to enjoy the subsidy for grass growing and the comprehensive subsidy for production means; and (iv) publicizing Program Newsletter to reflect the progress, achievements and experiences.

3.4.4.2. Countermeasure Proposals

In spite of the fact that thanks to the implementation of FGB policy there is a good rehabilitation of grassland vegetation and the problem of desertification has been relieved. However, this mandatory change in man-land relationship cannot be recognized as the best model of harmonious development. On one hand, FGB impacts the development of animal husbandry, and consequently impacts farmers' income. This is particularly remarkable in the places with animal husbandry as main industry (e.g. Yanchi County). On another hand, since lots of grassland lie fallow with FGB policy, production pressure on farmland is increased. Therefore, following measures should be taken: (i) fodder availability should be a decisive factor in livestock development. Rotational grazing and seasonal grazing should be gradually practiced; (ii) grassland should be protected by forests to keep it from desertification; (iii) the natural grassland should be improved by means of enrichment in favor of productivity; (iv) the problem of livestock drinking water shortage should be solved at some of the

grassland; and (v) a close cooperation between livestock development sector and forestry sector is required in favor of grass growing and fodder forest construction so as to shift FGB into semi-grazing + semi-confined raising.

(1) Inter-Sectoral Cooperation under Unified Planning and Coordination: FGB for ecological rehabilitation is related with multiple sectors. Therefore, each sector should be clarified with its responsibilities, objectives and measures. In the implementation of FGB policy, the following combinations should be properly managed: (i) the combination between overall FGB and partial mountain closure; (ii) the combination between the overall FGB and the regulation and efficiency use at small areas; (iii) the combination between long-term FGB and rotational grazing; (iv) the combination between the long-term benefits and the short-term benefits; and (v) the combination between the development of grass-livestock industry and the steady increase of farmers' income in modern agriculture.

The construction of rural infrastructures should be accelerated so as to remarkably improve the production and livelihood conditions of farmers as well as the economic-social conditions in the countryside. This is a measures of "construction pushing forward FGB". The traditional backward patterns of production and management should be replaced with scientific, intensive and efficient patterns of agricultural development. This is a measure of "change pushing forward FGB". By means of adjusting the industrial structure and arrangement, the development of advantageous industries will be accelerated in favor of farmers' higher income and rural development. This is a measure of "adjustment pushing forward FGB".

(2) Changing Traditional Patterns of Production and Livelihood: The traditional patterns of free-grazing and extensive animal husbandry not only hinders ecological rehabilitation but also obstruct rural economic development. Therefore, these backward production patterns must be replaced by scientific, intensive and efficient patterns of confined livestock development.

(3) FGB Management should be strengthened by (i) establishing and enforcing patrolling mechanism; and (ii) strictly executing the regulation of "livestock development on the basis of fodder availability".

(4) Technical extension and service in livestock development should be strengthened so as to consolidate the achievements of free-grazing ban with the financial gains from economic development. At the places with better livestock development, technical extension should focus on livestock raising in warm stables, technology of sheep fast growth, processing and ammonization technology for Caragana feed and veterinary service. With these measures, the efficiency of livestock development will be upgraded, and there will be shifts from grazing to confined livestock development

and from intensified management to primitive extensive management.

(5) Leading enterprises of fodder production and livestock development should be given favorable policy and financial supports for scaled production.

(6) Strengthening the Use of Grassland Resources: With successive years of free-grazing ban, the vegetation, ecology and productivity of grassland have got remarkable improvement. It has becoming more and more an outstanding issue how to reasonably use the grassland resources. For only when the conflicts between protection and use is properly settled, can the FGB achievements be effectively consolidated and can the objectives of ecological protection, economic development and farmers' higher income be achieved.

(7) In order to control land degradation and rehabilitate local vegetation, the project has arranged some activities of sandland closure for vegetation rehabilitation (SCVR). Within the SCVR scope, lots of collective lands have been divided and put under individual household management. If this kind of lands is used in the project construction, the impacted households will get compensation. The project has arranged 13,000 mu (866.7 ha) of grass growing in Lingwu (2,000 mu), Yanchi (5,000 mu) and Litong (6,000 mu). In order to mitigate the impacts of land use on the income of the impacted-people, conservation of 50 RMB/mu will be made for DCVR so as to timely solve problems of alternative livelihood in the project implementation.

4. Analysis of the Basic Features of the Impacted Households and Their Willingness of the Project Participation

4.1.Basic Features of Individuals and Households

In the 205 investigated households, 40% of the population was below 45 years old, 13.2% of the population was older than 60 years. 74.1% of the population was in the employment age. Of the investigated households, 77.1% of the population are male and 22.9% are female; 60.5% of the population are the Han Nationality and 39.5% are the Hui Muslims. The investigation showed that the average family size was 3.72 people and 95.6% of the households had 4~6 people. This is because many families have 2~3 children, and many married adult children still live together with their parents. Over 50% of the farmer households have at least 1 person doing off-farm income generating work frequently, and 41% of the farmer households have children to go to school. The details are illustrated in Table 4-1.

Table 4-1. Sampling Household Investigations

	Features	Frequency	%
Sex	Male	158	77.1
	Female	47	22.9
Age	≦45	82	40
	45~50	41	20
	50~55	29	14.1
	55~60	26	12.7
	≧60	27	13.2
Nationality	Han	124	60.5
	Hui	80	39.5
Marriage	Married	200	97.6
	Not married	5	2.4
Education	Primary school and below	88	42.9
	Junior middle school	69	33.7
	Senior middle school	31	15.1
	Technical secondary school	9	4.4
	Junior college	7	3.4
	University	1	5
Family size	≦4 people	143	69.8
	≧5 people	62	30.2
Off-farm income generating	None	85	41.5
	≧1 family member	120	58.5
Schooling family member	None	84	41
	≧1 family member	121	59

Information source: the SA group

4.2.Basic Situation of Livelihood and Production

Rainfed farmland is the main type in the project-impacted households. The average of per capita farmland is 10.3 mu including one mu of effectively irrigated. The income of the investigated households mainly came from the farming, livestock development and off-farm income generating. In 2009, 31.2% of the investigated families had total income over RMB 10,000; and 33.7%, of the families – RMB 20,000. The per capita income was RMB 3000~4000. From viewpoint of the satisfaction of family income, 47.3% of the families are basically satisfied with the income, while 19.5% of the families are not so satisfied with the income. Of the investigated families, nearly 40% have family member suffering from serious disease. The social assessment group also investigated 72.7% of the loan families. It was observed that the loan was used mainly for livestock development, schooling expenses and the purchase of seeds and fertilizers. Coal and electricity are the main energies for cooking and heating. Drinking water and irrigation mainly depends on rainwater harvesting and lift irrigation from the Yellow River. The details are illustrated in Table 4-2 and Table 4-3.

Table 4-2. Basic Situation of Production and Livelihood in the Sampled Households

Items	Features	Frequency	%
Livelihood level (compared with the village average)	Low	43	21
	Average	136	66.3
	High	26	12.7
Satisfaction to family economic situation	Very satisfied	27	13.2
	Basically satisfied	97	47.3
	Just so so	41	20
	Not so satisfied	32	15.6
	Dissatisfied	8	3.9
Households total income in 2009 (RMB)	≦10000	64	31.2
	10000~20000	72	35.1
	20000~50000	50	24.4
	≧50000	19	9.3
Ranking households income main sources	Cropping	99	48.3
	Livestock	45	22
	Off-farm generating	34	16.6
	Others	27	13.2
Ranking rural energies for cooking	Coal	104	50.7
	Fuel wood	43	21
	Straw	16	7.8
	Electricity	30	14.6
	Bio-gas	12	5.9
Ranking rural energies for heating in winter	Coal	199	97.1
	Fuel wood	4	2
	Electricity	2	1
Drinking water	Tap water	161	78.5
	Harvested rainwater	21	10.2
	Earth well	23	11.2
Irrigation water	Pumped from the Yellow River	159	77.6
	Harvested rainwater	36	17.6
	Earth well	10	4.9
Family member suffering from big disease in 2009	Yes	80	39.5
	No	126	60.5
Loaning in recent years	Yes	149	72.7
	No	56	27.3

Information source: the SA group

Table 4-3. Geographical Location of the Sampled Households

	Range	平均值
Distance from marginal land and hills (km)	0～4	0.9
Distance to the nearest highway (km)	0～20	0.8
Distance to the nearest bazaar (km)	0～35	5.8

4.3.Information Publicity of the Project

98% of the investigated families will support this project, 3 households were not so sure since they are not clear whether the project could bring them benefit, and only 1 household expressed its opposition because he worried that the desertification control project would possibly impact his family's livestock development. Only 54.6% of the investigated households knew something about the project. However, the people who learnt about the project showed high interest in the project implementation time and the planned activities. Therefore, it is necessary to strengthen the project information publicity. When investigating the project impacts possible, it was observed that 99% of households said that the project could bring them benefits and development opportunities without any negative effect to the local community and people. 57.1% of the investigated households expressed their willingness of contribute labor to the project construction, 20% of the households showed their interest in contracting project engineering, and 11.2% was willing to have the project located on the barren ground and barren hills under their management responsibility. The details are illustrated in Table 4-4.

Table 4-4. Project Information Publicity

Items	Features	Frequency	%
Have you ever heard of the project?	Yes	112	54.6
	No	93	45.4
If yes, from where? (ranking)	Radio, TV, newspaper	53	25.9
	Governmental notice	41	20
	Relatives and friends	10	4.9
	Others	7	3.4
What do you know about the project? (ranking)	Time of the project implementation	36	17.6
	Scheme of desertification control and forest vegetation building	23	11.2
	Scheme of tree planting	20	9.8
	Sites of the project implementation	19	9.3
Do you think the project implementation will bring development opportunities to your households and community?	Yes	100	48.8
	No	6	2.9
	Not sure	4	2
	Not know	1	5
Do you think the project implementation will generate negative impacts on the surrounding ecological environment?	Yes	18	8.8
	No	181	88.3
	Not sure	4	2
	Not know	2	1
Will the measures of desertification control and free-grazing ban impact the production and livelihood of your family?	Yes	26	12.7
	No	170	82.9
	Not sure	8	3.9
	Not know	1	5
Will your family be willing to participate in the project activities of desertification control and vegetation building?	Yes	201	98
	No	1	5
	Not know	3	1.5
If yes, how will you participate in the project?	Provide labor	117	57.1
	Provide marginal land and hill	23	11.2
	Do business nearby	19	9.3
	Contract engineering	41	20
	Others	2	1

4.4.Similar Experiences and Altitude

In the investigated, 74.6% of the households had experience participating in the similar project of ecological protection, 97.1% of the households agreed with the idea that the follow-up management is very important in afforestation, and 92.7% of the households expressed their requirements for technical service in planting trees (Table 4-5).

Table 4-5 Attitude of the Sampled Households towards Project of Ecological Construction

Items	Features	Frequency	%
Have you ever participated in the similar project?	Yes	153	74.6
	Not have project	41	20
	Have project but not participate	11	5.4
How do you think the importance of the post-management of a project of forest vegetation building?	Important	199	97.1
	Not important	6	2.9
Should technical training be required in afforestation?	Required	190	92.7
	Not required	15	7.3
Who do you think is a better training for the afforestation project?	Technician of the forest farm	136	66.3
	Technician of the forestry station	55	26.8
	Others	14	6.4

4.5.Ranking Project Benefits

On the basis of field investigations by questionnaires, the project benefits and their ranking in accordance with village heads and farmer households are as the following:：

(1) to obtain some income from short-term labor contribution;

(2) to obtain incomes from the sales of seedlings and fruits as well as from marketing profits;

(3) household agriculture will not be impacted;

(4) to cover barren ground and hills with vegetation in favor of livestock development and fodder processing industry as well as strengthening village collective economy；

(5) to learn forestry skills and technologies;

(6) to attract the farmers who are doing off-farm income generating activities to come back home to participate in the afforestation activity;

(7) to develop the development of related industries for employment opportunities;

(8) to improve the local ecological environment and enhance the quality of living conditions; and

(9) to improve the village ecological environment, reduce the hazards from wind erosion, protect crops from negative impact for higher production after the completion of the project of desertification control and vegetation building.

4.6. Basic Information of the Project Townships, Villagers, Forest Farms and Nature Reserves

4.6.1. Social-Economic Situation of the Project Townships

After consultation with the project offices and considering the project targets, the SA group decided its focuses of field investigations. By means of meetings and interviews with the leaders of villages and townships, information of population and social-economic development were collected.

(1) Baitugang Township

Baitugang Township is located 30 kilometers in the south of Lingwu City. The total area is 637 square kilometers, the topography declines from south to north, the population live in compacts, Kushui River is streaming along the boundary, Dongganqu Canal flows through. It has both plain and mountain areas. The township governs 27 natural villages in 8 administrative villages. The grassland area is 900,000 mu, the total farmland is 16310 mu (1.71%.). There are 2 coal mines and 1 large-scale smelting enterprise. The economic income is mainly from farming and livestock development. Since 2003, there has been 143,961.8 mu of LCP land and 127,012.1 mu of forest vegetation has been built on mountainous land. After regionalization adjustment, there has been 7009.1 mu of LCP land and 62,984.4 mu of forest vegetation has been built on mountainous land.

(2) Wulipo District of Biandangou Township

Wulipo District is made of 4 administrative villages: Xigouya, Nanliang, Wulipo and Haizijing with total population of 5240 people. The land area is 344 square kilometers (516,000 mu), including 18,000 mu of farmland, 393,500 mu of grassland, 104,500 mu of forest land.

Wulipo is a place with both plain and mountain areas. The villages originated from the resettlement activity of poverty reduction program. The villagers are mainly Hui Muslims. Not all the farmland is equipped with irrigation facilities, the land condition is poor, the agricultural development is backward, and the farmers' income is low. However, the land resource is rich, the grassland area is large, and it has advantageous conditions to develop animal husbandry. With the local government's support in recent

years, livestock development obtained considerable progress. The animal husbandry output value amounted for above 50% of the per capita net income. At the same time, in order to develop the new agricultural economy point of growth, the local government relies on its superiority natural resource, develops jujube production. At present, the area of jujube plantation amounts to 505 mu.

It is planned that Haizijing and Wulipo villages will be constructed as bases of beef and mutton production; and Naliang and Xigouya villages – as dairy farm. The places of Kushui River watershed will be the key place of protective forest construction, desertification control and vegetation building. Depending on the local existing resources and the development foundation, it is planned to accelerate the development of jujube planting, trees-grass inter-planting, alfalfa production and maize seed multiplication for economic, social and ecological integrated development.

(3) Taole Township

Taole township of Pingluo County governs 4 administrative villages, 2 communities, Taole Desertification Control Forest Farm and Taole Seed Multiplication Farm. The total area is 164 square kilometers, including 3 squ km of township headquarter and 34,000 mu of farmland. The total population is 10,157 people, including urban population of 4842 people and rural population of 5315 people. Farmer houses are distributed along provincial highway-203 and highway-301. The leading items of agriculture include wheat, maize and vegetables as well as sheep. In 2009, the local GDP reached RMB 82,555,000 – a year-on-year increase of 10.6%. Among them, the contribution of the primary, the secondary and the tertiary industry is RMB 19,954,000, RMB 31,386,000 and RMB 31,215,000, respectively. The per rural capita net income amounted to RMB 5689 – a year-on-year increase of 8.3%. In accordance with the township development program formulated in 2010, Taole Township will be built as a place of energy production base, business center, seed multiplication, cattle and sheep cultivation and desert tourism development.

(4) Wanglejing Township

Wanglejing Township is 835 square kilometers with population of 19,300 people. It governs 13 villages: Wanglejing, Bianjiwa, Shishanzi, Cengjipan, Niujijuan, Liusiqu, Zhengjiapu, Yaergou, Guantan, Wangwucha, Sunjialou, Langgonggou and Shuanggeda. The south is made of loess hills, while the north is the Erdos Plateau gentle-slope hills. It belongs to the typical temperate zone of continental climate. The yearly average temperature is 7.6℃, and yearly precipitation is 256.4 millimeters. At present, it has set up 3 demonstrate villages for tan sheep and 2 demonstrate villages for grassland chicken. The tan sheep raising quantity reaches 234,000 heads. One demonstration zone of jujube-potato inter-planting is newly constructed. In addition,

there is 1000 mu of tunnels of vegetables, 15,000 mu of deep plowing farmland, 4000 mu of plastic-film mulching, 7000 mu of small plot irrigation and 372 sets of livestock warm stables.

(5) Yingshuiqiao Township

Yingshuiqiao Township of Zhongwei governs 79 villagers groups in 15 administrative villages and 2 communities with total area of 1140 km2 and total population of 30756 people. Farmland area is 1309 hectares. Yingshuiqiao Township is an important place of transport, industrial development and tourism development in Zhongwei. A network of convenient transportation has been built with Weiqing Highway, Zhongyang Road, Jichang Road, Wupu Road and so on. With the decades of development, there have been 1817 various enterprises here including 220 industrial enterprise, the tourist resources are rich including the famous 5A level Shapotou Tourist Attraction.

4.6.2. Social-Economic Situation of the Project Forest Farms

After consultation with the project offices and considering the project targets, the SA group decided its focuses of field investigations. By means of meetings and interviews with the leaders and forest workers of the forest farms, information of population and social-economic development were collected.

(1) Rencundu Forest Farm

This forest farm subordinates to Ningxia Forestry Bureau. It is a large-scale state-own nursery integrating scientific research, production, experiment, demonstration and technical extension. It is situated in the middle of Yinchuan Plain along the east of the Yellow River with elevation of 1120 meters. It has the convenient transportation. It is 47 kilometers from Yinchuan.

Since the farm was set up, it has been focusing on the collection of germplasma resources, the breeding and extension of improved varieties and ecological construction. The farm has developed 7000 mu of the beach land along the Yellow River and planted 2800 mu of trees. At present, there are 166 staff on the farm including 39 technicians. Since 2000, household contract responsibility system has been employed on the farm.

(2) Baijitan Forest Farm

The Baijitan Nature Reserve is situated at the margin of Maowusu Sandland. Baijitan Forest Farm was set up in 1953, on the basis of which Baijitan Nature Reserve was established in April 2000. The total area is 1,480,000 mu with 476 staff. Baijitan is shouldering 2 responsibilities: desertification control and the natural resources

protection. There are 306 species of plants and 115 species of wild animals. Baijitan is located between the Maowusu Sandland and the Yellow River and Yinchuan as well as close to Ning Dong Energy and Chemical Base. It is at an important geographical position to protect the Yellow River, Yinchuan City and Ning Dong Energy and Chemical Base from the Maowusu Sandland.

From 2005 to 2009, Baijitan built 158,209 mu of vegetation including 89,602 mu of sand fixation forests, 20,000 mu of vegetation on barren hills, 45,000 mu of desertification control and 3,607 mu of trees along highways. In the period of the eleventh five-year plan, with the help of the Natural Forest Protection Program, the Desertification Control Demonstration Program, the Nature Reserve Construction Program, the project of 4th phase of the construction of the Three Norths Shelter-Belt System, national bond fund (RMB 14,950,000) and the local finance and the nature reserve construction special fund (RMB 10,000,000) was mobilized for the vegetation building in Baijitan. With the improvement of desertification control technology, the survival rate of vegetation building achieved above 85%. The encroachment of the Maowusu Sandland has been contained. According to the survey of forest resources in 2008, the forest area in Baijitan amounted to 40,348 hectares and the forest coverage achieved 40.6%.

