Technical Assistance Consultant's Report

Project Number: 49028
October 2017

People's Republic of China: Hebei Elderly Care Development Project
(Financed by the Technical Assistance Special Fund)

FINAL REPORT
(Volume 3 of 3, Part 3)

Prepared by NAREE International Limited

For Hebei Provincial Government

Asian Development Bank

Hebei Elderly Care Development Project

Final Report

Volume Three

Document 3-F

Report and Guidance on the Application of ICT

Asian Development Bank

TA No. 8996-PRC
Hebei Elderly Care Development Project

ICT Summary Report

October 2016

1. Existing information system

In September 2010, “e-Touch” service for home-based elderly care with the core as service hotline of “12349” community commenced. On the strength of this intelligent calling system, the project provides daily care, household services, health care, spiritual consolation, and other government purchasing services for over 2,500 qualified low-security, exceptionally poor and entitled groups. On this basis, the project attempts to provide paid or low-cost services for empty-nest, solitary and incapacitated groups of more than 80 years old. At present, Baoding and Shijiazhuang have put “12349” information service platform into full use, covering one million population and providing home delivery services of daily necessities and medical assistance services. Provincial Department of Civil Affairs is currently upgrading and rebuilding the system at the pilot area, Shijiazhuang City and designing the software. However, the project has not been finalized.

The existing management information system of endowment insurance for urban and rural residents of Hebei Human Resources and Social Security Department is only for internal use, and its application and data cannot be disclosed to the public for the moment.

Hebei Provincial Department of Civil Affairs plans to build elderly care information system at the end of 2015. It has completed the analysis of the requirements for elderly services and corresponding invitation for bids and is focusing on software design. In January 2016, Commerce Department commissioned Qinhuangdao Guangcai Science and Technology Development Co., Ltd. to construct Statistical Evaluation System of Old-age Care Service Enterprises in Hebei Province; in addition, it plans to establish a health and elderly care service network covering urban and rural areas supported by intelligent call and rescue service platform and based on the construction of the data of the elderly to provide emergency rescue, means of subsistence and other basic services. In June 2016, Hebei Development and Reform Commission confirmed and approved the construction of Demonstration Project of Application of Internet of Things for Intelligent Elderly Care in Special Care Hospitals in Hebei Province. The aforesaid projects are still at planning stage and require time for completion.

From the findings of relevant departments, the followings are concluded: Civil Affairs Department has completed the collection of data about the elderly in the province, put them in a file and activated the cards and mastered the information about demand for old-age provision. The Vocational Training Certificate of the Nursing Members uniformly issued by the Training Center of Civil Affairs Department serves as a useful tool to comprehend the information about nursing members. Civil Affairs has mastered the information about the institutions in question within the jurisdiction. Business Department is responsible for the statistical evaluation and management of elderly care service enterprises and the mastery of information about the enterprises in question. Health and Family Planning Department shall govern medical information and grasp the information about diagnosis and treatment. Health and Family Planning Commission and Human Resources and Social Security Department are responsible for the management of endowment insurance information of new rural cooperative medical system, urban residents and urban employees. In light of management authority and responsibility, the data in existing information-based system of the departments are exploited only for internal purposes but not shared among departments.

The project considers elderly care enterprises as the main body of construction, management, application, and operation, and the willingness of governmental departments to cooperate in data

sharing is at low level. Therefore, it is hard to acquire the aforesaid data resource for the time moment.

2. Investigation of the elderly care system provided by social enterprises

Some social enterprises are optimistic about the prospects for the development of the elderly care service market and have paid great efforts and dedications in intelligent elderly care information system. The competitive products mainly include:

Attendance-and-Care Intelligent Elderly care System developed by Hangzhou Aixun Science and Technology Ltd. has provided various software and hardware products relevant to intelligent elderly care for nursing institutions and service companies. The product supports various commercial activities, such as home care, community care, institutional care, combination of Medicare and support, expatriate care and so on. The product mainly includes intelligent elderly care cloud management system, institutional elderly care management system, home elderly care management system, community elderly care management system, hospital HIS management system, APP for families, APP for management personnel, elderly care platform, one-card management system, indoor positioning system, health management system, health big data platform and so on.

Hebei Xuanbo Software Technology Co., Ltd. offers the standalone version, network version, group version and intelligent version, applicable to small, medium and large elderly-care institutions.

Intelligent elderly care cloud platform developed by Beijing Sankai Technology Co., Ltd. has created a platform based on SAAS mode taking advantage of cloud computing, networking and big data, taken into account intelligent hardware, health big data services, e-commerce and other industry chains, provided all-around services for elderly care institutions, such as home care institution, community care institutions, real estate elderly care organizations and nursing homes and achieved the pattern of " Internet plus Elderly Care"(allowing free trial).

Langfang AVIC Star Compass Electronic Technology Co., Ltd. is responsible for the construction of the home care project named as Happiness Project in Langfang, Hebei. The project is the first to provide home care services for the elderly with Beidou Navigation System in the whole nation. Happiness project platform based on elderly database, call center and emergency call terminals builds three service modes including emergency rescue, living assistance and active caring. From the perspective of its realized functions, it is an upgraded version of one-key call system.