In late 1990s, Baijitan mobilized RMB 1,135,000 to build a brickyard and a factory for prefabrication. Nowadays, the output value has accumulated by more than RMB 20 million with profits and tax more than RMB 3 million. At the same time, many employment opportunities have been generated. Baijitan has also established a commercial nursery of flowers and trees and an afforestation company. The nursery has cultivated varieties of plantlets of 23,660,000 pieces for annual sales profit of more than RMB one million. The afforestation company has contracted and completed many afforestation projects and accumulated profits of more than RMB 100 million. Each year, the enterprises would feedback RMB 4 million to desertification control for the sustainable development of vegetation building.

(3) Shuxin Forest Farm of Qingtongxia

Shuxin Forest Farm covers 218,000 mu including 105,000 mu of forests and 113,000 mu of semi-desertified land. Of the population of more than 2000 people on the farm, there are 1000 staffs including 70 administrative staff, 36 technicians and 270 retired workers. With painstaking efforts for 40 years, the farm of pure desertification-orientation has developed into a complex of forestry, agriculture, industry and commerce integrating cropping, livestock development, processing and marketing. Since 2000, household contract responsibility system has been employed on the farm.

(4) Grassland Station of Xingqing District

Grassland Station of Xingqing District originated from the livestock farm of the former Taole County. With the administrative regionalization in 2004, it became a unit of Xingqing District. Of its land resources of 372,200 mu, grassland is 360,000 mu and cultivated area is 12,200 mu (including 11650 mu of river beaches). It has 81 staff.

The station is shouldering 2 responsibilities: grassland administration and the development of farming, forestry and livestock development. The main tasks include: strengthening grassland ecological construction, increasing vegetation coverage, law enforcement against illegal grazing, protecting grassland vegetations and the fencing facilities, developing economic forest and protecting natural vegetation.

(5) Taole Degradation Control Forest Farm

Taole Desertification Control Forest Farm is a large-scale state-owned ecological farm. From north to south is 28.8 kilometers long, while from west to east is 5.78 kilometers wide. The total population is 352 people including 128 staff. The total area is 352,000 mu, among them: desert area is 346,000 mu, irrigated area is 4500 mu, orchard area is 144 mu with annual fruit production of 150,000 kilograms and nursery is 400 mu.

In desertification control and ecological forest construction, combination is done among fencing, free-grazing ban and vegetation building; among trees, shrubs and grasses; among spring, summer autumn afforestation; and between natural rehabilitation and artificial enrichment. In production management, system of target-oriented responsibility is employed. In vegetation building, healthy seedlings of good adaptability to site conditions are used for designated survival rate. Up to now, vegetation building and rehabilitation of 202,000 mu have been achieved for desertification control, including public welfare forests of 50,000 mu and the protection of natural forests of 45,000 mu). 30 million trees and shrubs have been planted. The investment to desertification control has amounted to RMB 20 million.

(6) Hongdunzi Forest Farm of Xingqing District

Hongdunzi Farm is located at the margin of Maowusu Desert. It covers 360,000 mu (100,000 mu of forest land, 260,000 mu of grassland and 13,000 mu of farmland). The annual mean temperature is 8.1℃, and the annual sunshine is 3061.4 hours The annual precipitation amounts to 187.7 mm, while the annual evaporation – 2250 mm. The frost-free period lasts around 160 days. The landform is open and flat, consisting of 3 types – gentle hills, hills and sandland. The soil is mainly sandy sierozem.

The project area will cover 70,000 mu, involving 324 people in 76 HH. From 2011 to 2015, it is planned to close 65,000 mu of sandland for natural rehabilitation and build

5,400 mu of ecological protective forests. The vegetation in the sandland closure is composed mainly of Reaumuria, Artemisia, Nitraria, Oxytropis aciphylla, Ammopiptanthus mongolicus, Alhagi, Enneapogon borealis, Setaira viridis and so on. The vegetation coverage is 25~30%. The objective is: Ecological benefit, economic benefit and social benefit will be achieved after several years of sandland closure. In the project zone of ecological protective forests, it is planned to construct straw check-boards and plant drought endurance shrubs such as Hedysarum, Salix psammophila, Haloxylon ammodendron and Amorpha fruticosa in addition to grass sowing in raining seasons. The objective is to stop desertification and improve ecological environment.

(7) Xijiao Forest Farm of Zhongwei

Xijiao Forest Farm manages the total acreage of 402,089.7 mu including forestry land of 401,783.9 mu. Of the forestry land, Gantang Station manages natural secondary shrub forests of 400,000 mu with main species of Caragana, Ammopiptanthus mongolicus, Nitraria tangutorum and Artemisia. The timber forest is 53.1 mu with main species Liaohe poplar , Zhonglin-46 poplar and so on. The protective forest is 106.2 mu with main species of Xinjiang poplar, Liaohe poplar, Zhonglin-46 poplar and so on. The economic forest is 700 mu with main species of apples, apricot, plum and so on. The total fixed assets of the farm are RMB 5,470,280 including infrastructures of RMB 2,894,744, forest property of RMB 1,715,536 and other property of RMB 86,000.

The farm has the total population of 461 people including 158 staff (including 9 technicians and 51 retired).

The main responsibility of the farm is to protect and rehabilitate the 400,000 mu of natural secondary shrub forests at the west of Zhongwei county-town. In addition, it shoulders other tasks of ecological construction. For instance, it has implemented the Natural Forest Protection Program of 70,000 mu and the LCP of 20,000 mu. It is managing public welfare forest of 165,000 mu and more than 300 mu of nursery. The farm is one of the key units implementing ecological environment projects in Zhongwei.

4.6.3. Social-Economic Situation of the Project Villages

8 villages were sample to do social assessment. By means of meetings and interviews with villagers, information of population and social-economic development were collected.

(1) Yaergou Village

The Yaergou administrative village is located at the most west end of Yanchi County.

The administrative area is 18.4 square kilometers. There are 4 natural villages with 1154 people in 315 households. Cultivated area is 10,619.1 mu, forest land area is 11,670 mu, grassland area is 75000 mu, fencing area is 64000 mu, desertification area is 30000 mu, sheep in stables are 21556 heads, pigs are 620 heads, the construction livestock warm stables is 170 sets and greenhouses are 150 sets. In the recent development plan, the three leading industries will be tan sheep feeding, licorice planting and off-farm income generating. The village has planted licorice 4500 mu. In 2009, the off-farm income generating was 480 person-times. The mobilized resources of micro loans of RMB 700,000 and cooperation fund of RMB 200,000 were used mainly for livestock development (tan sheep, pig and grassland chickens), fodder production, the procurement of agricultural machinery and the development of primary industries. The SA group observed in the field investigations that the villagers were active in participating in public affairs. Village meetings were regularly organized to discuss social affairs and economic development. Decisions were made by all the villagers. The women were also active in participating in public affairs and economic activities. Of the villager representatives, women accounts for above 40%. Moreover, the work of livestock development is done mainly by female. As village of livestock development, woman play the main role in the economic production activity.

(2) Langdonggou Village

Langdonggou village is located at most west end of Yanchi County. The area of the village is 89,315 mu, there are 5 natural villages, altogether 379 households, 1528 people, by labor force 808 people. Total grassland area is 80000 mu including LCP land of 4510 mu and rainfed farmland of 8700 mu. Sheep in stables 15000 heads, pigs in stables 1500 heads. The ecological environment is harsh, the land desertification is serious. At the same time of livestock development, it is planned to plant jujube tree 110 mu to improve the ecological environment. The farmers' income is mainly on the going out for income generating and livestock development.

(3) Wanjigou Village

Wanjigou village of Yanchi County has land area of 125,000 mu. The farmland is 8860 mu including irrigated farmland of 960 mu and rainfed farmland of 8200 mu. Livestock warm stables are 231 sets and greenhouses are 204 sets. The crops are mainly maize, alfalfa and forage grasses. The livestock development is mainly tan sheep raising. Tan sheep reaches 55,000 heads. There are 5 village groups: Wangquan, Beiwangquan, Lizhaizi, Wanjigou and Yangzhanzi. The total population of the village is 1185 people in 335 households.

In 2009, the per capita net income is RMB 3450. The village is convenient in transportation. With the implementation of Amity Foundation project in recent years,

this village has built sand fixation forest of 85,000 mu (including Caragana 65,000 mu).

(4) Wuduizi Village

Wuduizi village of Pingluo County is a resettlement village of poverty reduction. There were three village groups, 254 households, 938 village people. The village has farmland 5330 mu, electric power lift water irrigation. In 2009, the per capita net income was RMB 5540. The households are distributed along provincial Highway-203. With the supports of county poverty reduction office since 2006, the housing conditions has been improved gradually. The village has constructed 80 sets of bio-gas tanks.

(5) Hongyazi Village

Hongyazi Village of Pingluo County governs seven villager groups, the village has 416 households, the total population is 1494 people (including 471 Hui people and 3 Mongolians). The minority population accounts for 33.3% of the total population. The total area is 73 square kilometers, the cultivated area is 7440 mu, the per person farmland is 5.2 mu. The crops are mainly wheat, maize and sunflower oil-seeds as well as some watermelon seeds, fennel and so on. Livestock development is mainly Tan sheep (small-tail han sheep) feeding with semi-grazing and semi-confined feeding. Livestock development is the leading industry and income source of the local farmers. Off-farm income generating has become another point of economic growth. By the end of 2009, the per person net income was RMB 5143.36.

(6) Wangjiagou Village

Wangjiagou Village of Pingluo County governs four natural villages with 266 households, the total population is 1035 people, the minority 13 people. The total area is 53 square kilometers, the cultivated area is 6386 mu. Farmland per household is above 35 mu. The main crop is wheat. In 2009, per person net income is RMB 6089.11. This village is to be developed into wheat seed multiplication base, and a mechanism of “company + production base + farmer households” will be built.

(7) **Changliushui Village**

Changliushui Village of Zhongwei is located on dry grassland and hills. The annual precipitation amounts to 200 mm. The annual mean temperature is 8.2℃. The annual sunshine is 2870 hours. The frost-free period is 152 days. The soils are grey calcium soil and skeleton soil with low content of organic matter. The vegetation coverage is low, and the resistance to erosion is weak. There are 210 households in the village, the population is 610 people, labor forces are 275 people, the population density is 13.7 persons per square kilometers. It has farmland 530 mu, per person farmland 0.8 mu.

In 2009, the total agricultural output value is RMB 795,000 including farming output value RMB 289,000, the animal husbandry output value of RMB 246,000, the forestry output value of RMB 120,000 and the other output value of RMB 140,000. The per person output value is RMB 4257 and the net income is RMB 1810. The agricultural economic structure is simple, rainfed farming is the major measure of agriculture, the grain yield is low and not stable, the agricultural production condition is poor, the productivity is low, the people live in poverty.

Table 4-6. Time Arrangements of Rural Women

Activities in winter	Sleep			Get up	slack season, feeding sheep			Cooking, housework		Resting, housework, feeding sheep				Cooking	Watching TV, sleep				
Time	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
0																			
Activities in summer	Get up	Crop management, feeding sheep			Cooking, housework			Resting				Crop management, feeding sheep			Cooking, housework			Watching TV, sleep	

Table 4-7. Work Distribution between Men and Women by Month

	Activity	Work Distribution		Activity	Work Distribution
Jan	Slack season, housework	F+M	Jul	Cultivation, weeding	F+M
Feb	Slack season, housework	F+M	Aug	Cutting grass for sheep	Female as the main
Mar	Preparation for spring sowing	M+F	Sep	Cutting grass for sheep	Female as the main
Apr	Spring sowing	M+F	Oct	Harvesting	M+F
May	Fertilizer application, sheep feeding	F+M	Nov	Selling agro-products	M+F
Jun	Cutting grass for sheep	F as the main	Dec	Selling sheep	M+F

Table 4-8. Work Distribution between Men and Women by Activity

	On rainfed farmland	On irrigated farmland	Livestock feeding	Marketing	Housework	Tree planting	Grass growing	Off-farm income generating
Male	√√	√√	√	√√	√	√	√	√√
Female	√	√	√√	√	√√	√√	√√	√

4.6.4. Social-Economic Situation of Yanchi Mechanization Forest Farm

Yanchi Mechanization Forest Farm is one of the key sites of Program of 6 One-million Mu of Ecological Construction in Ningxia. In the Program, the Farm is responsible for the management of one million mu of desertified lands. In 2008, the farm began to implemented the Program by means of sandland closure for vegetation

rehabilitation (SCVR), artificial vegetation building, constructing straw check-boards and so on at the southern margin of Maowusu Sandland. Nowadays, the protective forest system consisting of belts, networks and blocks has been preliminarily established. The forest coverage has reached 48.2%. The vegetation coverage exceeds 85.3%. The development of local economy has been effectively protected, in addition to 200,000 ha of grassland, 2,000 ha of farmland and 150 km of highways. The achievements of the farm in combating desertification have played demonstration roles in Yanchi. Besides, the farm is developing sand industry such as art weaving with willow sprouts, livestock development in stables, desert eco-tourism and the cultivation of medicinal herbs.

5. Analysis of Social-Economic Impacts

5.1 Identification of Stakeholder

World Bank puts forward concept of stakeholder in the assistance strategy, and strictly classifies the stakeholder. The stakeholder means that the group of people who will impact the World Bank's policy and activity also be impacted by World Bank(World Bank 1994:1）.Taking the object of reducing poverty as definite precondition, the stakeholder who will involve with the future project can be classified as:

(1) The primary stakeholders mean the target population, especially mean the population who are short of information and far from power, and excluded from social development, marginalized poor people.
(2) The borrowing stakeholders mean the borrowing national government.
(3) The Secondary stakeholders mean the nongovernmental organizations, commercial institutions along with professional experts straightly related with the primary stakeholders. According to the definition of World Bank, the assessment group based on the field investigation, identified primary stakeholders of Ningxia desertification control and ecological protection project, the procedure as following: see Fig 5-1.

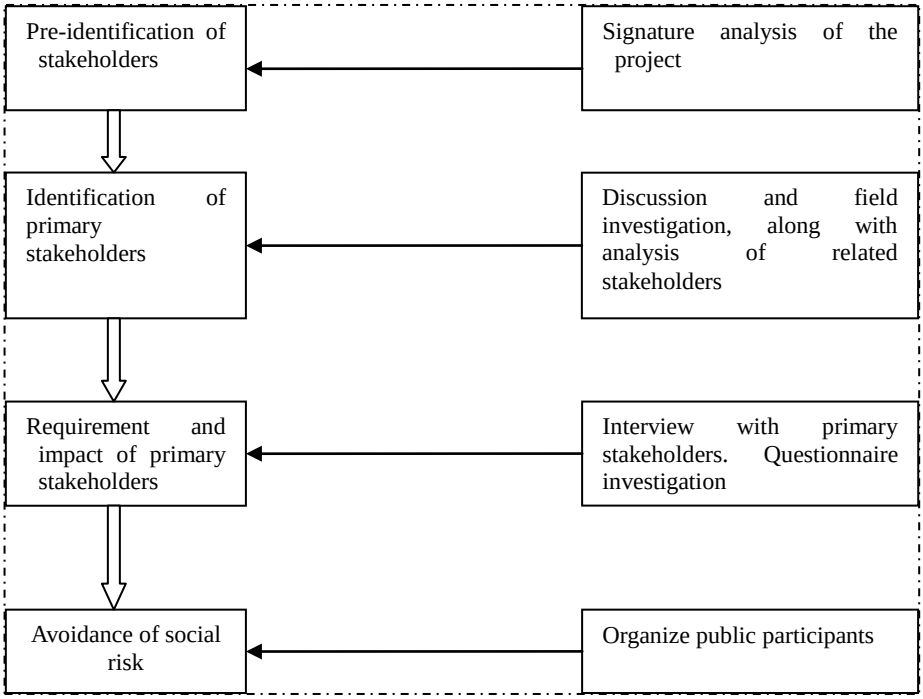


Fig 5-1 the procedure of identification of the relative stakeholders

The project stakeholders can be approximately classified as four groups: residents in the project areas (the beneficiary of the project), people impacted by free-grazing ban, vulnerable groups (minority, poverty-stricken group and the family female as householder), government and other relative organizations. The relationship between the stakeholders and the project is relative, so according to the vary impact the stakeholders can be classified as beneficiaries, sufferers, both beneficiaries and sufferers, and vulnerable group. Through the analysis, the stakeholders of the project can be identified as the following Table 5-1.

Table 5-1 Project Stakeholders

stakeholders	Obligation and Benefit
Farmers	Through project activity the participants not only can improve the condition of economy and production but also improve living surrounding and living condition by amendment of forest and grass resource and ecological environment.
	Some of the farmers participate in the project afforestation and growing seedling to get income and also learned technology.
	Special households of forestry and desertification control are microeconomic units, some made of one household and some by several households, they have small forest farms and a few fund are important supplement to state farms; they can contract the afforestation and desertification control by tendering.
	Seedling growing households can rear seedling or economic seedling and sell to the project to achieve income.
Forestry Bureau of project counties	Forestry Bureaus in the project areas are the nucleus strength to implement the project; the county forestry bureau will manage the project activity, organize and coordinate the farms and households.
Township forestry station	Township forestry stations will straight contact villages and farmers as technician and supervisor in the afforestation, seedling and monitoring.
Project state forestry farm	Project forestry farms are the principal parts in the project operation, the forestry farms will connect with villages and households hire farmers to plant trees and rear seedling, construct fast growing forest to achieve benefit. The project forestry farms are supervised by county project office.

Source: assessment group by field investigation.

5.2 Process of Stakeholder Participation

Social assessment group made a set of propaganda and encouraged primary stakeholders to participate in project decision making activity in the project impact area. The relative stakeholders participated in the interview from three levels.

5.2.1. Interviews with Officials

Assessment group convened interview with officials from all levels of project offices to collect (i) the actuality of implemented project and evaluation; (ii) analyzing the risk of the project; (iii) suggestion of improving the project effect; (iv) the problems of existing project ;(v) predicted impact of the project implementation; (vi relative information and statistical data from the region, counties and townships.

5.2.2. Interviews with Project Employers

Assessment group had interview with project employer. The subjects of the interview included: (i)the background and process of project establishment;(ii)the process of project design; (iii)the problems in the project; (Ⅳ)the suggestions of improving project effect and evading the risk;(Ⅴ)collecting relative project information kept by employer; (Ⅵ)selecting investigating places.

5.2.3. Unlimited Pre-informed Participation of Stakeholders

Assessment group developed unlimited pre-informed participation of stakeholders. In the project field assessment group selected deferent investigating places to cover deferent project impacted stakeholders.

(1) The process of unlimited pre-informed participation of stakeholders:

① Training of the investigation staff. Before the investigation, the staff was trained PRA to master PRA method, understand the project target and requirement.

② Collecting the information of villages, farms and nature reserves in the project impacted areas. Before investigation the staff collected information about distribution of the minority and their history, culture, economy and social development.

③ Interview with villagers and workers. The assessment group had interview with villagers and workers in villages and forestry farms, to comprehend their situation of production and living.

④ Making tables and drawing maps. The assessment group helped villagers and workers to make tables and maps about the distribution of resources, community status, seasonal production and living arrangement.

⑤ Household investigation. After understanding the basic situation of the minority villages, the assessment group made household investigation with questionnaire and face to face interview.

⑥ Investigation summary. Assessment group analyzed and summarized information they collected and completed the first draft of investigation report.

⑦ Information feedback. Assessment group submitted the investigation report to the decision making department and proposed the measures for the potential problems, also conveyed the attitude of decision making department to the villages and forestry farms.

(2) The working method of unlimited pre-informed participation of stakeholders including:

① Interview and ranking. In the investigation of villages and farms, the assessment group had public meetings with people from different nations, sexes, ages and properties, informed the project content. After fully understanding of the project construction, the assessment group collected the relative information from villagers and workers (ranking of problems and distribution of resources, seasonal calendar for different sexes and farming calendar), also verified information, analyzed and summarized problems and searched method to the problems with the villagers and workers.

② Making tables and drawing maps. The assessment group with assistance of knowledgeable villagers and workers made tables and maps of the distribution of resources and the community and understood condition of social and economic

development, as well as the environment. Therefore, assessment group discussed the problems in social, economical and environmental development with the villagers and workers understood their true thought and proposal for the project construction.

The assessment group helped male and female villagers separately filling seasonal production and living schedule to understand their farming activity, work and rest in different seasons, different roles in family production and living for different sexes, and females' desire and intention to the project.

③ Questionnaire and face to face interview. For deeper and comprehensive investigation of the people impacted by free-grazing ban and their suggestions for the project, assessment group made "World Bank Loan Project Ningxia Desertification Control and Ecological Protection Project Social Assessment Questionnaire" and collected information from each household.

We had face to face interview with the villagers who participated in foreign aid project before, discussed the problems, collected much valuable and constructive information, had more knowledge about potential issues, therefore ensured deepness of villagers' participation in the project decision making. Table 5-2 displays the situation of stakeholders' participation:

Table 5-2. Unlimited Pre-informed Participation of Stakeholders

Project content	Participants	Activity	Object
Ecological protection forest	Residents and forestry farm workers (including poverty-stricken households, minority and females) in the project area	Meeting, questionnaire, interview, ranking,	①share the project information ②analysis of project requirement ③ assessment of the project design and practice, ④analysis of the project impact ⑤analyze existing problems in the project, ⑥expectation and suggestion
Desertification control	Residents and forestry farm workers (including poverty-stricken households, minority and females) in the project area	Meeting, questionnaire, interview ,	①share the project information ②analyze project requirement ③ assessment of the project design and practice ④analyze the project impact ⑤analyze existing problems in the project ⑥expectation and suggestion
Ecological economic forest	Residents and forestry farm workers (including poverty-stricken households, minority and females) in the project area）	meeting , interview, ranking	①share the project information ②analyze project requirement ③ assessment of the project design and practice, ④analyze the project impact ⑤analyze existing problems in

Project content	Participants	Activity	Object
			the project ⑥expectation and suggestion ⑦ deliver wish of planting, analyze capacity for contract

Source: field investigation by assessment group.

5.3 Analysis of the Demands of the Stakeholders

Different stakeholders have different requirement for the project, therefore analysis of the different requirement of the stakeholders can help identifying social matters of the project to avoid potential social risk and promote the project implementation. Each assessment group communicated with every kind of stakeholders by questionnaire, interview, meeting and investigation. Table 5-3 summarized requirement of the stakeholders:

Table 5-3 Analysis of the Demands and Requirements of the Stakeholders

Project	Stakeholders	Common demands	Special demands
Ningxia Desertification Control and Ecological Protection Project	Residents (including poverty-stricken households, minority and females) in the project area	①improve village surrounding; ②increase income; ③reduce disease; ④develop family breeding and fodder production; ⑤increase collective income; ⑥improve village infrastructure;	①villagers: perfect water saving irrigation system; ②poverty-stricken households: increase family income; ③females: temporary job; ④minority: develop breeding;
	Workers of project forestry farms(nature reserve)	①develop economy of the forestry farm; ②improve the workers material benefits; ③improve the farms surrounding; ④bring along the villagers to participate in desertification control activity, increase the villagers income; ⑤perfect management system of the farm; ⑥improve the farm infrastructure; ⑦ensure fireproofing during the project;	① forestry farm(nature reserve):interject the construction of the project and nature reserve; ② ②forestry farm leader: select drought-enduring tree and shrub recommended by forest farm, subsidy for the construction of infrastructure; ③ workers of forestry farm: pattern of afforestation should be considered successful foreign aid project for reference and give attention to the development of the workers;

Project	Stakeholders	Common demands	Special demands
	Desertification control companies(private) and relative companies	① protect the ecological environment of the company; ② if enlarge the area of desertification control, there is a opportunity for the company; ③increase the income of employees;	①employees of the company: participate in the project construction; ②company head: participate in the project construction from every aspect;

Source: field investigation by assessment group

The demands of the other stakeholders as following:

(1) The project employer and project executing agency. The project employer and project executing agency expected that capital of the project should be released as soon as possible then they could launch the project successfully to reduce the cost of construction and operation, to ensure possibly more profit.

(2) Forestry Bureau and other institutions of the government. The other institutions of the government as Development and Reform Bureau, Agriculture and Animal Husbandry Bureau and Forestry Bureau demanded to evade social negative impact of the project, expected to start the project successfully to improve ecological environment on the east bank of Yellow River, to increase living level and quality of the local people, to accelerate development of enterprises and institutions in the project areas, to upgrade image and management level of the government.

5.4 Analysis of the Project Impacts on Stakeholders

5.4.1. Ningxia International Forestry Cooperation Center under Ningxia Forestry Bureau

Implementation of the project needs special staff with responsibility for daily work. The project enhances more tasks to the Cooperation Center, so the more staff should be increased and structure of the Center should be enlarged. The Cooperation Center plays a role of management and coordination of the project, the most important job of the Center currently is to get approval of World Bank's assessment, and also an important index for the superior government to evaluate its work. Success or failure of the project has a great impact on the Cooperation Center.

5.4.2. Governments of Project County Units

(1). Implementation of the project will improve basically ecological environment and condition of production in the project areas; enable the local people to live a better life.

(2). Implementation of the project will introduce advanced concept, manner of thinking, living and production, enable thinking and behavior of the local people

become more civilized and modernized, therefore speedup adjustment of industrial structure and the steps of becoming rich, construction of modernization.

(3). Implementation of the project will accelerate adjustment of agricultural structure and provide jobs for spare villagers in the project areas, guarantee the production of agriculture and animal husbandry and increase of villagers' income.

(4). Implementation of the project will double the area of forest land. Through the combination of scientific research and production will promote desertification control in Ningxia, also can be a demonstration for the whole country and the world.

5.4.3. County Project Offices and Other Institutions of the Government

(1) County Project Offices

The capacity and working style of the project office leaders play a key function to the success or failure of the project, whether they can report to the higher body and make known to lower levels effectively, organize and coordinate the other institutions of the government successfully have a great influence in the project implementation. The project implementation is mostly done by the lower level sections, therefore, the work of county project office should be reduced, and they mainly play the role of organization and coordination.

(2) Other Institutions of the Government

The project construction needs support and assistance of the other institutions of government. Therefore, they will be inevitably increased with certain workload, but the project has not close relationship with them, so they may be short of enthusiasm.

(3) The Project Executing Agency

The project executing agency is responsible for the project implementation, they do not influence directly the success or failure of the project, but their capacity, working style and conscience can decide the effect of the project. The project construction will increase their workload but the success of the project can only bring the mainly responsible leader an outstanding achievement. At same time the project construction can bring capital to forestry farms and companies, and enable the improvement of their treatment. The project executing agency also takes certain social risk, if they can not properly deal with households impacted by free-grazing ban, they will bear the pressure of social risk.

5.4.4. Township Governments and Village Commission in the Project Area

The project construction will influence the local township government in both positive and negative sides. For the positive side, the township and villages are brought into the project, they get an opportunity of development. For the negative side, workload

of the township government and village commission will be increased in the project implementation.

5.4.5. Households without Impact by Free-grazing Ban

During the field investigation, assessment group found the villagers in project area having adequate food and clothing; their key problems are low income and relative poverty. All the project sites have infrastructure of road, water and electricity, only a few infrastructure of project sites need to be improved and completed; there are schools and clinics distributed around, but they never have project of desertification control and ecological protection. The villagers reflected that their problems concentrated on infrastructures not perfect, shortage of investment and appropriate item. There are poverty-stricken households in every village. The reasons of poverty are illness, education, visitation of providence, low diathesis and scarcity of farm land and labors. The households with additional work like working in company, transportation, tourism and other avocation make more income than the households only engage in agriculture and animal husbandry.

Assessment group thinks that the project design and implementation should guarantee not to deepen the degree of the villagers' poverty and create new poverty-stricken households, and ensure that the poverty-stricken households can make benefit equally from the project. The project should improve infrastructure, promote ecological environment of the project villages, and clean the water and air to increase health level of the villagers to reduce expense for medical treatment. The project should enhance capacity of crop to resist sand blown by wind, and increase output and income.

5.4.6. People Impacted by Desertification Control

The project implementation is propitious to exert fully multi-function and benefit of the forest, to improve the structure and to increase the quality of the forest, and to upgrade ecological environment of the area. The project implementation can increase carbon sequestration，adjust climate, make water resource to be self-restraint, preserve water and soil, improve quality of the soil, decrease and control desertification and aggrandize biodiversity.

Desertification control needs to enclosure the grassland and forestland to carry out grazing ban. The villagers' breeding by half-grazing and half-feeding will be influenced, they may graze in the other villagers' crop land and public forest road, and the grazing will destroy the crops and gnaw trees, and make a great social risk. The grazing also impacts traffic safety. The village committee should adjust land to reduce the villagers' burden according to the situation.

In the area, villagers make living mostly by breeding and have more converted land, such as Changliushui Village in Lingwu, the villagers hope to extend time limit for subsidy, to support villagers with Caragana and fodder processing equipment, to increase the capacity of breeding. The project in some villages in Yanchi County should consider the charge of water transportation.

The project should be implemented in the area with good soil, the villagers hope to plant economic forest for making full value of the land. The plantation can be contracted to the villagers whose land are occupied, Therefore the villagers' income will be increased, and they hope the project should be implemented as soon as possible in their village.

For ensuring the living and benefit of the project impacted villagers, they hope the project support them with fodder production, plantation of economic forest and grazing management.

(1) During the project implementation, impacted villagers have priority to be employed to increase their income.

(2) In plantation of economic forest, impacted villagers take priority to have the contract and the charge should be reduced for the first three years, to increase their interest.

(3) Encourage the impacted villagers to carry on breeding in the forest to increase their income.

(4) The impacted villagers have priority to be employed as forest guards, to solve the problem of living if they accord with the condition.

5.4.7. Local Residents and Forest Workers in the Project Area

Ten farms will be involved in the project. The farms have 3000 workers in addition to around 10,000 family members. In the interviews, the workers expressed their expectation of the project implementation as soon as possible. The expectation are (i) the project will help increase the income of the workers and upgrade the welfare condition of the farms; (ii) the project will help improve the local ecological environment; (iii) the project implementation of vegetation building will provide the local farmers with more opportunities of income generating; (iv) the project will help improve the management system of the farms; and (v) the project will help improve the infrastructures of the farm. The possible impact is that the project might impact the traditional operational habits of some of the farmers.

5.5 The Project Impacted by the Stakeholders

5.5.1. Ningxia Project Office under Ningxia Forestry Bureau

Regional Project Office is the top agency of management and coordination for the project, their working attitude, working capacity, working efficiency and ability of management and coordination directly impress success or failure of the project. Therefore they must negotiate and coordinate the relationship with World Bank, international consultation institution, county project offices, the project contractors and design institution successfully, in this way to ensure project implementation smoothly. Regional Project Office can or not harmonize the above relationships plays a key factor for success or failure of the project.

5.5.2. County (City, District) Government

County (City, District) Government is local top management agency, and also one of the investors. Therefore their attitude to the project is also important for the success of the project construction. The local government plays a role of decision making, organization and coordination in the project implementation.

5.5.3. County (City, District) Project Office and Other Institutions of Government

County (City, District) Project Office is local direct project management agency, the capacity and working style of the office head plays a key function to success or failure of the project. Whether they can organize and coordinate the other institutions of government to assist the project construction successfully is very important. The attitude of other institutions of government to the project also influences the success or failure of the project, the project construction needs their support with approval of relative procedures.

5.5.4. Project Executing Agency

In the project preparation phase, the project executing agency assumes the most of preparation work, therefore their attitude to the project impacts development of the project. The project executing agency is the main undertaker of the project construction, with responsibility for the project operation. Although their work can not decide the success or failure of the project, their working capacity, working style and respect for work can decide effect of the project directly.

5.5.5. Township Governments and Village Commission in the Project Area

The attitude of township government and village commission in the project area is the key factor for the development of project successfully. The issues from the free-grazing ban in the project area must be coordinated by the township government

and village commission to ensure development of project smoothly.

5.5.6. Households without Impact by Free-grazing Ban

The villagers in the project area play a very important role in the project construction. According to the experience of former similar projects, during the project construction and management the relationship with the local villagers were not treated very well, there would be a great resistance to the project development, even after completeness of construction the project can not be managed properly. In field investigation, the assessment group found that the villagers in project area welcomed the project warmly, they actively asked information about the project, looked forward to the project implementation, and hoped to finish the situation when there is a wind, dust everywhere.

5.5.7. People Impacted by Desertification Control

Closure is the main method of desertification control, in the design phase most of the grassland (man-made and nature) was enclosed by fence. Selection of the project site should be considered to avoid land requisition and house removing, and better no house removing, that can reduce the impact on villagers. Along with the policy of land conversion, grazing ban and closure of grassland and mountain has be carried out, the policy has penetrated into villagers, at the same time forestry institutions encourage stable breeding and strengthen the punishment for night grazing, illegal grazing, illegal cutting and grassland damage. Therefore the construction of project has little impact on the villagers and the villagers have little impact on the project either. Certainly their breeding and fodder processing still need government's support, encouragement and induction.

Assessment group thinks that the project implementation will impact different stakeholders and different organizations differently; there is positive impact and also negative impact. Analysis of positive and negative impacts on stakeholders can identify, control and evade the social risk effectively in the project construction. Through unlimited pre-informed participation of stakeholders and field investigation, assessment group analyzes the project impact on stakeholders as following (Table 5-4).

Table 5-4 Impacts of the Project on Stakeholders

Project county(city, district)	Construction content	Project Township and Forestry Farm	Positive Impacted Households	Positive Impact	Negative Impacted Households	Negative Impact
Pingluo County	Ecological shelter belt, desertification control, ecological economic forest	Hongyazi Township	1293	**Household:** (1) increase temporary income; (2) increase income from selling fruits;(3) can do farm work at same time;; (4) can plant trees in their own waste land;(5) learn practical technique of forest;(6) villagers work in city back home join project construction; (7) opportunity of work, advance collective income such as process of forest products, special breeding and ecological tourism;(8) improve local ecological environment, promote quality of production and living, capacity of resisting wind, ensure survival rate;(9) change environment of the village;(10) reinforce concept of desertification control, consolidate result of land conversion and grazing ban;(11) reduce disease; **Forestry Farm and Workers:** (1) increase income and material benefit(2) improve ecological surrounding;(3) encourage villagers nearby to participate in desertification control to increase villagers income; (4) reinforce and perfect management system of forestry farm; (5) improve FF infrastructure; (6) ensure the security of forest farm during project construction;		**Household:** (1) project implementation impacts stockbreeding; (2) closure and grazing ban change method of breeding, increase cost of fodder. **Forestry Farm:** Project implementation may change some workers method and willingness of planting;
		Taole Township	435			
		Desertification Control Forestry Farm	46			
		Gaoren Township	1108			
Lingwu	Ecological shelter belt, desertification control, ecological economic forest	Ningdong Township	956			
		Baitugang Township	543			
		Majiatan Township	223			
		Linghe Township	416			
		Beishawo FF, Daquanlin Forestry Farm, Lingwu Baijitan Forestry Farm, Rencundu FF	785			
Zhongwei City	Ecological shelter belt, desertification control, ecological economic forest	Yingshuiqiao Township	598			
		The Western Suburb Forestry Farm	6			
Yanchi County	Ecological shelter belt, desertification control, economic forest	Wanglejing T Irrigation Area, Wanglejing T	1064			
		Gaoshawo Township	480			
		Huamachi Township	169			
Xingqing District	Ecological shelter belt, desertification control, ecological economic forest	Hongdunzi Forestry Farm	21			
		Yueyahu Forestry Farm	2			
		Taolin Horticulture Garden	196			
		Huangshagudu Company	1			
		Ningdongxinyuan Company	1			
Qingtongxia City	Ecological shelter belt, EE forest	Shaogang Township, Shuxin Forestry Farm	1140			
		Qingtongxia Township	1114			
		Lijun Township, Yanghe Township, Wanghong Township	520			
Litong District	Ecological shelter belt, DC EE forest Ecological shelter belt, DC economic forest	Sunjiatan Administrative Commission	310			
		Biandangou Township	1216			
Total			16816		18	

Source: field investigation and analyze of relative information by assessment group.

6 Analysis of Adaptive Social Interaction

Analysis of mutual adaptation between the project and project area is to forecast whether the social environment and human condition of the project area can admit and support existence and development of the project, and the degree of support by the local government and residents, to investigate adaptive relationship between the social environment and the project.

6.1 Mutual Adaptation between the Stakeholders and the Project

The relationship between stakeholders and the project is a relationship of impacting and being impacted, according to analysis method of stakeholders we can identify the different stakeholders, relationship between different stakeholders and the project, achieve attitude and demand of the stakeholders, analyze the influence to the project. The content of analysis is including: What are the attitude and acceptance of the stakeholders to the project, in which side and how they support and cooperate the project. The influence and adaptation of the project will make to the local organization, social structure, technique and culture. (Table 6-1).

Table 6-1 Mutual Adaptation between the Stakeholders and the Project

Project area / Stakeholder	Pingluo project area	Yanchi project area	Lingwu project area	Xingqing District project area	Litong District project area	Qingtongxia project area	Zhongwei project area
Regional Project Office	Active attitude; demand project office to complete project on schedule; adaptive;	Active attitude; demand project office to complete project on schedule; adaptive;	Active attitude; demand project office to complete project on schedule; adaptive;	Active attitude; demand project office to complete project on schedule; adaptive;	Active attitude; demand project office to complete project on schedule; adaptive	Active attitude; demand project office to complete project on schedule; adaptive	Active attitude; demand project office to complete project on schedule; adaptive
County (City, District) Government	Active attitude; demand to establish and implement the project soon; adaptive	Active attitude; demand to establish and implement the project soon; adaptive	Active attitude; demand to establish and implement the project soon; adaptive	Strive for the project actively; ensure to do the best; demand to establish and implement the project soon; adaptive	Active attitude; demand to establish and implement the project soon; adaptive	Active attitude; demand to establish and implement the project soon; adaptive	Active attitude; demand to establish and implement the project soon; adaptive
County Project Office and other Institution of Government	Active attitude; demand to implement project soon; adaptive	Active attitude; demand to implement project soon; adaptive	Active attitude; demand to implement project soon; adaptive	Active attitude; demand the size should be moderate; to implement project soon; adaptive	Active attitude; demand to implement project soon; adaptive	Active attitude; demand to implement project soon; adaptive	Active attitude; demand the size should be moderate; to implement project soon; adaptive
Project Executing Agency	Active attitude; demand counterpart fund and to launch the project soon; adaptive	Active attitude; demand counterpart fund and to launch the project soon; adaptive	Active attitude; demand counterpart fund and to launch the project soon; adaptive	Active attitude; demand counterpart fund and to launch the project soon; adaptive	Active attitude; demand counterpart fund and to launch the project soon; adaptive	Active attitude; demand counterpart fund and to launch the project soon; adaptive	Active attitude; relatively adaptive
Project Township and Village Commission	Active attitude; demand water saving equipment; relatively adaptive	Active attitude; demand water saving equipment and counterpart industry; relatively adaptive	Active attitude; demand water saving equipment; relatively adaptive	Active attitude; demand water saving equipment; relatively adaptive	Active attitude; demand water saving equipment; relatively adaptive	Active attitude; demand capital support; adaptive	Active attitude; relatively adaptive

Project area / Stakeholder	Pingluo project area	Yanchi project area	Lingwu project area	Xingqing District project area	Litong District project area	Qingtongxia project area	Zhongwei project area
Beneficial households and forestry farm workers	Active attitude; demand to launch the project soon; adaptive	Active attitude; demand to launch the project soon; adaptive	Active attitude; demand to launch the project soon; adaptive	Active attitude; demand to launch the project soon; adaptive	Active attitude; demand to launch the project soon; adaptive	Active attitude; demand to launch the project soon; adaptive	Active attitude; demand to launch the project soon; adaptive
Villagers in the project area	Active attitude; demand to ensure water for irrigation and living; relatively adaptive	Active attitude; demand to ensure water for irrigation and living; relatively adaptive	Active attitude; demand to ensure water for irrigation and living; relatively adaptive	Active attitude; demand the design must be scientific, to launch the project soon; adaptive	Active attitude; demand to ensure water for irrigation and living; relatively adaptive	Active attitude; relatively adaptive	Active attitude; relatively adaptive

6.2 Mutual Adaptation between the Project and the Local Organizations/Social Structures

6.2.1. Local Organizations

During the investigation in 8 counties (cities, districts), assessment group did not find any non-governmental organizations and spontaneous forms relative to the project, therefore there is no infection to the project. At the same time, our project is an ecological protection and commonweal project, so it can not influence the development of any kind of local organizations directly.