With such relevant technologies as cloud computing, the Internet of the things and mobile Internet and such intelligent terminals as smart watches, health inspection equipment and Internet health management AIO machine, the personal cloud service platform for health management developed by Shanghai Engoo Science and Technology Co., Ltd. has created governmental intelligent elderly care cloud service platform with the realized functions similar to Happiness Project.

At present, many local governments have also been exploring the pilot work of "Internet plus Elderly Care" and focus on home care. In terms of information construction, the remote monitoring and management is achieved through the establishment of community service centers, the induction of information network constructed with information technology, storage of basic elderly information, equipment with online elderly service interactive system and the installation of smart home care equipment, remote health care equipment, SOS call system of Falling, Alarming and Positioning at the home of the elderly.

However, on the whole, elderly care information management and service platform is still at initial stage, and the designs of present information system mostly focus on home care, intelligent devices, the real-time tracking of the physical conditions of the elderly and formation of data statistics. Nevertheless, the platforms that effectively integrates the parties in the elderly care system and satisfies diverse, multi-level and multi-type demands of the elderly including medical care, rehabilitation, nursing, health care, shopping, dining, travelling, entertainment and contribution are few.

3. ICT System Design

ICT system under the project herein refers to information service and management system. ICT system is a comprehensive information system that caters to the requirements for elderly care services, integrates smart home devices, remote monitoring or artificial monitoring, network transmission system, data storage system, business support software, application software, assistant decision-making application software, and other information technologies, focuses on such major links in elderly care services as medical care, nursing care, rehabilitation, health care, entertainment, fitness, sports, life services, consultation and others, adopts the methods of data mining and big data analysis based on the Internet, and integrates such application functions as elderly care services, auxiliary medical service, rehabilitation and health care, day care, remote consulting service, life services, care and early warning service, decision support service, etc.

Through the application of ICT system, regardless of the old-provision modes (old-age care institution, day care center, and home-based nursing), real-time medical and nursing information, rehabilitation and health care information, dynamic monitoring information, and daily activities relating to the elderly can be recorded in the system which on the strength of big data analysis and other technologies, can trigger instant warning or alarm messages in the discovery of any fluctuation in elderly health data and locate the corresponding position and provide immediate services to improve rescuing efficiency, conducive to provide the elderly with comprehensive and proactive services.

Through the information services and sharing in ICT system, comprehensive and thoughtful service for the elderly can be provided. The platform can deliver the medical and daily needs of the aged to corresponding institutions, and then medical institutions and community service agencies can provide on-site service according to the needs of the elderly on schedule; the public service and management platform facilitates the connection of families and other public organizations with the elderly care system, and families can get in touch with the aged at any time or keep a watchful eye on the condition of the elderly; elderly care enterprises, day care centers, and commonweal communities can organize relevant activities which can be publicized through the platform to enrich the spiritual life of the elderly. Through information customization, the aged can acquire information on the platform.

Scientific research, education, or medical institutions can exploit the data and information collected by the platform and apply big data analysis, trend analysis and cluster analysis, and other methods to make in-depth analysis of Geriatrics, rehabilitation medicine, nursing, elderly psychology, aging policies and other aspects and provide support for relevant government departments with regard to the planning and decision on elderly care, medical treatment, social security, relief and others.

The previous government-sponsored elderly care institutions mainly offer services for qualified low-income, specially poor, entitled groups with limited service targets and content; other elderly people

mainly depend on the support of their children, and their requirements cannot be satisfied or satisfied immediately during to the workplace far away from home and other particular facts.

The construction of the call center has relieved the dilemma. Call center mainly provides daily care, household services, health care, spiritual consolation, etc. completed by third-party alliance businesses for the elderly. When it comes to service mode, it is a typical single-point passive mode where after the receipt of telephone request, the center will transfer the requirements to third-party alliance businesses that will provide corresponding services. Its service targets and profession are limited. There is no design of actual requirements of the elderly and continuous observation and records about elderly psychology and physical conditions, unable to master instant information about the elderly and provide early warnings and prompts. Therefore, it is hard to satisfy the increasingly diversified service needs.

Through the construction of ICT system, the effective connection between elderly care institutions, social resources, and the elderly can be guaranteed, translating the service mode based on limited amount to one covering all aged people; through the transmittance of activity information, application of intelligent equipment, etc., it is feasible to sustainably and dynamically record physical monitoring, movement tracking, and other information and promptly discover abnormal situation to provide active services, translating single-point passive mode into active sustainable mode; through application of big data analysis and instant discovery of potential problems, early warning and prompts can be instantly provided, translating delayed service to instant service. Therefore, ICT system can cater to the elderly requirements of different ages, elderly care modes, and various services, improve the comprehensive quality of elderly service, enhance the influences of elderly care institutions and services, realizing the goal of elderly care, a true harmony where the elderly can enjoy security, assistance, care, happiness, learning and worthiness.