6.2.2. Social Structures

The content of social structure actually means the main body of society----human and its existing activity---social activity and existing fashion of social relation, commonly represents as: 1. population structure; 2. public composite structure; 3. position structure of human activity (which social stratum they belong to); 4. space structure of human existing; 5. manner structure of living; 6. structure of social economy, politics, law and culture, and their interrelation. Through investigation we found out that the family structure gives priority to nuclear family in the project area, every household has average 3, 44 people, 2, 17 labor force. The members of household on the one hand engage in agricultural production, on the other hand work in nearby cities; the proportion of agricultural income goes down gradually. The monthly income for general labor is between 1,000 Yuan and 2,000 Yuan. The project construction offers opportunity of employment for the villagers who are not willing to leave family, especially for the female and poverty-stricken households.

The project implementation will reinforce villagers' consciousness of ecological protection, improve the village ecological environment, and have no infection on the local social structure.

6.2.3. Mutual Adaptation between the Project and the Local Technological and Cultural Conditions

(1) Whether the Local Technique Can Satisfy the Project Demand

For the period of project construction, local technique includes counterpart construction technique and capacity of management in later period. The investigation of local technique, we tried to find construction companies and management agency with qualification for the project implementation and operation periods. Fortunately we found local construction companies and management agency have the capacity to meet World Bank's demand of Ningxia desertification control and ecological protection.

Table 6-2 shows except some deficiency of irrigation and water store equipment, the local technique can satisfy the requirement of the project. The natural environment in Yanchi and Lingwu is scurvy, droughty and short of water, plants mainly are irrigated by rainfall, the water saving equipment should be reinforced. The assessment group also found that the infrastructure of some forestry farms and nature reserve are not perfect for historical reason, the working condition is very hard, the quality of workers is generally low, many of them are old, in the interview with representatives, they hope to take opportunity of the project to increase the material benefits and to build themselves and farm a better future.

Table 6-2. Technical Conditions in the Project Area

No	Project Area	Local Technique Condition
1	Pingluo project area	The local villagers and government have rich experience of desertification control and ecological protection for long time, and successfully participated in many foreign aid forestry and ecological protection project, and have the capacity of implementing the project. In the project areas erosion loss is serious, ecology is very frail, they hope to increase water saving, irrigation and water store equipment.
2	Yanchi project area	The local villagers, forestry farm workers and government have rich experience of desertification control and ecological protection for long time, and successfully participated in many foreign aid forestry and ecological protection project, especially the Habra Lake national nature reserve, and have the capacity of implementing the project successfully. In the project areas erosion loss is serious, there is lack of enough water for human and livestock, the crop is irrigated by rainfall and multilevel pumping from Yellow River, ecology is very frail, they hope to increase water saving, irrigation and water store equipment.
3	Lingwu project area	The local villagers, forestry farm workers and government have rich experience of desertification control and ecological protection for long time, and successfully participated in many foreign aid forestry and ecological protection project, especially desertification control project by afforestation in Baijitan Forestry Farm, and have the capacity of implementing the project successfully. In the project areas erosion loss is serious, there is lack of enough water for human and livestock, the crop is irrigated by rainfall and multilevel pumping from Yellow River, ecology is very frail, they hope to increase water saving, irrigation and water store equipment.,
4	Xingqing District	The local villagers, forestry farm workers and government have rich experience of desertification control and ecological protection for long time, and successfully participated in many foreign aid forestry and ecological protection project, and have the capacity of implementing the project successfully. The local ecology is very frail, they hope to increase water saving, irrigation and water store equipment.
5	Litong District project area	The local villagers, forestry farm workers and government have rich experience of desertification control and ecological protection for long time, and successfully participated in many foreign aid forestry and ecological protection project, and have the capacity of implementing the project successfully. The local ecology is very frail, they hope to increase water saving, irrigation and water store equipment.
6	Qingtongxia project area	The local villagers, forestry farm workers and government have rich experience of desertification control and ecological protection for long time, and successfully participated in many foreign aid forestry and ecological protection project, and have the capacity of implementing the project successfully. The local ecology is very frail, they hope to increase water saving, irrigation and water store equipment.
7	Zhongwei project area	The local villagers and government have rich experience of desertification control and ecological protection for long time, and successfully participated in many foreign aid forestry and ecological protection project, and have the capacity of implementing the project successfully. Especially in German aid project, they accumulated rich and successful experience.

Source: Field investigations by assessment group, from July, 2010 to August,

(2) Possible Impact on Local Cultural Condition by the Project

The project and local cultural condition are basically adaptive, detailed information as following table 5-3:

Table 6-3. Mutual Adaptation between the Project and the Local Culture

No	Project area	Adaptation between the Local Cultural Condition and the Project
1	Pingluo project area	There is few Muslim people in the project area; most of the residents are Han people, no conflict between the project and local culture and habitude.
2	Yanchi project area	There is no minority in the project area. We consulted Religious Affairs Bureau, and knew there is no much difference between Muslim and Han residents, although there is difference in the living manner, habitude and faith, the construction of desertification control does not impact their interest. Therefore, there is no conflict between local cultural condition and the project.
3	Lingwu project area	There are some Muslim people in the project area. We consulted Religious Affairs Bureau, and knew there is no much difference between Muslim and Han residents, although there is difference in the living manner, habitude and faith, the construction of desertification control does not impact their interest. Therefore, there is no conflict between local cultural condition and the project.
4	Xingqing District project area	The project does not locate in minority area; therefore, there is no conflict between local cultural condition and the project.
5	Litong District project area	The project of ecological forest, economic forest, mountain closure and grazing ban related to some Muslim area. We consulted Religious Affairs Bureau, and knew there is no much difference between Muslim and Han residents, although there is difference in the living manner, habitude and faith, the construction of desertification control does not impact their interest. Therefore, there is no conflict between local cultural condition and the project.
6	Qingtongxia project area	There is no minority in the project area and no much cultural difference between the Han people; therefore, there is no conflict between local culture, habitude and the project.
7	Zhongwei project area	There is no ethnic people in the project-impacted population and no conflict between the villagers' living manner, habitude and desertification control, ecological protection.

Source: Field investigation by assessment group, from July, 2010 to August.

7. Identification and Control of Social Risks

7.1 Identification of Social Risks

Around important social impact on the project implementation identified by World Bank expert in preparation phase of social assessment, according to social-economic background in the project area and characteristic of the project, by field investigation, the assessment group identified primary social risk related with project design, possibly that will impact the achievement of the project target. Identification of primary social risk is for the sake of finding the effective measure to evade social risk and is convenient for the relative institutions of government to manage the risk. The easily happening main potential social risks are as following:

① The contradiction between water used by the project and used by local agriculture and livestock. In Ningxia, except irrigation areas irrigated by Yellow River have more rainfall and impacted by drought lightly, most of the areas often suffer from drought. In 2009, most areas in middle part of Ningxia and south mountain area suffered from unusual drought, agriculture and livestock was damaged seriously. The droughty banding in middle part of Ningxia is one of the areas distributed with poverty-stricken households; their incomes mostly come from agriculture and animal husbandry. The project will locate in a part of droughty banding in middle part of Ningxia, about 30% of total project areas. During the field investigation in Langdonggou Village and Yaergou Village in Yanchi County, assessment group found that every ton of water costs villager more than 100 Yuan.

② Risk of villagers' breeding manner against the project target and its sustainability. By field investigation, the assessment group found that villagers' breeding manner has a close relation with the surroundings, especially with mountain closure, grazing ban and desertification control. The most of villagers realize the benefit of grassland ecological protection, mountain closure and grazing ban, and begin to raise livestock in stables. But there are few villagers still grazing at night, in farm land and shelter belt for reducing the cost of breeding. The livestock eat crops, gnaw trees and also endanger the traffic safety.

③ In the prophase the villagers in nucleus impacted area are not very well informed. The assessment group found by field investigation, that most of the villagers know nothing about the project.

④ Risk of villagers' cognition on desertification control and ecological protection. The assessment group found that primary stakeholders do not position themselves in the desertification control and ecological protection properly, and not realize that they have the responsibility for protecting the ecological environment and they are one of

the main bodies in the ecological protection. At the present time, they are only receptors of the project and policy. Not only the primary stakeholders think that desertification control and ecological protection are the business of government, but also the project management agencies and project employers share the same viewpoint. Such instance, the right and obligation of primary stakeholders may not be considered properly in the project design, implementation and management.

⑤ Risk of the project follow-up management. The target of desertification control is not to make economic benefit, and the ecological impression can not be seen in short period of time, therefore after the completion of implementation follow-up management is very important. Presently Ningxia desertification control and ecological protection project is still at prophase of preparation, the central work of every project unit is to get approval of the project establishment, the project management agency and project employers do not think much about the work of project later period management.

⑥ The conflict between the project and projects of agriculture, forest and ecological development dominated by the government. By the investigation of assessment group, in recent years, Ningxia Government has decided and implemented facility agriculture to increase villagers' income such as " Ningxia Master Plan of Six Construction Projects of Million mu Ecological-Economic Forest", " Ningxia Development Plan of Million mu Facility Agriculture Construction", " Ningxia Master Plan of Ecological Forest Development Strategy", and " Ningxia Implementation Plan of Superior Fruits Industry Belt Construction", there may be conflicts between the government projects and the contents in some project areas. The conflicts will influence the achievement of the project target, and impact on the speed of implementation.

⑦ The difference between ecological protection and the target of villagers' income. The assessment group found that there is a distinct difference between the target of governmental ecological protection and villagers' expected benefit through participating in the project, if the villagers do not participate in the desertification control and afforestation voluntarily, the difference may cause a target conflict. The target of government is to ensure ecological function of forest, namely attribute of ecological "Public Article", at the same time to make economic benefit for the villagers. But the villagers take priority of economic benefit in their decision making, then the function of ecological protection. In such case, the guidance will be made in selection of tree species and later period management. Therefore we propose that the forestry departments should negotiate with individual household and stakeholders to find the way for achievement of both targets.

As stated above, the limit of making use of forest land and forestry resource (such as

grazing ban after tree planting, no cutting firewood and no picking non-timber products) may impact contracted villagers' short-term income. The poverty-stricken households make living by forestry products, their short-term income will suffer from an obvious negative impact. For this contradiction, the management and project model should be negotiated with the community stakeholders. In the selection of tree species, management model and making use of forestry products, it is very important to consider the dependence of the villagers' living on forestry products.

7.2 Control of Social Risks

The vulnerable group, minority and female should be helped to enjoy the social benefit equally brought by the project; the negative impact on the minority and poverty-stricken households by free-grazing ban should be possibly evaded; the risk cognition of the villagers to desertification control and ecological protection need to be heightened; the risk of achieving the project target and sustainable management against the villagers' breeding manner, and contradiction between the water used for project and water used for agriculture and breeding also should be depressed. The project agencies need to reinforce capacity building and project follow-up management, to accelerate the achievement of project target and sustainable management. Assessment group investigated every project area, comprehended related regulations and policies of every level, encouraged villagers' participation, discussed fully with stakeholders, relative government institutions, the project employer, executing agency and residents in the project areas. Assessment group suggests following measure and monitoring evaluation mechanism based on investigation to reduce social risk of the project to least degree.

7.2.1. Control Measures against Social Risks

The assessment group suggests following measures to control the social risk:

① Establish a guideline of project beneficiaries' (primary stakeholders) participation. The project beneficiaries' participation should impenetrate in all the project periods including project preparation, design, and implementation and monitoring evaluation. The guideline designed by assessment group aims to reduce the project negative impact on primary stakeholders; to ensure the project information to be published and the villagers to share the benefits equally; to help the primary stakeholders to set up main body consciousness of the project; to analyze the relationship between villagers' living manner and ecological protection; to absorb the primary stakeholders to participate in the project construction, management and monitoring evaluation. The assessment group suggests that the project employer, executing agency should cooperate with local forestry departments and national affair committee to give priority to the resettled residents, poverty-stricken people, female and minority with

non-technique working posts and to help them to get benefit from the project.

② Increase the strength of propaganda in the prophase of project. In the project design, the propaganda activity should be planned, especially the strength of propaganda in prophase of project should be increased, to let the project beneficiaries and sufferers know the relative information exactly and in time, to encourage them to participate in the project, to evade possible risk timely.

③ Educational training of mountain closure, free-grazing ban, desertification control and ecological protection. The assessment group thinks that it is necessary to reinforce the education of mountain closure, grazing ban, desertification control and ecological protection, to heighten the villagers' consciousness of environmental protection. The assessment group suggests that the related government should conduct propaganda among the villagers about the regulations of mountain closure, grazing ban, desertification control and ecological protection with the assistance of propaganda department, forestry bureau, agriculture and animal husbandry bureau, broadcast and television bureau and newspaper.

④ Optimize the design. The project design should make the widest possible use of advanced water saving irrigation technique and equipment; scientifically plan the scale of water supple and water store equipment.

⑤ The construction of project later period management mechanism. The assessment group suggests that the project should absorb the villagers and forestry farm workers in project area to participate in the project later period management. On the basis of project management group in the implementation phase, follow-up management group should be established. The members of the follow-up management group should be elected from villagers and forestry farm workers, among them there must be representatives of female and minority. The assessment group advices that in the project of desertification control and ecological protection, the regulation of project follow-up management for the communities should be made with the assistance and instruction of the project employer and the project office. The communities will conduct the follow-up management of infrastructure of desertification control and ecological protection. Absorbing the villagers and forestry farm workers in the project follow-up management, assessment group advices that at the same time, the forestry bureau, agriculture and animal husbandry bureau increase strength of executing the law ---mountain closure, grazing ban and desertification control; reinforce the education of ecological protection to the residents in the project area, to realize sustainable effect of the project.

7.2.2. Institutional Arrangements as well as Monitoring and Evaluation

To ensure the above measures implemented successfully, Ningxia Project Office under the Forestry Bureau is responsible to organize the related institutions to perform the above measures, the project employer, executing agency and local related institutions of government are responsible to implement the above measures.

① The scientific research institutions are responsible for the selection of project sites, tree and grass species, optimization of technique, and also decision of reasonable infrastructure, scale of water supply and water store equipment.

② The project employer and executing agency are mainly responsible to make sure the project capital; during the project implementation and operation phases to provide working posts to vulnerable group and to grant income timely; to negotiate with the villagers and forestry farm workers about the problems of traffic, living surrounding and safety caused by the project implementation for their understanding and support; to consider actively the measure of reducing the impact possibly.

③ Forestry Bureau and Environment Protection Bureau are responsible for the education about desertification control and ecological protection, also to publish the monitoring information of ecological environment. During the project implementation and operation, they should publish the information of desertification control and ecological situation regularly.

④Labor and Social Security Bureau is responsible to arrange the villagers with working posts, and post training.

⑤Poverty Alleviation and Development Office is responsible for the identification of the poverty-stricken people in the project villages, employment direction and policy consultation for the poverty-stricken people.

⑥National Affairs Committee is responsible for the identification of minority people, support of production and living, and policy consultation.

⑦ The Civil Administration Bureau is responsible for the identification of the villagers who have been brought into lowest living security, and to supervise the implementation of the relative found for the vulnerable group by the supporting policy.

⑧ The Finance Bureau is responsible to fulfill the found for vulnerable group by the supporting policy, and to supervise the execution of the relative policy.

Suggestions of countermeasure for the executing agency and monitoring agency to the social risk of the project construction are in (Table 7-1).

Table 7-1 Measures to Avoid or Mitigate Social Risks

Project name	Project content	Social risk	Action	Time	Responsible unit	Assistant unit	Action measure	Monitoring guideline
Desertification control and ecological protection project	1. Ecological shelter belt; 2. Desertification control; 3. Ecological economic forest	1. The villagers' sense of desertification control and ecological protection is weak, so there are risks for the project to realize its target.	① Strengthen the training of national and local ecological environment guideline; the regulation of mountain closure, grazing ban and desertification control; ② Training of water saving irrigation; ③ Propaganda of which breeding manner impacts ecological environment, help the villagers to realize the impact on ecological environment by their breeding manner.	Whole project periods	The project employer, forestry bureau and agriculture and animal husbandry bureau.	Townships and villages	Implementing the plan of ecological management	Implementing the training plan mentioned in Environment Assessment Report.
		2. The conflict between the project and villagers' production and living.	① Absorb the poverty-stricken households, minority and female in the project area to participate in the project construction; ② Absorb the forestry farm workers and villagers nearby to participate in the project construction; ③ During the implementation of desertification control, the problem of short of forage grass should be solved in time; ④ Set up a telephone to accept public complaints.	The project construction period	The project employer and executing agency	The project office, townships and villages	Implementing the above actions	1. The quantity and content appealed by villagers for the impacts of project construction. 2. The quantity of local project participators and the proportion of female, minority and poverty-stricken households, and income.

Project name	Project content	Social risk	Action	Time	Responsible unit	Assistant unit	Action measure	Monitoring guideline
		3. The conflict between the project content and villagers for selection of tree species	① The tree and grass species need further investigation and discussion, the selection can not influence the future development and the plan of the villages and forestry farms;② Respect the selection of species by the villagers and forestry farm workers, the selection of tree species should integrate the local reality and demand of breeding households; ③ Suggestion got by investigation, to ensure the survival rate, the project should adopt a inter-planting model to plant shelter belt, economic crop and economic forest together to maximize the ecological and economic benefit;④ The purchase of seedling should be by tender and competitive bidding;⑤ The construction units should absorb the villagers in the project area to participate in the project construction, especially the poverty households, minority and female.	The project construction period	The project employer and construction units	The project office, township government and village commission	Implementing the above actions.	1. The quantity and content of complaints by villagers for the impacts of project construction. 2. The quantity of local project participators and the proportion of female, minority and poverty-stricken households, and income.

Project name	Project content	Social risk	Action	Time	Responsible unit	Assistant unit	Action measure	Monitoring guideline
		4. Problems of project follow-up management.	① Establish project follow-up management group in the project villages and forestry farms, to assist the forestry bureau for annual ecological environment monitoring in the project area; ② Set up a hot line telephone complaints to accept report of illegal grazing and cutting, to reinforce the punishment.; ③ Plan the found for follow-up management, the follow-up management can be carried by marketable operation.	The project monitoring period	The forestry bureau, forestry station, forestry farm, desertification control company and special households of desertification control.	The community project follow-up management group and the project employer.	Community ecological monitoring group and forestry department implement the regular monitoring.	1. The quantity and content of complaint tables from the village commission. 2. The record of telephone complaints and its settlement. 3. Annual ecology monitoring report.

7.3 Potential Risks of the Project Implementation and the Countermeasures

The target and content of the "desertification control and ecological protection" project are not only to extend multi-models of desertification control and ecological protection in Ningxia, but also to benefit the villagers and forestry farm workers in the project areas. The final target of the project is not only to plant trees for 620,000 mu and to control desertification for 380,000 mu, but also to emphasize the Yellow River banks and focal ecological construction area. The project will reinforce desertification control, at the same time; also solve the problem of backward infrastructure, shortage of counterpart construction, and capacity retardation of sustainable development.