The completed report on the overall design of ICT system based on elderly care information management and the demand analysis of service targets has analyzed the construction of elderly care information management and service platform, designed system general architecture, identified system function and performance requirements, determined the content of system database, presented the building plan of system hardware and software environment, and illustrated the mode of interaction between the system and other relative systems.

Elderly care information management and service platform consists of hierarchical supporting system and two security systems. In detail, hierarchical supporting system includes information collection and transmission, computer network, hardware facilities, data resources, application support, business applications and application interaction; two security systems refer to information security system and standard and regulation system.

Information collection and transmission layer for the collection and transmission of all kinds of basic monitoring information, including basic monitoring information and emergency rescue information sent by smart elderly care devices; basic monitoring information, nursing records, etc. automatically or manually input in the system.

Computer network layer can provide high-speed and reliable transmission channel for data, images, and other information. Computer network layer recommends the application of the network resources provided by China Telecom, China Unicom and other operators rather than self-construction of

network environment.

Data resource layer, the center for the collection, storage, and management of all data, is one architecture layer between data resource layer and business application, able to store the data in integrated database and metadata base.

Application support layer is an integrated application support framework constructed on the basis of WEB underlying technology of Java EE technical route for convenient deployment, operation, and management of application subsystems and provides environment for the operation of basic software for system application. In addition, the layer provides application services and integration services and consists of various types of commercial support software and development common support software.

Business application layer is a elderly care service and management system completed by professional software development enterprises, mainly including personnel management, medical referral management, rehabilitation management, nursing management, health management, learning and entertainment, life services, consulting services, early care warning, statistical analysis, decision support, information issuance, system settings and other function submodules.

Application interaction layer is the portal for users to access system application layer. Through application interaction layer, it is feasible to improve the efficiency of business personnel, enhance the level of elderly care services, and facilitate the understanding of relevant elderly care policies, measures, and activities by the public. The layer should be completed by professional software development enterprises.

Elderly care service and management system is complex is levels and structure with numerous information collection nodes and abundant data transferring between the systems at different levels. Therefore, during platform design and development, importance should be attached to the compliance with the standards and regulations formulated by national, industrial, and competent authorities to improve system normalization, which is to the benefit of sustainable system expansion, improvement, and upgrade.

Safety guarantee system is the basis to guarantee the secure application of the system which includes physical security, network security, application environment, and others. Establishment and improvement of safety management system is indispensable to safety management. As an important link of safety assurance, standardized safety management can contain or avert various damages.

During the development of business application, JavaEE technical route should be adopted, which can satisfy the requirements of different system development units beyond hardware platform and operating system.

System design and development should follow the concept of modular architecture, adopt B/S architecture, and move forward with the thought pattern, “hierarchical design and module construction". The systems are combined in the form of weak coupling to carry on the component development.

4. System Functions

Elderly care service and management system should include file management, medical services,

nursing services, rehabilitation services, health care services, entertainment services, life services, consulting services, elderly care services, assistant decision-making, system settings and other functions. On the strength of the functional modules, the design objective can be achieved, namely a true harmony where the elderly can enjoy security, assistance, care, happiness, learning, and worthiness.

File management includes two sub-function modules, file establishment of new users and file maintenance of existing users. The targets of file management include management staff, medical staff, the elderly, service providers, other personnel. File content and requirements can be set under main responsibilities and activities of the system in accordance with user objects.

Nursing services include basic care, medical referral and transfer rehabilitation. Basic care services are mainly carried out in elderly care institutions or community care centers for disabled or partially disabled elderly. Nursing services can extend to home-based elderly through regular on-site services in accordance with requirements.

Medical referral module should record the seizure conditions of the elderly, provide the latest records, data, and information about the elderly for doctors, and inform the emergency contact person in question.

Rehabilitation and health care services should record the information about rehabilitation training, including elderly physical monitoring, the content and time of rehabilitation training, training information, etc., and assess the physical conditions of rehabilitative seniors.

Learning and entertainment module mainly includes activity publication, online registration, online payment, results publication, and voluntary application. In order to enrich the life of relatively healthy seniors and reflect elderly learning and happiness, elderly care institutions or communities can organize and arrange diversified learning and recreational activities which can extend the scope to attract old people (different charging policies for seniors inside and outside the system). The elderly can apply for the roles, such as teachers, volunteers, and leaders in accordance with their own strengths to manifest individual value and devote remaining life to make contributions.

Consulting services include emergency assistance, response to call information, online consultation, and forum module. The functions of call center are reflected here.

Life service module includes the receipt of requirements, task assignment, task completion, service evaluation, service management, and other submodules. These functions are the main functions realized by the original call center.

Early care warning is an active service function which can make analysis of the records about elderly activities on the basis of system data, provide the elderly with customized services, active care, early warnings and offer prompts in case of any abnormal change in elderly daily behaviors and activity habits. The information can be promoted to the elderly, families, and corresponding community.

Comprehensive information module can make in-depth data mining and analysis of the information recorded on each function module of the system based on the GIS platform and displays the results of statistical analysis in the form of picture, chart, etc. through big data analysis and other statistical analysis methods. Through comprehensive information module, institutional managers can have a

general knowledge of institutional operation and provide technical support for services provision, activity arrangement, and institutional development; the public can have a better knowledge of the support capacity, service level, and living conditions of elderly care institutions as well as relevant state policies.