Through changing the traditional method of desertification control and ecological protection, the quality and ability of the beneficiaries are improved; the social economic development in the project villages and forestry farms is promoted. The project needs highly qualified managers, technicians, villagers active participation, relative counterpart technique, exact market information, and better natural, climate conditions. If there is a problem in any link of the construction, the effect of the project and payment of the loan will be impacted. Through assessment we generalize the potential risks as managerial risk, natural risk, technical risk, market risk, policy risk and beneficial group risk. See Table 7-2.

Table 7-2 Potential Risks and Countermeasures in the Project Implementation

Potential risk	Risk factor	Countermeasures
Managerial risk	① Separation of project management and loan management; ② Traditional management concept and from top to bottom management measure ③ Emphasize the hardware construction and despise the capacity building of the beneficial group.	① The project office should contact, cooperate with loan management agency to plan as a whole. ② To train the management staff in every level for the participation, developing concept of community and working method.
Beneficial group risk	① Traditional concept and small –scale peasant consciousness;	To train the villagers, to select community with better working basis and cohesiveness as project village;
Natural risk	Natural disaster as drought.	① To forecast the problem and prepare countermeasure; ② To improve villagers' technique of planting and breeding;③ The finance of county and township should be subsidized; ④ To solve the problem of water for human and livestock in the project area; ⑤ To prepare rainmaking in time.
Technical risk	① The quality of seedling and grass seeds, the capacity of anti-drought is weak; ② Short of water saving and water supply equipment and technique; ③ The technique of planting and breeding are not ripe, the species extended is not feasible.	① Strictly enforce the quality of seedling and grass seeds; ② To establish a service system of irrigation works, to ensure one more persons in the project area and forestry farm;③ To take a training course to comprehend the local instances and villagers' willingness.
Policy risk	The policy is not sanity and feasible to cause problem to the project and impact	To establish scientific and feasible policy.

Potential risk	Risk factor	Countermeasures
	expected project target.	
Marketing risk	① The prices of Tan sheep, Tan chicken and other livestock go down, but the cost of fodder goes up; ② Fruit and vegetable are difficult to sell; ③ Marketing competition is weak.	① To establish villagers' technical and economic cooperation organization; ② To establish a market pattern of " company + households"; ③ To forecast the market exactly.

7.3.1. Managerial Risks and the Countermeasures

The Managerial Risks and the Countermeasures

This kind of risk mainly comes from the project management and implementation agency, or because of the bad project management that will result in unsuccessful factors of the project.

The characteristic of " desertification control and ecological protection " project is big investment and large extension, the content is not only ecological protection, desertification control, ecological-economic forest and construction of counterpart equipment, but also relates to thousands of households' planting, breeding, community propaganda and villagers' training. The project management is a complicated systems engineering. Although every county (city, district) project office has implemented many similar projects and achieved a great success, it is still not easy to realize the project target of "World Bank Loan". 1. It is a loan project, so there is a problem and risk of paying the loan; 2. The World Bank project has a high demand of beneficiaries' participation and capacity building (except hardware construction). Through assessment of related institutions in 7 counties (cities, districts) we think that the reasons of managerial risk may possible come from following aspects:

(1) The Separation of the Project Management and Loan Management

We found out that the structure of project office in the 7 counties (cities, districts) is basically same, the responsibility of every project office has a common ground---they are only responsible for the application of project and management and coordination in the project implementation, pay little attention to the loan and how to pay off the loan. That means they transferred the responsibility of granting loan and recalling the loan to finance department. Although it is rational and feasible as the regular operation manner of the World Bank loan, from an other point of view, we think there is a risk for the project achievement.

The assessment group thinks there is some difference between the World Bank loan project and commercial loan project. In this project, the loan is not only a financial activity, but also a measure to accelerate the development of accommodators and the area. Therefore it is not the project final purpose to grant the loan and to recall the

loan; the final purpose of the project is to combine the loan's granting, using and recalling together to increase the villagers' income, to promote the development of the communities, to heighten capacity of accommodators and the project management institutions, it is the sign of project success. It is the project office to understand the target and content of the project, it is the project office to go deep into the communities to face the beneficial groups, it is also project office to control and coordinate the project implementation. The financial department (or credit cooperatives) is impossible to have a group of professional staffs to take charge of the project, they can possibly conform the loan with regulation and financial system, it is impossible for them to go deep into the communities to face the beneficial groups to conduct particular investigation. It is in certain degree to increase the risk of recalling the loan (it is also the reason why in some areas of China the loan recalling rate is very low).

To conquer the risk, firstly it is necessary to make the staffs of project office and cooperative institutions to understand the project connotation, content and target of the "desertification control and ecological protection" project, to heighten their knowledge; secondly, it is necessary to establish a cooperative system between the project office and loan management department to plan as a whole on the loan granting, recalling and the other project activities.

(2) The Traditional Managerial Concept and the superincumbent Managerial Measure

Impersonally speaking, the project management staffs from every level in the 7 counties (cities, districts) have a plenty of professional knowledge and rich experience in practical working, furthermore, they work hard and conscientiously. During the investigation, we found that the project staffs we talked with were not very familiar with new concept of project management such as beneficiaries' participation, community development, the relation between sex and development; their measures of working and decision making are basically from top to bottom, they did not let the communities and beneficiaries participate in the project activity fully. That makes the project decision and activity not to accord with the demand of villagers. The villagers' enthusiasm of participation in the project activity is hurt and they only take the project as some thing of the government.

(3) Stress the Hardware Construction and Despise the Capacity Building of the Beneficiary Group

Some of the project office staffs simply comprehend the project content as "planting trees, grass and making checkerboard"; equate the development of poverty-stricken area as the increasing of villagers' income; therefore they think that the measure of

desertification control is simply to plant trees and grass, to make checkerboard, to sink pumping wells. But the most important project content in the desert area --- the change of beneficiaries' concept, capacity building and the construction of organization is not paid enough attention to; furthermore, they never think to help poverty-stricken villagers to get resource by making use of the loan, to undertake the their own fortune at the same time. If this part of the project managers' attitude of loan is not changed, they do not pay attention to capacity building of the households, there will be an undoubted risk against the project achievement, especially against the villagers' loan recalling.

The measure to control the risks mentioned above is the same. That is to train the management staffs from every level; the training content should include not only the project implementation, found management, payment, purchases, reimbursement and foreign language, but also villagers' participation, the development concept of the communities and working measures.

7.3.2. Risks against the Beneficiaries and the Countermeasures

The project community and its members are not only the project beneficiaries, but also the participators of the project activity; they are the main body of the project. The social environment of the community and the quality and concept of its members are namely the safeguard to the project achievement, but also the risk factors, because of their traditional concept and consciousness of small scale peasant.

Owing to desertification control and ecological protection project areas are mostly poverty-stricken backward areas, the villagers are hard to avoid impression of traditional concept. They are not willing to appear in public, to participate in community affair; especially the female villagers are absorbed in their families, seldom to participate in training and meeting. This is a negative impact on the project activity for the community's participation. There are still few villagers with strict consciousness of small scale peasant; they are always waiting for the help of government and other people and even almsgiving.

Although, there are only few of them, this is a potential negative impact on the project successful implementation. We have to mainly conduct propaganda and education to overcome the disadvantage factors. The villagers' training can not only include desertification control and ecological protection, but also include how to heighten the villagers' knowledge, how to change the villagers' traditional concept, and how to set up the consciousness of master should be considered too.

7.3.3. Natural Risks and the Countermeasures

The main content of the project is to set up an ecological protection system of the

areas along the Yellow River and east area of the Yellow River. Every body knows that the planting of shelter belt and economic forest are easily impacted by the natural disasters. The risks mostly include drought, hailstone, unusual high temperature and low temperature, unusual rainfall and snowfall and also epidemic disease in the breeding areas.

For the climate damage, the relative institution should make use of the meteorological data to figure out the probability of certain natural disaster’s happening and the degree of damage caused by the natural disaster, prepare emergency plan in advance, and inform the villagers in time. Fodder land and fodder storage should be established, a good relationship with nearby agricultural areas should be founded for the support of straw and grass in emergency time. Epidemic prevention of livestock should make a scientific regulation which the villagers must follow strictly. At the same time, the project should provide relative training to increase breeding technique and management of the villagers.

7.3.4. Technical Risks and the Countermeasures

The technical risk mainly comes from seedling and equipment of counterpart irrigation. The construction of nursery base and equipment of counterpart irrigation is an important content of “desertification control and ecological protection” project, if the quality of seedling is not good the project basically can not be successful. During the field investigation, some villagers reflected that the quality of seedling had some problems in the projects (including foreign aid projects) they involved. Some of seedlings did not suit the local climate and water quality, so the survival rate is low; and also the protection was absent and to cause man-made damage (as sheep gnawed), now these kinds of problems have been solved out. For reducing the risks, the project office should check the quality of seedlings and irrigation equipment strictly; establish a regulation and punishment measure to punish the irresponsible units and individual. At the same time, a service system of irrigation equipment should be set up and completed.

If the new technique is not ripe, or some new species are not suitable to the soil and the climate in the project area, then the species and technique are impossible to bring a successful ecological effect to the project area. So this is necessary to make experiment on the new technique of water saving irrigation and new species. Otherwise, the measure of superincumbent administrative command should be changed; the project should encourage participation of the communities and solicit opinions of the villagers in the project areas. This is also an effective approach to avoid the risk of new technique and new species.

7.3.5. Policy and System Risks and the Countermeasures

So called policy risk means distempered and unsuitable policies which cause problems in the project implementation. The policies that impact the project can be national macro-policies and specific policies made by the project.

The macro-policies that will impact the project include industry policy, land policy, imports and exports policy and exchange rate policy. The change of national macro-policies can not be controlled by the project. But the project can make policies which are advantageous to the project implementation by scientific design, for example, the project may regulate the lowest percentage of females who participate in the project construction, and the poverty-stricken households have the priority to take the contract of economic forest, to ensure the participation of vulnerable group. In short, the project should make feasible and practical policies which are advantageous to the beneficiaries and achievement of the project target. The designer of the project must fully understand circumstances in the project areas, and conduct deep investigation. The project beneficiaries' participation in the process of project design is the best measure.

7.3.6. Marketing Risks and the Countermeasures

The main content of "desertification control and ecological protection" project is to develop a trinity model of "ecological protection forest", "desertification control" and "ecological-economic forest", the project takes desertification control as a ligament to develop the breeding of sheep, cattle and chicken, and brings along economic plants as fruit trees, vegetable and medicinal material. Aquaculture may suffer from economic damage by prices' falling; the growing period of fruit trees and medicinal material is long, they need 3—5 years to be mature or have fruits, but the species of fruit and vegetable at present market are changed irregularly. How to sell the products in the market and keep their competition is directly related with economic income of thousands of households.

To avoid above risks, the feasible countermeasure is to help the villagers to establish an economic organization of technical cooperation, to face the market together by helping each other and self-help; or to set up a "companies + households" model. The villagers sign a contract with companies, the companies purchase the products regularly, to avoid the problem of selling; secondly, to help the villagers with marketing forecast, the villagers can decide the species of planting and breeding according to present and future market.

7.4 Negative Social Impacts Possibly from the Project

Whether in the government conference rooms, villagers communities and forestry

farms or on grassland, almost of all the people we interviewed with told us about the benefits---social benefit, economical benefit and environmental benefit brought by the desertification control and ecological protection project, they all unanimously thought there were no negative social impacts from the project. But during the field investigation, assessment group realized that there were at least three problems which deserved consideration of relative institutions; 1. Whether the project may make the benefit unequal distribution to the different groups, and the poverty-stricken households and other vulnerable group may be marginalized; 2. If the project design, the selection of project sites and tree species, and the use of equipment of water saving irrigation are not suitable and proper, and the loan management is not strict, although the households and forestry farms are not responsible to pay for the loan, it is possible only few people can get benefit from the project, if the loan is not handled with the operational process demanded by World Bank (identification of contractors' capacity and qualification), not to contract the construction to the individuals and companies with real ability, authority of the government will be also reduced. 3. some of the local governments neglect their financial situation, borrow too much loans, run into debt.

7.4.1. Benefit Unequal Distribution and Vulnerable Group Marginalization

We can not deny the original intention of the project office is good; it is for the project success. The project office needs to negotiate further with the township governments about how to absorb more poverty-stricken households in the project activity, to provide every kind of services to help the beneficiaries with the selection of suitable project models.

7.4.2. Un-standardized Loan Management Generating Farmers' Psychological Dependence

We found that there were tow kinds of World Bank loans in the project areas at present; one is the government guaranteed to borrow money from the World Bank, but the villagers were the main body of the loan, the project households used the loan and repaid the loan; the other is the local government was main body of the loan, the local government borrowed money from the World Bank and was responsible to repay the loan, the villagers used the loan freely. The tow kinds of measures were decided by local government according the local social and economical situation, they are both reasonable. In fact, the poverty-stricken households were simply supported by material to improve their living condition is not advisable, and it is testified by internal and external many years practice of development. The modern concept of support is not to provide relief to poverty-stricken households, but to endow them with right and resources, to inspire them to think about their problems and

unfavorable situation, to help them to participate in the process of development, to make them to increase their capacity in the development, to let themselves make the decision. Therefore there are more and more economic aids to help villagers to develop their production with loan. It does not mean that the government can not invest in desertification control and ecological protection.

If the project managers of every level and the local officials do not understand the significance and content of the project deeply, not to locate the project found in the right position, not only the project target can not be realized, but also the local communities and beneficiaries are negatively impacted by the project implementation.

7.4.3. Too Much Borrowing by Local Governments to Impact Regional Social-Economic Development

The desertification control project is a World Bank loan project guaranteed by the local government, during the investigation we found that some of the project counties had a limited financial found, their economic development were backward, the working expenditure was very short, if they simply pursue the scale and speed of the construction of ecological homestead, they would neglect the practical situation to make too much borrowing. If the management of project loan is delayed, the government will undertake the risk, and would run into debt, or would borrow all around, or would apportion payment of the loan to the relative institutions, or township government and village commission. The economic and social regular development in the whole area would be impacted.

7.5 Discussion: Establishment of Participatory Project Management Mechanism

The practice of internal and external development has testified that the beneficiaries' participation is the chief condition for success of the project. The key question is what the beneficiaries' participation is? Some project staffs think that the project brings benefit to the villagers, they let the villagers join the meeting and training, that is the participation. Actually, they only let the villagers join, not really participate.

We can say in this way, the meaning of participation is to take part in actively and positively, furthermore, during the participation they have the right of decision. So "beneficiaries' participation" means the villagers should participate actively and effectively in the every process of the project activity -- design, implementation, management, monitoring and evaluation, they have the right and opportunity of speaking; and their opinion would be respected by the project management department, also impact the policy making.

Otherwise, we should also realize that there is heterogeneity in the project beneficial group. That means the group is formed of different people, different type of small

groups such as male, female, elder and young; different nations; and the people with different economic condition. Therefore, beneficial groups' participation of the project signifies that we have to ensure the different groups, especially the vulnerable group to have the opportunity of participation and the right of speaking.

According to above principle, the project should establish a set of systems, to guarantee the participation of stakeholders in the project decision and implementation in all the process of project operation.

(1) Participation Mechanism in the Project Design/ Plan

The project design (text) is the basis and guideline of the project implementation; a good project design and plan is the foundation of project's success. Therefore, the target group of the project must participate in the project from the beginning.

- The project design should first listen attentively to the opinions of project management department from every level, especially the opinions of project beneficiaries; the project design unit should invite every kind of representatives of villagers to join the design, especially the poverty-stricken households, minority and female;
- The selection standard of beneficial households should be discussed in the community for opinion;
- Discussion with the villagers in the project areas, to formulate an ensured measure of loan recalling, to absorb the useful suggestions in the project plan;
- Before the project office plans the project activities (training, visit and study, construction of demonstration bases and introduction of new species), the villagers' opinion should be asked about the content of activity and time arrangement.
- For the participation of minority, female and poverty-stricken households, the project office should constitute a channel of participatory information exchange, to ask villagers' opinion in every process of project design. The project office should hold grouping workshops, especially encourage the minority, female, poverty-stricken households and vulnerable group to join the workshop, discuss the opinions of representatives, then select opinions that represent the most of villagers' interest for project planning. But there is one thing we should point out, in some minority centralized areas, such as Litong District and Lingwu City, the Muslim population constitutes the majority, the Muslim are the main stream in the project areas, they are not the vulnerable group. The local government helped the villagers to have established a ripe channel of information exchange, to ensure the Muslim people's full participation in the project.

(2) Participatory Mechanism in the Project Implementation

Project implementation is the principal part for every project, the project should set up a long-term participatory mechanism, including:

- At the beginning of the project, every project village should constitute a "village management group of project implementation (hereafter as village project group)" based on village Party branch and village commission with the representatives of villagers. The representatives of the villagers should include female, minority and relative poverty-stricken households;
- The responsibility of the village project group is to help superior project office to implement the project activity in the village. Their work includes organizing of the project construction, holding project meetings and training, and soliciting opinions of the villagers about the project implementation. The responsibility of the group should be published on the wall, be known by all the villagers especially the project households for their supervising.
- The work of village project group should follow the principle of publicity and justness, try their best to let the villagers know and receive equally the benefit provided by the project (training, visit and study and new species). The subsidy, reward and honor for special project households should be published to ensure the justness and also play a part in propaganda.
- In the project operation, some villages with mature condition can establish desertification control union. The management level of union should be voted by the union members, the voting members should not be less than 70%, to ensure the result of the election delegating most of beneficiaries' opinion.
- The constitution of the desertification control union should be fully negotiate with the villagers to get their approval; the income and expenditure account of the membership dues should be published to the members regularly.

(3) Participatory Mechanism in the Project Monitoring and Evaluation

The project monitoring and evaluation is to guarantee successful implementation of the project according to the design. As the direct beneficiaries and participators of the project, only the project households participate in the project monitoring and evaluation, the problems can be found and corrected at any moment. The following mechanism can make a better participation of the villagers:

- The county (city, district) project office should circulate a notice of project progress and work arrangement to the villagers regularly. We suggest that every project office can edit and print briefings and publish in the project communities.
- After every important activity, as desertification control training, the project office should collect the participators' reflection, take notes and keep in the archives, for improving in the future activity and also for the accumulation of information and data for the project evaluation.
- Each project area can retain some project households to conduct daily monitoring for the project evaluation index (for example, the survival rate of the shelter belt, and the progress of checkerboard). In order to let more households participate in the project monitoring and to ensure the justness, the monitoring households should be changed regularly.

(4) The Project Accelerates the Participatory Mechanism of Vulnerable Group

The vulnerable group of the community is the main objective the project pay attention to, they are the group easily to be neglected usually. Because they are "vulnerable", a mechanism must be established to help them to participate in the project.

- In the project design, there should be instructive regulations to help the female, minority and vulnerable group to participate in the project activity, for example, the female participators of the training can not be less than 50% (in the Muslim areas the percentage can be lower); each community must absorb certain percentage of poverty-stricken households to participate in the project, and they will be the index in the project evaluation.
- To ensure the reflection from vulnerable group, the village project group and the leaders of desertification control union should have the representatives of female, minority and relatively poverty-stricken households.
- According to the characteristic that the female and minority are not very well educated, each project area should organize special training for them, the training content, training measure and even the language should accord with their requirement to increase the training impression. Something we should point out is that, most of the Muslim groups related with the project have blended in the local culture, so the language problem needs not to be considered especially in the project activity.