Assistant decision-making module designs relative decision-making modules through man-machine conversation, the analysis of recorded business activities, including recovery, health care, nursing, medication, recent activities, shopping, etc. of the wholly incapacitated, partly incapacitated and self-care seniors, decision-maker preferences, and public attitudes, makes calculation and analysis of different scenarios in accordance with the models, provides decision makers with program analysis results, makes comprehensive judgement of diversified programs, and recommends an optimal program, assisting decision makers with the identification of major problems and improving decision efficiency. Through big data analysis, the module can analyze the correlation between the various business activities, abstract corresponding rules, and further suggestions about institutional construction and development for decision makers.

Functions of system setting module are realized by system administrator who can guarantee normal operation of the entire system. The module incudes management of registered users, management of system log, setting of user roles, customization of user businesses, management of basic data, etc.

5. Database

Database system is a unified system of data storage and management, including data management, data storage management and other parts. It can store the data in integrated database and metadata database.

Database server and database management system can be used in data management system to ensure the stability, reliability, and business continuity of the system.

Elderly care information platform involves a large number of daily business records, so it should be allocated with large database storage space, and the initial distribution can be 5~10T. With the increase of data amount, if the hard disk space of the storage device is insufficient, hard disk memorizer can be dynamically added.

Database management system is recommended to be ORACLE system.

6. Data Interface

Data interface design is an important part of system construction. Information transmission between business modules of the system as well as between the system and other external systems should be conducted through data interface. In order to facilitate the expansion of the system, each system module should provide a standard interface for calls of other module; interface should be standardized for the expansion of system function.

With the continuous application of the system, the demands for business services will emerge. During system design, three modes of expansion interface should be provided, including component invocation, business service, and data access to support rolling development and upgrade of the system.

The use of one-card facilitates the consumption and activities of the elderly elderly care system and comprehensive management of the elderly by administrative staff. Through the design of data conversion interface, one-card information can be directly stored in database server.

The development of mobile APP has greatly expanded the application scope and convenience of elderly care information system. Against the backdrop, relevant users can get in touch with information service platform anywhere and anytime, upload or require necessary information, and satisfy a variety of elderly service needs more timely.

The prospective interactive departments of elderly care information management and service platform include financial, civic, business, human-security, sanitary, hospital, and other institutions. When the above departments can share information with the elderly care information platform, the system should be equipped with external data interface to conduct interaction through data integration. External data interfaces should be designed in accordance with specific database structure of corresponding departments. Through data conversion interface, data in external system can be imported into the database of the system on a regular basis.

7. Relationship between call center system and elderly care information management and service platform

In accordance with overall design report of ICT system, the IAs have designed ICT system, identified the functional requirements of ICT system, planned information service platform, configured necessary system hardware and software and made investment budget on the basis of the orientation and specific requirements of all projects.

Table I Summary of Subproject ICT Design

IA	Project Construction Mode	Purpose of Design	Functional Design	Service Object	Construction objectives
Chengde Haoren Elderly Care Industry Co., Ltd	Built by Chengde Haoren Elderly Care Industry Co., Ltd	Elderly care information platform can assume the functions of regional elderly care services, such as overall planning, management, command, and coordination, providing calling service, remote monitoring, remote medical and other information	Elderly care information platform will construct intelligent elderly care information management and service system, call center, management service system of elderly file management, remote medical system, intelligent call system, remote	The services of elderly care service information center cover 22 community branches and 3 subdistrict home elderly care service centers, but it will include all the elderlies within Chengde in the future.	Through the construction of elderly care long-term care valuation system, elderly care information service platform, and pilot units of home and community elderly care services, Hebei elderly care information system will set up an example and create a model elderly care service system of intelligence, wisdom

		services as well as full-time nursery, month care, week care and day care.	monitoring system, provide the elderly with digital records as well as such services as medical management, remote monitoring, living assistance, family care, etc., and offer seniors within the territory with information calling, remote monitoring, remote medical treatment, and other information services.		and diversification.
Hebei Runqinyuan Elderly Care Industry Development Co., Ltd	The leaders of Project Working Group will be assumed by municipal leaders, and the members include CAB, Health Bureau, Finance Bureau, HR Bureau, and leaders of Runqinyuan. It is built by Hebei Runqinyuan Elderly Care Industry Development Co., Ltd	Through the construction of ICT system, elderly care service center will focus on major elderly care links including medical treatment, nursing, rehabilitation, consulting, entertainment, fitness, sports and life services and become collection, transmission, and processing center of project information.	Elderly care service and management system should include file management, medical services, nursing services, rehabilitation services, health care services, entertainment services, life services, consulting services, elderly care services, assistant decision-making, system settings and other functions. After the completion of the project, elderly care institutions, health care institutions, elderly care community networks, and	The services of the project will cover 60,000 elderlies in She County. It can attract the elderly requiring provision in Handan urban areas and even Beijing-Tianji-Hebei Region.	She County plans to build ICT system as Hebei demonstration project and provide constructive suggestions for other elderly care institutions to apply the system in Hebei province.