(5) Information Exchange and Training

During the field investigation in the eight counties (cities, districts), the assessment group exchanged the information and communicated with the management staffs from every level, at same time, the assessment group edified and trained the project management staffs about the priority of Muslim people, villagers' participation, the concept of development, equality of sex, community working measure (investigation of beneficiaries' requirement and so on) and project monitoring.

At last, the assessment group communicated with the project office about the problems they found during the field investigation, and suggested that the project should pay more attention to the minority and female, participatory investigation and working measure in the practical project management.

8 Strategy of Community Participation

8.1 Principles and Framework of Participation

In the World Bank Participation Source Book, the World Bank defined participation as "it is the process that impacts the project stakeholders to control and involve in the development, decision of the development and relative resource bound up with them". The definition avoids that the primary stakeholders are simply regarded as passive objects of the support, interview, and labors. The definition also clearly explicates that the process of World Bank project implementation is a process to arouse the primary stakeholders to impact and control the activity of development. To realize this purpose, the national economy and relative departments should think of more broad of stakeholders, guarantee all the stakeholders and their relation to be identified, and to be considered in every project process; to let the poor people easily obtain the resource especially the financial resource; and to strengthen the managerial capacity of the stakeholders and their organizations. Table 8-1 summarized the principal frame of community participation:

Table 8-1 Principal Frame of Community Participation

No	Steps	Function of primary stakeholders	Function of government	Function of experts	Effect
1	Problem analysis and subject establishment	Analyze the problems of families, society and resource, the reason of the problems	Support of administration, politics and finance	Help the stakeholder to analyze the problem and lead to find the reason of the problem	Can find the real problem exactly
2	Content and frame of the project	Raise self-demand, compare the relation between self-demand and the reason of problem, to establish the frame to solve the problem.	Study whether government can support the plan submitted by primary stakeholders.	Base on analysis of the problems submit technical feasible suggestions to the government and primary stakeholders	Relate the project content with practical demand of the stakeholders
3	Project plan	Establish the plan of project activity, according to family labor force and division of sex, season and their social-economic characteristic, and confirm the person in charge.	Examine the relation between the stakeholders' plan and the appropriation founds made by government.	Make the project plan and risk forecast plan with stakeholders.	The planned activity should accord with productive season, distribution of labor force and fund situation of the primary stakeholders
4	Project implementation	Set up organization system, elect person in charge of the project activity.	Provide condition of project implementation	Technical support	Self responsibility of the beneficiaries group
5	Monitoring and evaluation	Project executors conduct self-check, and organize the evaluation of the	Participate in the project monitoring	Analysis of monitoring and evaluation result and	Beneficiary group know in time the

No	Steps	Function of primary stakeholders	Function of government	Function of experts	Effect
		project regularly.	and evaluation.	report to the government and primary stakeholders.	progress of their own project activity.
6	Final project evaluation	Evaluate the final benefit of self-investment and exterior support.	Participate in the process of evaluation and examine the benefit of government input.	Participate in evaluation and examine the benefit of technical input.	Evaluation by the beneficiaries whether they benefited from the project.
Function of role		Policy executor	Guarantor	Supporter	Unified roles

8.2 Guidelines of Stakeholder participation

In the project design, implementation and monitoring, in order to guarantee every kind of beneficiaries to receive concerned information in time, and to have the equal opportunity to raise their own opinion and suggestion, at same time for the convenience of the project implementation unit and supervising and management agencies to master the motion of the project implementation, to make scientific decision, the assessment group advices:

① The project information should be kept to public, the propaganda work should be carried through the whole project periods. It is necessary to establish a system of publication of the project information, to publish the project information closely related with the stakeholders in community office or public places. The primary stakeholder should be informed with the situation of project implementation also by public meeting, soviet, and slogan, television, broadcast and so on.

② Help the primary stakeholder to set up the consciousness of project main body. The assessment group suggests conducting following trainings: a. The project should hold participatory training for primary stakeholder to guide them to think actively about the community development, desertification control and ecological protection; b. The project should conduct training of ecological environment protection for the stakeholder, to lead them to consider the impact on environment by their living and production manner, and how to protect the environment for themselves; c. The project should hold training of technique to eliminate the misgivings of the stakeholder to the project.

③ The project should absorb the stakeholder to participate in the project construction, first employ them as paid labors, allow them to provide logistics to the project construction.

④ The project should pay attention to the function of community leaders and family influence. The project activity of propaganda, training, mobilization, reflection of the villagers' demand, finding the problems in the project implementation,

coordination of the conflicts and follow-up management all need the participation of the community leaders. The project should consider some subsidy for the main community leaders who participate in the project.

⑤ The project should establish village participatory management of desertification control, ecological protection and economic forest, to mobilize the public to keep a sustainable achievement of the project.

In the Table 8-2, the assessment group worked out a guideline of stakeholders' participation in ecological shelter belt, desertification control and ecological-economic forest construction, including above suggestions of participation.

Table 8-2 Guideline of Stakeholder Participation

Content	Phase	Participatory activity	Content of activity	Measure of activity	Participator	Responsible unit	Remark
Ecological shelter belt	Preparation phase	Project publicity	① public the importance and necessity of the project, collect opinion and suggestion from villagers. ② transmit information concerned by impacted group as project starting date, place.	Poster, propaganda book, public meeting, slogan, leaflet	①Whole members of the community, ② The project employer, ③ The project office	The project office, the project employer.	Support by forestry bureau, forestry station, township and villages
		Participatory analysis of impacted group	① identification of project impacted groups and their existing situation, ② identification of positive and negative impacts on every kind of group by the project.	Representative meeting of forestry farm workers/ villagers.	① representative of the community (including representative of special groups such as poverty-stricken households, minority, female) ② community/ village committee, ③ the project employer and project office.		Support by assessment group, forestry bureau.
		Participatory analysis of the problems	① analysis of existing situation and problem of ecological environment in villages and forestry farms, ② help residents to analyze the source of desertification and the relation with their living manner.	Representative meeting of forestry farm workers/ villagers.			Support by assessment group, forestry bureau.
		Participatory assessment of local knowledge	Analysis of local knowledge to find ways to reduce the desertification and erosion.	Representative meeting of forestry farm workers/ villagers.			Support by assessment group, forestry bureau.
		Participatory analysis of the requirement	Confirm the demand of the project impacted groups, and analysis of the difference between project design and their demand.	Representative meeting of forestry farm workers/ villagers.			Support by assessment group, forestry bureau.
		Problem feedback	① assessment of the project plan and its content, ② expectation and proposal of the stakeholder for the project.	Representative meeting of forestry farm workers/ villagers.			Support by assessment group, forestry bureau.

Content	Phase	Participatory activity	Content of activity	Measure of activity	Participator	Responsible unit	Remark
		Training and signing contract	① training of national and local regulations as index of ecological environment, ecological protection, mountain closure and grazing ban ② publish to the villagers which breeding and production manner impact ecological environment, help the villagers to realize the impact of their breeding on the environment. ③ sign contract with the relevant institutions and enterprises.	① public meeting of forestry farm/ village ② poster, propaganda book, slogan, leaflet	①whole members of the community, ②the project employer, ③ the project office, ④ forestry bureau, ⑤ forestry farm/ village committee;		Support by forestry bureau, forestry station, township and villages
	Implementation phase	Community project management group	Election of group members and the head, hold organizing training to select management and implementation participators safeguard public order in project site, coordinate relations, and reflect villagers' opinion.	① public meeting of forestry farm/ village ② representative meeting of workers/ villagers. ③ meeting of community project management group (including special group such as poverty-stricken households, resettled villagers, minority, female)	① whole members of the community, ② forestry farm/ village committee ③the project employer, ④the project office, ⑤ the community project management group	The project office, the project employer, forestry farm, village committee, community project management group.	Support by Assessment group, Forestry station.
		Training	①training of national and local regulations as index of ecological environment, ecological protection, mountain closure and grazing ban. ② publish to the villagers which breeding and production manner impact ecological environment, help the villagers to realize the impact of their breeding on the environment	① public meeting of forestry farm/ village ② poster, propaganda book, slogan, leaflet, broadcast and television	① whole staffs of the forestry farm, ②the project employer, ③the project office, ④ the forestry bureau, ⑤the community project management group		Support by propaganda department education bureau, forestry bureau, Radio and TV bureau, newspaper, forestry farm, township and villages.

Content	Phase	Participatory activity	Content of activity	Measure of activity	Participator	Responsible unit	Remark
		Project construction	① confirm working posts offered by project construction, ② confirm the standard of participators in project construction must include minority, female and poverty-stricken households, ④ confirm the salary, ⑤ technical and security training of the participators, ⑥ participate in the project construction.	① public meeting of forestry farm ② representative meeting of forestry farm workers/ villagers. ③ participate in the project construction	① The participators of the project construction including minority, female and poverty-stricken households, ② The project office, ③ The project employer,④The project construction agency ⑤ The community project management group	The project office, the project employer, project construction agency, community project management group	Support by forestry bureau.
	Monitoring and feedback	Village/ forestry farm project monitoring group	① regular monitoring of ecological environment, ② monitoring of recovery of villagers living level, ③ monitoring of recovery of the nature environment after the project construction.	① public meeting of forestry farm ② representative meeting of forestry farm/ village ③ the community project monitoring group(including representatives of special group such as poverty-stricken households, minority, female)	① whole members of the community, ②forestry farm/ village committee ③the project employer, ④the project office, ⑤ community project monitoring group	The project office, the project employer, community project monitoring group	
		Training	Skill training of monitoring and evaluation.	Training meeting of community monitoring group	① community project monitoring group ② the project office, ③the project employer		
		Opinion and complaints	Set up opinion feedback system for the villagers	① print table of project complaints and deliver to every villagers group for villagers to submit their suggestion any time, ② set up telephone complaints in township project office ③community monitoring group collects villagers opinion and suggestion at any moment	① community project monitoring group ② the whole members of the community, ③the project office, and the project employer,	Village/community project monitoring group , project office	

Content	Phase	Participatory activity	Content of activity	Measure of activity	Participator	Responsible unit	Remark
	Follow-up management	Project maintenance	Forestry farm, village heads and representatives of the community form a management committee to manage the infrastructure of ecological environment, the members of committee should include certain percentage of female, minority and poverty-stricken people. to assist the project employer and forestry bureau to conduct infrastructure of shelter belt, as water supply, water store equipment, forest road maintenance—follow up management work	①public meeting of forestry farm/ village ② representative meeting of forestry farm/ village ③ meeting of community follow-up management committee (including representatives of special group such as poverty-stricken households, minority, female)	① the community project follow-up management group ② the whole members of the community, ③the project office, and project employer.	Community project follow-up management group, the project employer.	
Mountain and grassland closure	Preparation phase	Project publicity	① public the importance and necessity of the project, collect opinion and suggestion from villagers. ② transmit information concerned by impacted group as project starting date, place.	Poster, propaganda book, slogan, leaflet, and public meeting	① whole members of the community, ②the project employer, ③the project office,	The project office, the project employer.	Support by forestry bureau, forestry station, township and villages
		Participatory analysis of impacted group	① identification of project impacted groups and their existing situation, ② identification of positive and negative impacts on every kind of group by the project.	Representative meeting of forestry farm workers/ villagers	①representatives of the community (including representatives of special groups such as poor households, minority and female) ② community/village committee, ③the project employer, and the project office,		Support by assessment group, forestry bureau
		Participatory analysis of problems	① analysis of existing situation and problem of ecological environment in villages and forestry farms, ② help residents to analyze the source of desertification and the relation with their living manner.	Representative meeting of forestry farm workers/ villagers			Support by assessment group, forestry bureau
		Participatory assessment of local knowledge	Analysis of local knowledge to find ways to reduce the desertification and erosion	Representative meeting of forestry farm workers/ villagers			Support by assessment group, forestry bureau
		Participatory analysis of requirement	Confirm the demand of the project impacted groups, and analysis of the difference between project design and their demand.	Representative meeting of forestry farm workers/ villagers			Support by assessment group, forestry bureau

Content	Phase	Participatory activity	Content of activity	Measure of activity	Participator	Responsible unit	Remark
		Problem feedback	① assessment of the project plan and its content, ② expectation and proposal of the stakeholder for the project.	Representative meeting of forestry farm workers/ villagers	① whole members of the community, ②the project employer, ② the project office, ④the forestry bureau, ⑤forestry farm/ village committee		Support by assessment group, forestry bureau
	Implementation phase	Training	①training of national and local regulations as index of ecological environment, ecological protection, mountain closure and grazing ban ② publish to the villagers which breeding and production manner impact ecological environment, help the villagers to realize the impact of their breeding on the environment.	①public meeting of forestry farm/ village ② poster, propaganda book, slogan, leaflet,	① whole members of the community, ②the project employer, ③the project office, ④the forestry bureau, ⑤forestry farm/ village committee	The project office, the project employer, forestry farm/ community project management group.	Support by forestry bureau, forestry station, township and villages
		Training of community project management group	Election of group members and the head, hold organizing training to select management and implementation participators safeguard public order in project site, coordinate relations, reflect villagers opinion	①public meeting of forestry farm/ village ② representative meeting of forestry farm workers/ villagers ③ meeting of community project management group (including representatives of special groups such as poverty-stricken households, resettled villagers, minority, female)	① whole members of the community, ②forestry farm/ village committee ③the project employer, ④the project office, ⑤the community project management group		Support by propaganda department education bureau, forestry bureau, Radio and TV bureau, Newspaper, forestry farm, township and villages.
			①training of national and local regulations as index of ecological environment, ecological protection, mountain closure and grazing ban ② publish to the villagers which breeding and production manner impact ecological environment, help the villagers to realize the impact of their breeding on the environment.	①public meeting of forestry farm/ village ② poster, propaganda book, slogan, leaflet, broadcast and television	①whole staffs of forestry farm, ② the project employer, ③the project office, ④forestry bureau, ⑤the community project management group,		

Content	Phase	Participatory activity	Content of activity	Measure of activity	Participator	Responsible unit	Remark
		Project construction	① confirm working posts offered by project construction, ② confirm the standard of participators in project construction must include minority, female and poverty-stricken households, ④ confirm the salary ⑤ technical and security training of the participators, ⑥ participate in the project construction.	① whole staff meeting of forestry farm ② representative meeting of forestry farm / village ③ participate in the project construction	① participators of the construction, including minority, female and poor households ②The project office, ③ the project employer, ④ executing agency ⑤ the community project management group,	The project office, the project employer, project construction agency, community project management group	Support by forestry bureau
	Monitoring and feedback	Village/ forestry farm project monitoring group	① regular monitoring of ecological environment ② monitoring of recovery of villagers living level, ③ monitoring of recovery of the nature environment after the project construction.	① public meeting of forestry farm/ village ② representative meeting of forestry farm / village ③ the community project monitoring group (including representatives of special groups such as poverty-stricken households, minority, female)	①whole members of the community, ② forestry farm/ village committee ③the project employer, ④the project office, ⑤ community project monitoring group	The project office, the project employer, community project monitoring group.	
		Training	Skill training of monitoring and evaluation.	Training meeting of community monitoring group	① village monitoring group ②the project office, ③the project employer,		
		Opinions and complaints	Set up opinion feedback system for the villagers	① print table of project complaints and deliver to every villagers group for villagers to submit their suggestion any time, ② set up telephone complaints in township project office ③community monitoring group collects villagers opinion and suggestion at any moment	① community project monitoring group ② whole members of the community, ③the project office, and the project employer,	Village/community project monitoring group, the project office.	

Content	Phase	Participatory activity	Content of activity	Measure of activity	Participator	Responsible unit	Remark
	Follow-up management	Project maintenance	Forestry farm, village heads and representatives of the community form a management committee to manage the infrastructure of ecological environment, the members of committee should include certain percentage of female, minority and poverty-stricken people. To assist the project employer and forestry bureau to conduct infrastructure of shelter belt, as water supply, water store equipment, forest road maintenance—follow up management work.	①public meeting of forestry farm/ village ② representative meeting of forestry farm/ village ③ meeting of community follow-up management committee (including representatives of special groups such as poverty-stricken households, minority, female)	① the community project follow-up management group ② whole members of the community, ③the project office, and the project employer,	Village/community project follow-up management group, project employer.	
Ecological economic forest	Preparation phase	Project publicity	① public the importance and necessity of the project, collect opinion and suggestion from villagers ② transmit information concerned by impacted group as project starting date, place.	Poster, propaganda book, slogan, leaflet, and public meeting、	① whole members of the community, ②the project employer, ③the project office,	Project office, Project employer.	Support by forestry bureau, forestry station, township and villages
		Participatory analysis of impacted group	① identification of project impacted groups and their existing situation, ② identification of positive and negative impacts on every kind of group by the project	Representative meeting of forestry farm workers/ villagers	① representatives of the community (including representatives of special groups such as poor households, minority and female ② community/village committee, ③the project employer, and the project office,		Support by Assessment group, Forestry bureau
		Participatory analysis of problem	① analysis of existing situation and problem of ecological environment in villages and forestry farms, ② help residents to analyze the source of desertification and the relation with their living manner.	Representative meeting of forestry farm workers/ villagers			Support by assessment group, forestry bureau
		Participatory assessment of local knowledge	Analysis of local knowledge to find ways to reduce the desertification and erosion.	Representative meeting of forestry farm workers/ villagers			Support by assessment group, forestry bureau
		Participatory analysis of requirement	Confirm the demand of the project impacted groups, and analysis of the difference between project design and their demand.	Representative meeting of forestry farm workers/ villagers			Support by assessment group, forestry bureau

Content	Phase	Participatory activity	Content of activity	Measure of activity	Participator	Responsible unit	Remark
		Problem feedback	① assessment of the project plan and its content, ② expectation and proposal of the stakeholder for the project.	Representative meeting of forestry farm workers/ villagers	① whole members of the community ②the project employer, ② the project office, ④forestry bureau, ⑤Forestry farm/ village committee		Support by assessment group, forestry bureau
	Implementation phase	Training	①training of national and local regulations as index of ecological environment, ecological protection, mountain closure and grazing ban. ② publish to the villagers which breeding and production manner impact ecological environment, help the villagers to realize the impact of their breeding on the environment	① public meeting of forestry farm/ village ② poster, propaganda book, slogan, leaflet,	① whole members of the community, ②the project employer, ② the project office, ④Forestry bureau ⑤Forestry farm/ village committee	Project office, Project employer, Forestry farm/village, Community project management group.	Support by forestry bureau, forestry station, township and villages
		Training of community project management group	Election of group members and the head, hold organizing training to select management and implementation participators safeguard public order in project site, coordinate relations, and reflect villagers' opinion.	① public meeting of forestry farm/ village ② representative meeting of forestry farm/ village ③ meeting of community follow-up management committee (including representatives of special groups such as poverty-stricken households, minority, female)	① whole members of the community, ②forestry farm/ village committee ③the project employer, ④the project office, ⑤the community project management group,		Support by propaganda department education bureau, forestry bureau, Radio and TV bureau, Newspaper, forestry farm , township and villages
			①training of national and local regulations as index of ecological environment, ecological protection, mountain closure and grazing ban. ② publish to the villagers which breeding and production manner impact ecological environment, help the villagers to realize the impact of their breeding on the environment.	① public meeting of forestry farm/ village ② poster, propaganda book, slogan, leaflet, broadcast and television	① whole staffs of the forestry farm, ②the project employer, ③the project office, ④forestry bureau, ⑤the community project management group,		

Content	Phase	Participatory activity	Content of activity	Measure of activity	Participator	Responsible unit	Remark
		Project construction	① confirm working posts offered by project construction, ② confirm the standard of participators in project construction must include minority, female and poverty-stricken households, ④confirm the salary, ⑤ technical and security training of the participators, ⑥ participate in the project construction.	① whole staff meeting of forestry farm ② representative meeting of forestry farm / village ③ participate in the project construction	① participators of the construction including minority, female and poor households, ② the project office, ③ the project employer, ④ the project construction agency,⑤the community project management group,	project office, project employer, project construction agency, community project management group.	Support by forestry bureau.
	Monitoring and feedback	Village /forestry farm project monitoring group	① regular monitoring of ecological environment, ② monitoring of recovery of villagers living level, ③ monitoring of recovery of the nature environment after the project construction.	① public meeting of forestry farm/ village ② representative meeting of forestry farm / village ③ the community project monitoring group (including representatives of special groups such as poverty-stricken households, minority, female)	① whole members of the community, ②forestry farm/ village committee ③the project employer, ④the project office, ⑤ community project monitoring group	project office, project employer, community project management group.	
		Training	Skill training of monitoring and evaluation.	Training meeting of community monitoring group	① the village/community project monitoring group, ② the project office, ③the project employer,		
		Opinion and complaints	Set up opinion feedback system for the villagers	① print table of project complaints and deliver to every villagers group for villagers to submit their suggestion any time, ② set up telephone complaints in township project office ③community monitoring group collects villagers opinion and suggestion at any moment	① the village/community project monitoring group, ② whole members of the community, ③The project office, and the project employer,	village/community project monitoring group.	