			home-based families are organically connected through elderly care information platform.		
Lixian County Aged Home	The subproject is led by the Civil Affairs Bureau and co-built by Lixian County Aged Home, nursing homes for elderly revolutionaries and relatives at Li County, private enterprises (social capital), investment advisers and other departments at Li County, such as Health Bureau and Social Security and Human Resources Bureau.	The subproject relying on Hebei nursing information system, civil affairs information system and others as well as the platform of elderly care information system will provide an intelligent and comprehensive elderly care service system catering to different forms of old-age provision and elderly care services.	The subproject will construct elderly care information system platform at Li County, including multiple subsystems, such as home and community elderly care service system, institutional elderly care service system, information system for the elderly, management system for service providers and so on, make full use of the Internet, the Internet of the things and other information technologies and create comprehensive information files for the aged though the data acquisition, cloud storage and data management and match the elderly with social service resources to realize a real four-in-one system and better satisfy the	The subproject will initially provide service for 99,700 old people at Li County and satisfy the demands of the elderly at different age-phases and with various service needs.	The subproject will set up regional benchmarks to establish and develop a new easily-copied and easily-promoted EC model under New Normal of aging society.

			demand for home, community and institutional elderly care services. A true nursing home without walls will be created.		
Julu County Hospital	The subproject is managed by Project Leading Group and Project Administration Office of Julu County Healthcare and Elderly Care Integrated Service Center. Julu County Hospital is the main construction unit.	The subproject will provide elderly nursing, health testing, fitness, entertainment, health care and other services for the aged at comprehensive elderly care and health care service centers Julu urban areas, and day care centers.	The subproject will establish elderly care service information records including localization for elderly emergency rescue, contact information of children and relatives, nearby service organization, mutual-help group members, etc. and provide emergency rescue, information query, remote medical treatment, community service, household services, appliances maintenance, and other service projects for the elderly.	The subproject mainly provides elderly care services for middle-and-low-income elderlies at Julu County and surrounding villages and towns.	In accordance with overall smart Julu construction planning, the subproject relies on Hebei nursing information system, civil affairs information system and others to establish intelligent home care service centers, speed up the construction of elderly care service information, and supervise and evaluate elderly care services within the whole county through the construction of information assesesment and management platform.
Xinji Juyouleyuan Elderly Care Service Co. Ltd	The leader of Project Leading Group is Xinji executive vice mayor, and the members include local bureau of finance, DRC,	The subproject constructs call center of home care information service within Xinji City on the basis of existing elderly care information system and civil affairs information system	Through the establishment of intelligent dynamic files management, E-touch call, service management etc., the system provides community and home-based elderlies with	The subproject will provide services for the elderly at communities of Xinji urban areas, villages, and towns.	The subproject will connect the elderly with social supporting resources to build comprehensive and intelligent home-based, community, and smart institutional elderly care service system.

	CAB, Land Bureau, planning bureau, health bureau and Dayu Group. Dayu Group will be in charge of the promotion of the project.	within Hebei province.	professional home care, health management consulting, household services, delivery of nutritious meals, and other home-based elderly care system.		
Yanshan University	Built by Yanshan University	The subproject will complete the research and development on ICT application-oriented courses, introduce two textbooks for ICT application, compile 1 textbook for ICT application, and make analysis of elderly data.	The management information system of elderly care service system will collect, transfer, process, store, update, expand, and maintain the information about the management, services and operation through the application of computer hardware, software and network communication equipment and other office equipment. It will scientifically and standardly manage elderly health data and analyze the data about geriatric epidemiology, physical conditions, and others.	Excellent of elderly care services include rehabilitation research, ICT elderly data analysis, cognitive psychological intervention, elderly care policy and other aspects.	The subproject will provide trainings for the management information of elderly care service system, obtaining the latest information management concept and professional knowledge for elderly care service system, and improve information management level of elderly care service. The subproject will scientifically and standardly manage elderly health data, and the main task is to analyze the data about geriatric epidemiology, physical conditions, and others.

Hebei Province has generally established call service network of home care for the elderly in 11 prefecture-level cities and 36 municipal districts within the whole province, and among them,

Shijiazhuang and Baoding have put it into full operation and provide home delivery services of daily necessities and medical assistance services.

The call center can generally be divided into seating section, operator access and processing section, and call-information storage and processing section.

From the analysis of the structure and function of call centers, we can come to an conclusion that call center can be deemed as simplified elderly care information service system, and seating section and inbound call can be realized by information collection and transmission layer during the overall system design; operators can realize the transmission of information. Identical to realized functions of computer network layer in overall system design, the functions of database server, CTI server, FAX server, application server, incoming-information processing can respectively correspond to data storage layer, application support layer and application layer.

When subprojects build their elderly care information management and service platform, in case of existing call center, it is feasible to expand on the basis of original hardware and software. With the unchanged call center functions, subprojects can supplement database storage equipment, data layer, application support equipment, and others, develop elderly care information management and service function modules, and incorporate the system functions of original call center through system integration.

If there is no call center, it necessary to make overall consideration based on the overall framework of the system, add call center function, and deploy corresponding equipment.

All subprojects plan to construct elderly care information service platform with call center function or upgrade and modify e-Touch system.

8. Design of Subproject ICT System

1). Shuangluan District, Chengde city

The subproject, Chengde Shuangluan District Haoren Health and Elderly Care Service Center Project at Shuangluan District, Chengde city will fully establish a home-community-institution trinity elderly care service model, accelerate the rapid development of the region's elderly care services, and give full play project demonstration effects. After project operation, elderly care information platform can assume planning, management, command, coordination functions for elderly care services within the territory, provide services for approximate 696,500 seniors (2020) within Chengde City and consider further growth of the elderly.

The latest services of elderly care service information center cover22 community branches and 3 sub-district home elderly care service centers, but it will include all the seniors within Chengde at a specified future date and provide them with calling service, remote monitoring, remote medical and other information services as well as full-time nursery, month care, week care and day care. The Internet of things applied in the subproject can create perception layer, network layer and application layer. The subproject exploits mobile terminal equipment and environment monitoring devices to perceive elderly health status and understand the demand for service applies network cloud platform for information collection, data management, and data analysis and provides the elderly with housekeeping, nursing, first aid, medical rehabilitation, material transportation, and other services in

accordance with requirements.

Elderly care information platform will construct intelligent elderly care information management and service system, call center, management service system of elderly file management, remote medical system, intelligent call system, remote monitoring system, provide the elderly with digital records as well as such services as medical management, remote monitoring, living assistance, family care, etc., and offer seniors within the territory with information calling, remote monitoring, remote medical treatment, and other information services.

Elderly care information platform at Shuangluan District, Chengde city is designed based on the Design Framework Report on Overall Design of ICT System with comprehensive functions. The implementation plan is shown below.

Item	Activity	Implementation Method	Cost (RMB 0,000)	Expected implementation date
System design	Analysis of elderly care demand (for elderly care information service platform)	Questionnaire and interview	8	2017.02-2017.03
	Design the system hardware and software in accordance with the conclusions of demand analysis	On-site meeting, WeChat, and email	30	2017.04-2017.10
	Review existing service platforms; study the operation of service platforms at Shijiazhuang, Beijing, Shanghai and other places; determine system design	Site visit, product selection	5	2017.05-2017.08
Platform construction	Construct elderly care service platform	Equipment procurement and installation	926.69	2017.05-2019.08
System development	Complete the development of evaluation system	Hire ICT experts and conduct software programming	15	2018.7-2018.9
	Complete the development of elderly care information service system	Hire ICT experts and conduct software programming	150	2017.8-2019.6
Formulate operating instruction	Formulate operating instruction in accordance with investigation results of platforms and actual situations of the Project	E-mail, WeChat	-	2018.01-2018.02
Capacity building:	Hire operation experts and trainers of platform system	E-mail, WeChat	10	2019.2

staff training	Determine meeting place, training plan and content	WeChat, mail	1.5	2019.3
	Prepare training materials	on-site working	2	2019.5
	Field learning conference	on-site meeting	0.8	2019.6
	Site visit	Site visit	1	2019.7
	Evaluate training results	on-site meeting, WeChat, and email	1	2019.8

2). She County

The subproject at She County plans to build the Shexian County Binhe Elderly Care and Rehabilitation Center. Surrounding “six-point” goal (a true harmony where the elderly can enjoy security, assistance, care, happiness, learning, and worthiness), the subproject give priority to the development of social services, improve social security system for the elderly, nurture and strengthen aging industry, increase the investment in infrastructure construction for old-age care, improve elderly care system, promote coordinated and overall development of old-age care and economic society, and create a four-in-one (based on homes, depending on communities, supported by institutions and propped by medical treatment) leading elderly care institution covering Shanxi-Hebei-Shandong-Henan area .

In terms of information, the subproject plans to apply ICT system to provide professional services, medical care consultation, health consultation, household services, water-and-meal delivery, psychological counseling, and other information services, satisfy comprehensive elderly care service requirements, integrate home care, community care and institutional care, and cater to basic medical rehabilitation needs. The platform is constructed in accordance with high standards and has reserved for prospective increasing seniors.

The construction of ICT system in elderly care service center makes elderly care service center become collection, transmission, and processing center of project information. ICT system facing the demands for elderly-care services is a comprehensive information system integrating various information technologies including remote automatic monitoring and manual monitoring, smart home design and identification, network transmission system, data storage system, business support software, application software and decision support, data mining and data analysis system, emphasizing the information services on major elderly care links including medical treatment, nursing, rehabilitation, consulting, entertainment, fitness, sports and life services, relying on the internet and supported by data mining and big data and combining various application functions including elderly care services, auxiliary medical service, rehabilitation and health care services, day care services, remote consulting services, life services, care warning services and decision support services.