Content	Phase	Participatory activity	Content of activity	Measure of activity	Participator	Responsible unit	Remark
	Follow-up management	Project maintenance	Forestry farm, village heads and representatives of the community form a management committee to manage the infrastructure of ecological environment, the members of committee should include certain percentage of female, minority and poverty-stricken people. To assist the project employer and forestry bureau to conduct infrastructure of shelter belt, as water supply, water store equipment, prevention of plant disease and insect pests and follow up management work	① public meeting of forestry farm/ village ② representative meeting of forestry farm/ village ③ meeting of community follow-up management committee (including representatives of special groups such as poverty-stricken households, minority, female)	① the community project follow-up management group ② whole members of the community, ③the project office, and the project employer,	village/community project follow-up management group.	

9. Conclusions, Proposals and Actions

9.1. Conclusions

9.1.1. The SA group thinks the social-economic benefits of this desertification control and ecological protection project are mainly reflected in:

(1) This project of desertification control and ecological protection will be located at the east side of the Yellow River. It is a place where Ning Dong Energy and Chemical Base is located and it is also the place to host economic development, tourism development, flood prevention and ecological security in Ningxia. The Government of Ningxia has been paying lots of attention to forestry ecological construction. With the World Bank loan, the project is an important measure to build regional advantage ecology in favor of the local people and the economic-social rapid development in Ningxia.

(2) Through the project implementation for desertification control and ecological protection, farmers' dependence on traditional production means in the project area will be gradually shifted to the adjustment of agricultural structures with integrated management. In the process of accelerating desertification control and improving ecological environment, the production structure in the desertified areas will be adjusted, new industries will be developed and new channels of income generating will be created for the local people in desertified areas. When the ecological-economic protective trees in the project reach the peak of fruit production, the farmers will have higher income and there will be a remarkable progress in local economic development for a beneficial cycle among "desertification control, agricultural increment and enterprise profit increase". Through participating in the project construction and technical training, the store of knowledge and concept of the project farmers will be remarkably enriched in favor of sustainable development. In addition, the project construction will make positive contribution to national unity and social harmonization.

(3) The project construction will have far-reaching effects pushing forward agricultural development and rural progress, including (i) improving ecological environment in the countryside; (ii) improving rural infrastructure; (iii) pushing forward the development of tourism, agriculture and service industry; (iv) increasing employment opportunities in the relevant industries during and after the project construction; and (v) laying a solid foundation for continuous desertification control.

(4) The project activities of desertification control and ecological construction will help optimize agricultural structure, and push forward the rapid development of sand industry, livestock raising and ecological tourism, in which the farmers will have

higher income.

(5) The project implementation will help upgrade the capacity building of the ecological and environment protection institutions in the project area. Through importing advanced methods and systems of project management, the professionality of the ecological and environment protection staff will be upgraded. In addition, the project implementation will help upgrade the awareness of the project farmers in ecological protection.

(6) The project implementation will help improve the living environment, health conditions and living conditions of the poverty-stricken people. In addition, the project will provide them with some employment opportunities in favor of their income generating.

9.1.2. The potential social risks identified by the assessment group include:

(1) Conflicts between the water demands between the project and the surrounding agriculture and animal husbandry: Around one third of the project area will be located at the drylands at the central part of Ningxia, where the poverty-stricken people live in compacts and agriculture and animal husbandry are the leading industries.

(2) Conflicts between the ecological sustainability of the project and the livestock development of the local people: Most of the local people have recognized the importance in grassland protection and ecological environment improvement. They respect the governmental policy of free-grazing ban and employ confined feeding in livestock development. However, However, limited number of farmers still follow a livestock development pattern of semi-grazing and semi-feeding to reduce production cost. There are many cases of night grazing or grazing in the farmland or windbreak shelter belts along roads damaging crops or trees.

(3) There is a deficiency in the project information publicity among the impacted people in the preparation stage.

(4) Risks in post-management of the project: Since a project of desertification control does not orient at economic benefit and even ecological effect can be hardly observed in short time, the post-management of the project will be very important.

(5) Farmers' recognition of desertification control and ecological protection as well as its impacts on their income: The SA group observed in the field investigations that the major stakeholders had not sufficiently recognized their due role in desertification control and ecological protection. They neither agreed that they were responsible for protecting the surrounding environment, they nor thought that they were one of the key bodies of environment protection. The group also observed that there was a remarkable gap between the governmental objectives of ecological protection and the

income increase expectation of the farmers through the project vegetation building. This problem will impact the project objectives if the farmers' participation in desertification control and vegetation building is not out of their willingness.

9.1.3. Aiming at the above social risks possible, the SA group proposes:

(1) Strengthening the project information publicity: It should be designed that the project information publicity will be carried out throughout the project implementation (especially at the early stage), so that the impacted people will timely learn the project information in favor of the project participation and risk avoidance or mitigation.
(2) Formulating guidelines of beneficiary (major stakeholder) participation: The project beneficiaries will participate in the project throughout the whole process from preparation, design, implementation to monitoring/evaluation.
(3) Carrying out educational training of policies of free-grazing ban, desertification control and ecological protection: For the smooth implementation and sustainability of the project, it is necessary to carry out educational training of the policies of free-grazing ban, desertification control and ecological protection so as to upgrade the awareness of the public of ecological improvement.
(4) Providing employment opportunities: It is proposed that the project administrating agency, executing agency, forestry sector and ethnic administrating agency will cooperate to provide as many as possible the employment opportunities of unskilled works to the poverty-stricken people, women and ethnic groups to help them benefit from the project.
(5) Establishing project post-management mechanism: It is proposed that the households and forest farm workers in the project area will be employed for the post-management. On the basis of the project implementation teams during the project construction, project post-management teams will be set up. The members of the post-management teams will be selected through voting by villagers and forest farm workers. The teams must have females and ethnic representatives.
(6) Optimizing design: Whenever possible, advanced technologies and facilities of water saving should be designed. The scales of supplementary watering and water storage facilities should be reasonably arranged.
(7) Seedlings of the required quality should be timely procured in sufficient quantity.
On the basis of the comprehensive analysis of the social factors in the project implementation for desertification control and ecological protection in Ningxia, the SA group has proposed required actions so as to minimize the negative impacts and make sure that the major stakeholders will benefit equally.

9.2. Proposals

This social assessment has further clarified the the possible impacts of the project implementation on the livelihood of local farmers and the existing models of alternative livelihood for the farmers to choose. The majority of the impacted farmers

expressed thair preference for off-farm work of income generating and livestock development. This is because (i) the Government encourages off-farm income generating and livestock development; (ii) the natual conditions are harsh for production and livelihood; and (iii) the harmers are adjusting their traditional livelihood to get them adaptable to the new environmnet of free-grazing ban. The frequent natural clamities make the farmers aware of the un-stability of rain-fed farming. The existing problems of livestock development mainly originate from technical deficiency and increased feed cost under the context of free-grazing ban. These problems can be solved by technical service/training and livestock development subsidy from the Government and supports from fodder processing enterprises. There are more and more uncertainties in off-farm income generating. For instance, the employers have higher and higher requirements for the knowledge and skills of off-farm workers. However, considering the contracted farmland and grassland, the farmers will still take farming and livestock development as their priority choices in short term. Therefore, the measures of alternative livelihood are summarized as follows:

9.2.1. Alternative Livelihood after Free-grazing Ban

With free-grazing ban, the cost of livestock development increases remarkably. The major restraints against livestock development are the shortages of fodder and laborers, in addition to financial resources. When the cost of livestock development increases about 20%, it seems that the livestock development suffers from too high a cost pressure if the analysis is made only on the basis of cost. In fact, since confined livestock development can absorb old and weak laborers who are not likely to serves as normal laborers, the actual labor cost is much lower than the official calculation of the labor cost for livestock development.

Therefore, confined livestock development is profitable for some of the rural households. In the investigations, it was observed that some farmers achieved good profit through technical improvement and production scale expansion. For the farmers of livestock development + farming with the former as the main, they have to change or adjust their production structure. In order to protect livestock development and encourage farmers in livestock development, the relevant authorities should consider two things: (i) the problem of fodder shortage should be solved by constructing fodder production bases; and (ii) farmers should be encouraged in intensified management of livestock development from the viewpoint of economies of scale. The institutions of scientific research and technical extension should strengthen their efforts on feed research, fodder cultivation/production and livestock management for higher efficiency.

In order to have better livelihood and higher income, farmers expect supports in livestock development, fruit production and animal husbandry management. For the communities and households that shift from grazing to confined livestock development, the following points should be considered in the project vegetation building:

(1) developing fodder resources;
(2) clarifying gazing area with specified carrying capacity;
(3) clarifying lands of fodder grass production;
(4) encouraging the shift from grazing and semi-grazing to confined livestock development;
(5) the implementation of the above 4 measures requires close cooperation between county forestry bureau and animal husbandry sector;
(6) in the project implementation, the impacted households should be given priority in benefit arrangements such as employment opportunities so as to help them with higher income;
(7) in fruit production, the impacted households should be given priority in benefit arrangements. For instance, the contract fee can be exempted in the first 3 years after tree planting;
(8) farmers are encouraged to raise small animals and poultry in forests for additional income;
(9) under the same conditions, the impacted households should be given priority in forest guard recruitment.

The post-management measures for the project forest vegetation include sustainable grazing. This is to change from the previous uncontrolled grazing to confined grazing. The activities of technical training and extension should include livestock management both within and around the vegetation building area of the project.

Technical extension and service in livestock development should be strengthened so as to consolidate the achievements of free-grazing ban with the financial gains from economic development. At the places with better livestock development, technical extension should focus on livestock raising in warm stables, technology of sheep fast growth, processing and ammonization technology for Caragana feed and veterinary service. With these measures, the efficiency of livestock development will be upgraded, and there will be shifts from grazing to confined livestock development and from intensified management to primitive extensive management. In addition, leading enterprises of fodder production and livestock development should be given favorable policy and financial supports for scaled production.

9.2.2. Grass growing and alternative livelihood

In order to control land degradation and rehabilitate local vegetation, the project has arranged some activities of sandland closure for vegetation rehabilitation (SCVR). Within the SCVR scope, lots of collective lands have been divided and put under individual household management. If this kind of lands is used in the project construction, the impacted households will get compensation. The project has arranged 13,000 mu (866.7 ha) of grass growing in Lingwu (2,000 mu), Yanchi (5,000 mu) and Litong (6,000 mu). In order to mitigate the impacts of land use on the income of the impacted-people, conservation of 50 RMB/mu will be made for SCVR so as to timely solve problems of alternative livelihood in the project implementation.

9.3. Proposals

9.3.1. Seedling Procurement and Production

The representatives of the project farmers will be included into the seedling procurement tendering teams and seedling quality check & acceptance teams. The project farmers will be at the decisive position of the use of the seedling procurement fund. With the technical service of the forestry institutions, village collectives and farmer groups will be encouraged to produce seedlings of the designated quality for the project. Forestry institutions will supervise the tendering process of seedling procurement for cost efficiency.

9.3.2. Participatory Approaches in Planning and Design

The project farmers and forest workers will be mobilized active in the construction and management of the protective forests and economic forests as well as the vegetation rehabilitation in the project area. The local people will be mobilized to participate in the project planning and design (including the selection of species and sites), and their proposals and willingness will be seriously considered, since the project success will be built on the combination of the knowledge of technicians and the willingness, interest and experiences of the local people.

9.3.3. Post-planting Management

Village regulations on protecting and managing the project forests and vegetation will be formulated and approved at village general meetings at the technical assistance of forestry institutions. By means of contract, the interest of forest guards will be linked with the quality of protection and management. The ownership of the forests with economic return will be clarified and their management will be contracted to specified households in favor of sustainability.

9.4. Actions

On the comprehensive analysis of the project social factors, the SA group has proposed an action plan (Table 8-1) to minimize the project negative impacts and make sure of the fair share of the project benefits among the stakeholders.

Table 9-1. Social Risks and Proposed Countermeasures in Some of the Project Activities

Contents	Social Problems of Special Concern	Proposals
1. Lingwu		
Ecological Protective Forest	Difficulties in post-management, low survival rate and wasting resources	Arranging forest protection sub-stations, well-prepared afforestation land, water-saving irrigation
Desertification Control	Night grazing, illegal grazing; illegal collection/digging herbal medicines such as licorice only to damage grassland and farmland	Strengthening information publicity for ecological protection, increasing fodder processing and storage facilities
Ecological Economic Forest	No special social risk except the general risks as described in the Social Assessment Report	None
2. Pingluo		
Ecological Protective Forest	Difficulties in post-management, low survival rate and wasting resources	Arranging forest protection sub-stations, well-prepared afforestation land, water-saving irrigation
Desertification Control	No special social risk except the general risks as described in the Social Assessment Report	None
Ecological Economic Forest	No special social risk except the general risks as described in the Social Assessment Report	None
3. Yanchi		
Ecological Protective Forest	Difficulties in post-management, low survival rate and wasting resources	Arranging forest protection sub-stations, well-prepared afforestation land, water-saving irrigation
Desertification Control	Night grazing, illegal grazing; illegal collection/digging herbal medicines such as licorice only to damage grassland and farmland	Strengthening information publicity for ecological protection, increasing fodder processing and storage facilities
Ecological Economic Forest	No special social risk except the general risks as described in the Social Assessment Report	None
4. Litong		
Ecological Protective Forest	Difficulties in post-management, low survival rate and wasting resources	Arranging forest protection sub-stations, well-prepared afforestation land, water-saving irrigation
Desertification Control	Night grazing, illegal grazing; illegal collection/digging herbal medicines such as licorice only to damage grassland and farmland	Strengthening information publicity for ecological protection, increasing fodder processing and storage facilities
Ecological Economic Forest	No special social risk except the general risks as described in the Social Assessment Report	None
5. Xingqing		
Ecological Protective Forest	Difficulties in post-management, low survival rate and wasting resources	Arranging forest protection sub-stations, well-prepared afforestation land, water-saving

Contents	Social Problems of Special Concern	Proposals
		irrigation
Desertification Control	No special social risk except the general risks as described in the Social Assessment Report	None
Ecological Economic Forest	No special social risk except the general risks as described in the Social Assessment Report	None
6. Qingtongxia		
Ecological Protective Forest	Difficulties in post-management, low survival rate and wasting resources	Arranging forest protection sub-stations, well-prepared afforestation land, water-saving irrigation
Ecological Economic Forest	No special social risk except the general risks as described in the Social Assessment Report	None
7. Zhongwei		
Ecological Protective Forest	No special social risk except the general risks as described in the Social Assessment Report	None
Desertification Control	No special social risk except the general risks as described in the Social Assessment Report	None

Annex 1. Events of Desertification Control and Forestry Development in Ningxia

Years	Activities of Desertification Control and Forestry	Contents
1949-1977	Establish a batch of national forestry farms, in different kinds of desertification areas to carry out enclosure protection and afforestation.	Into the sixties, Ningxia governments at all levels had established a large number of township and village forestry farms local people involved in the management, desertification and sandy areas in the form of green dotted with spots, formed a sand-fixing shelterbelts.
1978-1994	The state had launched the “Three North” protection system and other key ecological projects to make desertification control in Ningxia into a scale and new stage of stable development.	Carried out large-scale desertification control in Maowusu sandy land, soil erosion prevention in mountainous areas in southern part, and in northern part comprehensive saline land control. Also had invested more than 3 billion Yuan to implement Guhai, Zhongwei Nanshantanzi, and Yanhuanding irrigation projects for the poor people, set up a new oasis of 200,000 ha, 20 million people move to the irrigated oasis from desert area, reducing population pressure in arid area.
1995-to this day	Since the mid-90s, especially the "Tenth Five Years” period, Ningxia further expand the scale of control, increasing the intensity of the comprehensive management of agriculture, forestry, animal husbandry	In the southern mountain area, the implementation of mountains, water, land, forest, road small watershed management, erosion control; in the central sandy area, to carry out comprehensive management of desertification and create a desert oasis; in the northern irrigated areas, vigorously pursued agricultural development and farmland infrastructure and low-yielding farmland reform, to prevent soil salinization
2000	Implementation of land conversion	In accordance with the general population, in Ningxia land conversion the per capita area of 0.78 mu, returning farmland to forest in 25 provinces and autonomous regions have per capita area of 0.15 mu it is 5.2 times the per capita area is ranked first in China.
2003	Grazing ban in whole region	From May 1, 2003 after following Hebei and Shanxi, Ningxia became the third province in China to implement grazing ban throughout the whole region, a deep "Prairie revolution." In the agricultural and pastoral areas.

Years	Activities of Desertification Control and Forestry	Contents
2004	Autonomous Region People's Government promulgated the "Ningxia Hui Autonomous Region Party Committee, People's Government on the Views to Further Accelerate the Development of Forestry"	By 2010, the forest (with forest land, shrub land and plant trees all around, the same hereafter) area reached to 1,4000,000 mu, forest green rate of 18%, initially improved ecological conditions, forestry industrial structure has been optimized; to 2020, the forest area will reach to 19,400,000 mu, forest green rate of 25%, a remarkable improvement in eco-forestry industry ; to 2050, the forest area will reach to more than 23,300,000 mu, forest green rate will remain stably at 30%, forest industry in regional economic development significantly will increase the contribution rate, basically to realize the target of beautiful landscape, ecological civilization in Ningxia.
2007	Autonomous Region People's Government promulgated the "Ningxia Hui Autonomous Region People's Government on Further Strengthening the Views of Desertification Control"	To 2010, we strive to control the region an area of 333,600 hectares of desertification, in which: 216,900 ha of artificial forests and pastures, enclosed 100,000 hectares, aerial seeding 16,700 ha. Ecological situation in the mainly controlled area will evidently improved; to 2020, the whole region can control more than 60% of the decertified land, the ecological situation in desertified area will be significantly improved; to the middle of this century, the whole region can basically control the desertification. effectively.
August, 2008	Officially launched the implementation of six projects each with million mu of Forestry Ecological Engineering	Ningxia will use 5 years (2008 ~ 2012) in five ecological areas, from north to south in turn build four ecological barrier, building 6 ecological protection system projects each with a million mu, to complete afforestation 6,132,000 mu,to make the region forest coverage to 17.44%. Forestry industry through the implementation of the project, to achieve by 2012 the region's forestry output value 7 billion.
April, 2009	The master plan of comprehensive prevention and desertification control in Ningxia national demonstration area approved	According to the plan, 2008 to 2020, Ningxia has totally invested in 11.3 billion in the 16 counties (cities, districts) taken for different types of desertified land protection, management, development of comprehensive measures, in accordance with the sand prevention, sand control, and making use of sand the technical route to complete the 7,690,000 mu of desertified land in the comprehensive management to provide a national demonstration in comprehensive desertification control.
April, 2009	China's largest international forestry aid projects launched in Ningxia	The country's largest forestry project by international aid "Sino-German Desertification Control Programme in North China, Ningxia Project" was officially launched on April 8. This is the German government aid China's first grants and loans will be bundled with the afforestation projects, is currently the largest international forestry assistance project.