The system includes file management, medical services, nursing services, rehabilitation services, health care services, entertainment services, life services, consulting services, care warning services, decision support, system setting, and other functions and provides emergency relief, life assistance, and active care. After the completion of the project, elderly care institutions, health care institutions,

elderly care community networks, and home-based families are organically connected through elderly care information platform and other dynamic resources. The services of the project will cover 60,000 seniors in She County.

She County plans to build ICT system as Hebei demonstration project through corporate practice under the care and support of Asian Development Bank and local developments and provide constructive suggestions for other elderly care institutions to apply the system in Hebei province.

The information service platform at She County is designed based on the Design Framework Report on Overall Design of ICT System with comprehensive functions. The implementation plan is shown below.

Item	Activity	Implementation Method	Cost (RMB 0,000)	Expected implementation date
Identify requirements	Confirm ICT system requirements and reach a consensus with relevant parties	Negotiate with Hebei Finance Department, Hebei Provincial Department of Industry, Handan and Shexian Bureau of Industry and Information to reach an agreement on the main content and procedures of the system.	-	2017.1-2017.6
Identify suppliers	Identify suppliers of system suppliers	Seeking consulting experts in system engineering, computer science and other areas in Beijing and Hebei with competitive scientific research ability on technolohy, screening and selecting qualified ICT system suppliers to provide help for the construction of system.	10.00	2017.6-2018.7
Construct the platform	Construct elderly care service platform	Equipment procurement and installation	903.72	2019.9-2019.12
Construct the deign	Complete system construction	With the help of Departments of Industry and Information Technology of She County and Handan, Runqinyuan and working	10.00	2018.8-2019.12

		group determine the suppliers of ICT system and complete system construction together through field visit and expert discussion;		
Trail operation	Conduct trail operation	Apply the system for the operation of Runqinyuan; test the system at the place of relative groups, government, community leaders and other project implementation agencies;	2.00	2020.1-2020.9
Improve the system	Propose recommendations on system improvement	Consulting experts evaluate system construction and testing progress and propose areas requiring improvement;	12.00	2020.9-2020.9
Formal operation	Put the system into normal operation	Apply the system for operation	-	2020.10
System promotion	Formally promote the demonstration project during 2020 to 2022	After the evaluation of the system operation, formally promote the system	-	2020.11 -2022.12

3). Li County

Li County Subject plans to create 10 comprehensive elderly care service centers and community care centers and build an intelligent and comprehensive elderly care service system based on elderly care information service center through the connection of the elderly with social resources, catering to different forms of old-age provision and elderly care services, and covering all the seniors within Li County. On the strength of elderly care information service platform, the subproject will initially provide service for 60,500 old people at She County and satisfy the demands of the elderly at different age-phases and with various service needs. In addition, the subproject will set up regional benchmarks to establish and develop a new easily-copied and easily-promoted aging-caring model under New Normal of aging society.

The project development and planning group in Li County consists of representatives from Li County Civil Affairs Bureau, nursing homes for elderly revolutionaries and relatives at Li County, private enterprises (social capital), investment advisers and other departments at Li County, such as Health

Bureau and Department of Social Security and Human Resources. The subproject is led by the Civil Affairs Bureau and co-built by the relevant functional departments.

The subproject relying on Hebei nursing information system, civil affairs information system and others will construct elderly care information system platform at Li County, including multiple subsystems, such as home and community elderly care service system, institutional elderly care service system, information system for the elderly, management system for service providers and so on, make full use of the Internet, the Internet of the things and other information technologies and create comprehensive information files for the aged though the data acquisition, cloud storage and data management and match the elderly with social service resources to realize a real four-in-one system and better satisfy the demand for home, community and institutional elderly care services. A true nursing home without walls will be created.

The elderly care information service system will connect medical institutions, community management institutions (such as sub-district offices, neighborhood committees, and community center), the elderly depending on institutional endowment, the elderly depending on social endowment, the elderly at home, social service providers, volunteers, managers, etc., include intelligent and dynamic file management, management, management of affiliated areas, and others, provide seniors with elderly service, medical consultation, health consultation, household services, water-and-meal delivery, psychological consulting, and integrate home care, community care and institutional care to constitute an organic closely-concerned family .

The subproject provides the elderly with one localizable and E-touch mobile phone (or hook) for the connection with information service platform.

Service principle and concept of the information service center at Li County “12349” hotline service. The implementation plan is shown below.

Item	Activity	Implementation Method	Cost (RMB 0,000)	Expected implementation date
Information service equipment (including software development cost)	Information service equipment for comprehensive service centers and 10 day care centers and corresponding installation fees	Equipment procurement and installation	836.4	2020.1-2021.6

4). Julu County

Julu Subproject plans to build a guidance center for comprehensive health and elderly care services, upgrade five urban and rural nursing homes, encourage local medical institutions to participate in rural elderly undertaking through cooperation or associate construction on the strength of elderly care resources, such as rural welfare homes, and integrate life nursing functions of elderly care institutions

and medical care functions of medical institution to cater to the elderly requirements of the public.