Years	Activities of Desertification Control and Forestry	Contents
June, 2009	Construction of the first college of desertification prevention and control	The construction of "Ningxia Desertification Control Vocational and technical College" was launched, the college covers an area of 5,000 mu, building area of 410,000 square meters, first phase construction of 163,000 square meters, is the only one in the world specializing in training desertification control professionals.
September, 2009	Autonomous Region People's Government issued " Pilot View " on the Reform of Collective Forest Right System "	In Pengyang, Yanchi, Yongning County carried out the pilot reform of collective forest right system, the other counties (cities, districts) selected 1 ~ 3 townships as experimental units, after experience has been gained, will extend gradually.

Annex 2. List of International Cooperation Projects in Ningxia

Years	Activity	Content
1982-1986	Xiji shelter belt project	Planting trees 52,800 ha, grass 51,300 ha , investment 10 million U.S. dollars, equivalent to 81.26 million Yuan;
1989-1992	Yanchi Gaoshawo Forestry Farm	China-Japan Project of Vegetation Rehabilitation at Desertified Areas, budget Jen 19 million (or RMB 1.6 million
1993-1995	Lingwu Baijitan Forestry Farm	Desertification areas for experimental study of agro-forestry projects, investment 24 million yen, equivalent to 2.09 million Yuan;
1991-2001	Research for forest conservation project in Ningxia	Spend 0.56 billion yen, equivalent to 25 million Yuan;
1998 -2006	Lingwu Baijitan Forestry Farm	For Ningxia – Daogen friendly forest projects, investment 18 million yen, equivalent to 1.08 million Yuan;
1996-2002	Qingtongxia and other 8 counties, cities, farms	Sino-German financial cooperation for the eastern foot of Helan Mountain in Ningxia ecological forestry engineering, investment 12 million marks, equivalent to 67 million Yuan;
2002-2003	Helan County Sishilidian Township Jinshan Village	Sino-German technical cooperation for demonstration of desertification control project in Ningxia, investments $ 50,000, equivalent to 420,000 Yuan;
2002-2004	Yanchi, Lingwu, Taoluo	Shelter belt in the middle of Yellow River project, and successfully completed the tasks. Desertification control for 4,200 ha, invested 1.47 billion yen, equivalent to 98 million Yuan;
2002-2004	Lingwu Baijitan Nature Reserve	Universal education for young people and Ningxia Afforestation Project invested 24,900,000 yen, equivalent to 150,000,000 Yuan;
2004-2006	Lingwu Baijitan Nature Reserve	Universal education for young people and Ningxia Afforestation Project Phase II, investment 30 million yen, equivalent to 1.8 million Yuan;
2003-2005	Pingluo County	For the Sino-Korea cooperation Ningxia Pingluo Yellow River Beach land Soil and Water Conservation Demonstration Project, investment 1 million U.S. dollars, equivalent to 8.3 million Yuan;
2006-2008	Lingwu Baijitan Nature Reserve	Project of Desertification Survey, USD 70,000 or RMB 500,000
2006-2013	Central arid area include Yanchi and other 4 counties and cities	Sino-German financial cooperation for the desertification control in north China Ningxia project for area of 72,200 ha, 9.5 million Euros investment, equivalent to 95 million Yuan;
2008-2010	Lingwu Baijitan Nature Reserve	At cutting-edge of Maowusu Sandland in Lingwu for desertification control and tree planting, invested 30 million yen, equivalent to 1.8 million Yuan.

Years	Activity	Content
The project areas by foreign aid in the Ningxia reach to 175 mu of ecological protection, 21 million mu of artificial afforestation has been completed, and 45 million mu of enclosure, the total funds invested are up to 392.9 million Yuan.		

Annex 3. Social Assessment Questionnaire for Ningxia Desertification Control and Ecological Protection Project

Survey Location:_____ city _____county / district / city_____ township____ village___ group
Investigator: _____
Investigation time: 2010 ____month _____ date
Responder's Name: _____ Name of head of household registration_____
Contact Tel:

1. The basic situation of the family:

1.1 The basic personal situation:

(1), The sex of responder: (1) Male (2) Female

(2), Your age:_____ years old.

(3), Your nation: (1) Han (2) Muslim (3) Mongolia (4), Tibetan (5) Other_____

(4), Your faith: (1) Buddhism (2) Islam (3) Christianity (4) local religious (5) Other____ (6) no religious belief

(5), Your marital status: (1) Married (2) unmarried

(6), Your level of education: (1) Primary and below (2) Junior (3) High school (4) Secondary (5) College (6) Undergraduate

1.2 The basic conditions of life:

(1), What do you think your family's standard of living in the village: (i) Low (ii) Medium (iii) Above average.

(2), Are you satisfied with your economic situation t? (i) Very satisfied (ii) Satisfied (iii) General (iv) Not satisfied (v) Very dissatisfied

(3), The population of people at home all year round____, any work outside the home____? and people go to school_____?

(4), Your family in 2009, the annual total income is about_____ RMB, your family in turn the main source of income (from more to less, please order only):

(i) Farming income (ii) Breeding income (iii) Crafts (iv) Small workshop (v) Business (vi) Temporary wage income (vii) Permanent wage income (viii) Other (such as gathering, hunting, grazing)

(5), What is your family daily cost _____Yuan?: ① Production: Farm machinery _____(Yuan) Seeds, Fertilizers and Pesticides input (____ Yuan), Labor expenses

(_____Yuan) Water (_____Yuan) Electricity (_____Yuan) , Gasoline and Diesel

(_____Yuan). ② Living expenses: Clothing (_____Yuan), Food (_____Yuan), Transport

(_____Yuan) Human, Weddings and Funerals expenses (_____Yuan), Education

(_____Yuan), Medical (_____Yuan).

(6), In which year is your house built? _____ Years _____ _ square meters of housing space,

how far to the nearest barren hills and wasteland, how far to the nearest paved road, and how

far to the nearest farmers market.

(7),In your family any serious sick-person in recent years? (1)Yes (2) No, suffer from_____

1.3 The basic situation of production:

(1)、The Structure of Breeding Planting and Land Use in 2009

Item	Crops		Economic forest			Economic plant			Breeding		
Crops	mu	jin/mu	species	mu	Jin/mu	species	mu	Jin/mu	species	How many	weight
Wheat			Apple			Greenhouse			Cattle		
Rice			Pear			Sesame			Sheep		
Corn			Date			Melon			Pig		
Bean			Wolfberry			Other			Chicken		
Other			Apricot						Fish	Mu,	
Potato			Other						Other	production	
Barren mountain Wasteland	mu										

(2), Do you have the following certificates ?

(i) Land use certificate (ii) Forest land use certificates (iii) Grassland use certificates (iv) Other use of certificate:

(3), Have you ever borrowed money from the bank? (i) Yea (ii) No

If the answer is yes , What did you do with the loan ? (Ranking)

(i) Buy seed, fertilizer and pesticides (ii) To build a house (iii) To see doctor (iv) School tuition (v) Other

2. What is your opinion to the similar project you involved before, and the project this time?

,

(1), Have you heard "World Bank loans Ningxia desertification control and ecological protection demonstration projects?"

(i) Yes (ii) No (Does not know. Skip to question 6)

(2), If you know, what is the sources?

(i) Radio and Television or Newspapers (ii) The notice (iii) Relatives and friends (iv) Other

(3), What do you know about this project?

(i) The project implementation time (ii) The project implementation site (iii) Afforestation plan

(iv) Desertification control plan ,(v) The relevant matters during the construction period (vi)

Do not know clearly, (vii) Completely unknown (viii) Other (please specify)

(4), What information about the project do you want to know?

(i) The project implementation time (ii) The project implementation site (iii) Afforestation plan

(iv) The desertification control plan (v) The relevant matters during the construction period

(5), Do you think this project will bring the opportunity of development to your family or community ?

(i) Yes (ii) No (iii) Not sure (iv) Do not know.

(6), Do you think there will be negative impact from the desertification control?

(i) Yes (ii) No (iii) Not sure (iv) Do not know

(7), Do you think the afforestation and desertification control will impact your life?

(i) Yes (ii) No (iii) Not sure (iv) Do not know

(8), Are you willing to participate in afforestation and desertification control projects construction?

(i) Yes (ii) No (iii) Do not know (No answer)

Lf you want, how would you like to participate?

(i) Services supply (ii) Provide barren hills and wasteland (iii) Do business in the vicinity of the project area (iv) Contracting construction with the projects (v) Other (please specify)

(9), The land requisition of the project:

a. If the project requires the requisition of your land, would you like?

(i) Yes (ii) No (iii) Does not answer

b. If forestry projects need to occupy your farm land or forest land, what form of compensation do you want?.

(i) Only funds (ii), Exchange only (iii) Only arrangement of work (iv) Integrated Compensation.

c. Monetary compensation, in which way do you want ?

(i) One-time payment (ii) Amortization (iii) Do not care

(10), The resettlement caused by the construction of the project:

a. If the project requires you to move, would you like?

(i) Yes (ii) No (iii) Does not answer

b. If you are willing to resettle, what would you like to get for compensation?

(i) Funds (ii) To arrange the house (iii) Arrangement of work (iv) Other (please specify)

c. If you want to move, where are you willing to move?

(i) The vicinity of origin (ii) Town (iii) Other

e. If you want to arrange your child a work, who would you like to arrange son or daughter?

(i) Son (ii) Daughter (iii) Either

f. What impact would the resettlement cause on your family?

(i) No Impact (ii) Reduce the correspondence between the relatives and friends (iii) In the new living environment vulnerable to discrimination (4) Other

(11), Has your family been ever involved in activity of forestry project ?

(i) Yes (ii) No (iii) Did not like to participate

If you participated in the project, what is the name of the project?_____ what kind of activity did you involve?_____

(12), Who organized the project you participated?_____. Which department organized the project? .

(13), Are you active or passive to participate in the project?_____

(14), Do you think the follow-up management and protection of forestry projects is important? (i) Yes (ii) No (Why)_____

(15), Have you ever filled out similar questionnaires of forestry project?

(i) Yes (ii) No (iii) Saw someone else filling over.

3, The participation of women:

(1), Would you like to participate in this project?

(i) Yes (ii) No (reason)_____

(2), If you want to participate, in which way are you willing to participate in this project?

(i) Temporary labor (ii) To have a contract (3) Other_____

(3), What is your opinion about the project you participated in before ?

(i) Very good (ii) ok (iii) It does not work (reason)_____

(4), What is your opinion about the planting structure of your family?

(i) Maintain the previous condition (ii) Want a big change (how to change_____

4. The use of energy

(1), What do you use for cooking?_____heating?_____.

(i) Coal (ii) wood (iii) Wheat straw (iv) electricity (v) Biogas (vi) Solar cooker (vii) Other

(2) Drinking water?

(i) Tap water (ii) Dependent on the weather (cellar) (iii) Self-drilling well
l

(3), Production, or irrigation water?

(i) Canal water (2) Dependent on the weather (rainfall) (3) Self-drilling well

5. The positive and negative impacts caused by the past forestry project.

(1), What direct benefit did the previous desertification control projects bring to you? (Multiple

choice and ranking)

(i) Short-term income for labor;

(ii) Can get fruit sales revenue (share the profit of selling);

(iii) Can take care of home and farm work;

(iv) Can plant trees on their own barren hills;

(v) Can learn forestry technology;

(vi) Can attract farmers who work outside back home to participate in afforestation activities;

(vii) Project created the large number of job opportunities to related industries;

(viii) Can improve the local ecological environment and improve quality of life.

(ix) Other_____

(2)What are the negative impacts caused by the past desertification control projects?

(i) Reduced the income of breeding (ii)Inconvenient to go out (iii)Reduced production of crop by land requisition (iv) Increased employment outside the village (v) Forced to move (vi) change of living manner (vii)Other_____

(3)、What else impacts caused by the projects?_____

6、Selection of tree species and technique

(1)、Aspiration of tree species for ecological shelter belt? (fill tree species)

(i) Tree_____

(ii) Shrub_____

(2)、Aspiration of ecological-economic forest? (multiple choice and ranking)_____

(i) Wolfberry (ii) Caragana (iii) Licorice (iv) Grape (v) Apple (vi) Dates (vii) Sea buckthorn

(Viii) Sphaerocephala (ix) Sophora (x) Other:_____

3, Do you need technical training and guidance for planting trees?

(1) Yes (2) No (why)

If you need training and guidance, who do you think is better?

(1) Forest Technician (2) Forestry Station (3) Other_____

Annex 4. Interview Outline with Village heads

1. The basic situation of project villages:

(1),The population (number, gender, ethnicity, religion, occupation, agriculture and proportion of non-agricultural population)

(2), The situation of village's natural resources (land, forests, minerals, forests, etc.) and their utilization

, (3) The village's income, the main source and the proportion, the rank in the township

(4), The composition of village livelihood model (agriculture, non agricultural, animal husbandry) and their development.

(5), The level of economic development in the village: the village per capita income? Poverty? Ranking of economic development? Collective economic development?

(6), How was the village women's participation in forestry projects? Were they active and how many of them participated in the project?

(7), The history of development and planning of the village.

(8), What is the village's current situation and problem in infrastructure?

、

(9), The village's environmental situation? The impact on the villagers' life?

(10), Except the village committee, are there any other organizations in the village ? What are they? What are their composition and operation? (Example: cooperation, etc.)

(11), The village's experience of implementing similar projects (including land use arrangements and adjustments)

(12), The village's land-use changes in the structure and methods (such as contract conditions and the way of compensation, standards)

(13), The situation of land conversion and participation in desertification control in the village?

the impact on village's income?

2., The situation of local minorities

(1), The village's minority species, population, proportion, place of residence

(2), The ethnic customs and habits of environmental protection

(3), The economic development of ethnic minority

(4), The situation of ethnic minorities' belief

(5), Production and consumption situation of ethnic minorities

6, The situation of Government's assistance to the minorities

(7), The situation of intercourse between the nations

(8), The situation of land conversion and participation in desertification control to the minority households? the impact on their life?

3., The non-voluntary resettlement

(1), The situation of the resettled villagers? The reason of their resettlement

2, For participating in returning farmland to forest and grassland, desertification control project implementation and they moved out? Why?

4, What is your opinion about the implementation of forestry projects in the village?

(1), Forestry projects implemented before in the village? What kinds of project activities are you responsible for? What are the difficulties you encountered in the implementation?

(2), What are the benefits by the implementation of these projects? What is the negative impact? And how to solve?

(3), What are the benefits brought by these projects? How many households participated in the project? What kinds of households got more benefits? Any households they resisted the project? Why?

(4), How did the villagers to cooperate with the government departments to complete these forestry projects?

(5), What are the difficulties in cooperating the government to implement forestry projects?

(6), Do you think there are any negative impacts on the original environment of the village by the implementation of forestry projects? What are they?

(7), In which year, did the earliest forestry project implement? Did the project improve the ecological environment? What is the impact on collective economy and villagers' income?

(8), Please provide some recommendations and opinions to the future economic development of the village.

4. Mapping (best to find the village (topography map, investigators may also be hand-drawn):

(1), Community map

(2), Resource distribution map (specified major highways, hospitals, schools, markets, bridges, historic sites, drinking water, irrigation facilities, and any possible critical facilities affected by the project)

(Note: The interview outline is also suitable for another group's interviews with township-level officials, the subject of the interview can be changed according to the circumstances, the purpose of the interview is to understand the social-economic and cultural situation in the project area, and the opinion of township staff for this project and former projects.)

Annex 5. Interview Outline with Forest Farm Workers

1, General situation of the forestry farm (the number of employees, age, education, professional structure, etc.)!

2、The benefits situation of the forestry farm workers.

3, The difficulties in the development of forestry farm? Forest rangers set point, staffing and situation of management.

4, What kind of forestry and desertification control projects did the forestry farm participate? In what form did the forestry farm participate? What is the result?

5, What is the forestry farm's (head) opinion about the project impact? (Positive and negative)

6, Your (the employee's) opinion about the project?

7、Your suggestion(the employee)for the better development of the project?

(Record the names of participating employees, sex, age, residence, and way to contact)

Annex 6. Interview Outline with Staff for Desertification Control, Forest Products and Pharmacy

1, The general situation of enterprise's development (employee number, age, education, professional level, etc.)!

2, The material benefit of the employees

3, The difficulties in the development of the enterprise? Forest rangers set point, staffing and situation of management.

4, What kind of forestry and desertification control projects did the enterprise participate? In what form did the enterprise participate? What is the result?

5, What is enterprise's (leadership) opinion about the impact by the project? (Positive and negative)

6, Your (the employee) opinion about the project?

7, Your (workers') suggestion for the better development of the project?

(Record the names of participating employees, sex, age, residence, and way to contact)

Annex 7. Interview Outline with Villagers

1, What is the impact caused by the former forestry projects ?

Positive:

Negative:

2, What kinds of problems happened in the former forestry projects? (Ranking, according to the importance of the problems).

3, What kind of people got more benefits from the project?

4, What is your suggestion about the forestry project?

5, Whether there was any charge in the forestry projects you participated before? What do you think about the charge? (Pro or not and how to charge?)

6, What is your urgent problems at in the public service facilities (such as transportation, irrigation, medical care, children education, etc.), housing arrangements f? Possible solutions? What do you need the government to do?

7, What are the impacts on the village's income, employment and working outside the village by returning farmland to forests and grasslands and the implementation of desertification

control projects?

9, The experience of land requisition for forestry projects before in the village (including land use arrangements and adjustments)?

10, The situation of the female villagers' participation in the former forestry projects? (Such as motivation and quantity, etc.)

11, Do you want your children to participate in this forestry project? Why?

(Record the names of the participating villagers, sex, age, residence, contact information)

Annex 8. Outline for Household Interview

The interview questions:

1, Compare your village's economic development and ecological environment to other neighboring villages, Is there a gap? If there is a gap, the reason?

2, Do you think that desertification control will improve villagers' incomes and the ecological environment? Why? What are the impacts of these forestry projects?

4, What other opinions do you have about the returning farmland to forest and grassland, and desertification control? If your answer is objection, please tell us the reason.

5, Do you think what are the reasonable measures of compensation in the land requisition and resettlement?

6, Do you think who have got the most benefit from the former forestry projects?

7, The impacts of desertification control project on the village culture, historical heritage and religion, tourist attractions? (Be specific)

8, The impacts of desertification control project construction on the production and life of women? What are their requirements and suggestions for these projects?

9, The impacts of desertification control project construction on the manner of production and life, and your national custom? What is your suggestion?(this question for minority only.)

10, What is the situation of the implementation of desertification control in the village and villagers' participation? And what is the impact on the village's income, employment and work outside the home ?

11, What did the government do in the former forestry projects? Are you satisfied with their work? What should the government improve? (Please answer)

Table：

1、Making tables of daily life and seasonal activity for different sexuality

Table 1：Table of Daily Life and Seasonal Activity for Women

Daily housework in winter																			
Time (.00)	5.00	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Daily housework in summery																			

2、Making tables of daily trip and daily intercourse.

Table 1：The Village Farming Calendar and Division of Labor for Different Sexuality

Month	Farming activity	Division of labor	Month	Farming activity	Division of labor
Jan			jul		
Feb			Aug		
Mar			Sep		
Apr			Oct		
May			Nov		
Jun			Dec		

Table 2：Analysis of Division of Labor in the Village(get more“√”，for more work)

Activity	Dry land production	Paddy field production	Breeding	Market	Housework	Tree planting			
Male									
Female									