When it comes to information, in accordance with overall construction planning of intelligent Julu, the subproject rely on Hebei nursing information system, civil affairs information system and other intelligent home care service centers to supervise and evaluate elderly care services within the whole county. The countries (neighborhood committee and residence community), villages, and towns (development zone) will build elderly care service information platform, set up “E-touch” for emergency assistance, and establish elderly care service information library for elderly service hotline and other projects, including health records of the elderly within the jurisdiction, localization for elderly emergency rescue, contact information of children and relatives, nearby service organization, mutual-help group members, etc..

Day care centers adopt One-Card for internal management. The activities of the elderly within the centers are recorded with One-Card and available to family members authorized by the elderly. After the installment of mobile APP software, family members can make on-line query of daily activities, physical examination results, etc. of the elderly within day care centers.

The subproject provides one mobile phone integrating mobile communication and E-touch beeper for the connection with information service platform, making them enjoy round-the-clock emergency rescue, information query, remote medical treatment, community service, household services, appliances maintenance, and other service projects. With the connection of the elderly with social supporting resources for the elderly, the elderly can stay at home but enjoy elderly care.

Information service center make full use of internet and Internet of Things, establish comprehensive elderly information files through data collection, cloud storage, and data management, and provide day care centers with data support and better services.

Service principle and concept of the information service center at Julu County “12349” hotline service. The implementation plan is shown below.

Item	Activity	Implementation Method	Cost (RMB 0,000)	Expected implementation date
Information service equipment (including software development cost)	Information service equipment at comprehensive service centers and corresponding installation fees	Equipment procurement and installation	404.72	2019.7-2020.12

5). Xinji City

Xinji Subproject plans to construct Xinji daily care center (Xinji Parents' Paradise Elderly Care Community Center) and build its branches at the five villages and towns, including Xinleitou, Jiucheng, Qianying County, Zhiqiu and Wangkou; to establish three community care centers at Fanghua Neighborhood, Aoling Shengyuan Neighborhood and Crystal River Neighborhood at Xinji urban areas

to provide resource sharing and remote connection with Paradise of Xiji Parents. The project will provide the elderly at Xinji rural and urban areas with elderly care, day care, household services, cultural entertainment, advisory service, medical and health care, spiritual consolation, and other services.

When it comes to information service, the subproject constructs call center of home care information service within Xinji City on the basis of existing elderly care information system and civil affairs information system within Hebei province, enables acceptance of elderly care services and management of service resources based on basic information database and elderly care service information database of the elderly in whole city and surrounding areas and through the construction of elderly care service information platform based on modern communication technology, and connect the elderly with social supporting resources for the aged to provide powerful support for comprehensive and intelligent home-based, community, and institutional elderly care service system, realize a true “four-in-one “system, and better satisfy the requirements for home-based, community, and institutional elderly care services.

Integrated intelligent elderly care service system utilizes modernized communication technology to construct elderly care service information platform and enables acceptance of elderly care services and management of service resources. Through the establishment of dynamic management of intelligent files, E-touch call, management of service areas, etc., the system provides community and home-based seniors with professional home care, health management consulting, household services, delivery of nutritious meals, and other home-based elderly care system.

Xinji County plans to create an intelligent and comprehensive four-in-one (based on homes, depending on communities, supported by institutions and propped by medical treatment) elderly elderly care system aimed at different elderly care modes and service requirements and covering a majority of seniors within rural and urban Xiji City as well as surrounding areas.

Service principle and concept of the information service center at Xinji County “12349”hotline service. The implementation plan is shown below.

Item	Activity	Implementation Method	Cost (RMB 0,000)	Expected implementation date
System development	Provide equipment, develop operating procedures, and promote marketing		81	2018.3-2018.12
Construct the platform	Construct elderly care service platform	Equipment procurement and installation	239	2019.1-2019.6
Evaluate application	Demand assessment, consulting, system design, pilot operation, promotion and provide trainings		11	2019.1-2019.6

6). Yanshan University

Yanshan University plans to jointly build smart elderly care service platform with Contec Medical Systems Co., Ltd., which is not specifically described.

It is suggested that Yanshan University bring into play the advantages, focus on the collection of information relevant with elderly care service, carry out information management research and practice, and support the scientific research in medical support as well as team building and combination. At the same time, Yanshan University will form professional hierarchical elderly care training system, establish a simulating training base for home-based, institutional, and community elderly care services as well as rehabilitation nursing; build a production-study and medical-treatment day care and activity center for community elders. The implementation plan is shown below.

Item	Activity	Implementation Method	Cost (RMB 0,000)	Expected implementation date
Information service equipment	Equipment for Research Center of ICT Elderly Data	Equipment procurement and installation	163.65	2019.1-2019.3
Capacity building	Obtain updated ICT knowledge and skills for solving application issues	Technical trainings for ICT development and curriculum development	2	2017.05~2019.07
	Invite domestic and foreign experts for seminars and communication		NA (Just provided the overall cost, not specific divided to ICT use)	2019.03-2022.07
	Cooperative research between domestic and foreign institutions			2019.03-2022.07
	New faculty employment			2019.03-2022.07
	Foreign research, domestic research, exchange, seminars			2019.03-2022.07
	Product research and development	Development on ICT system		2019.03-2022.07
	Textbook introduction and study transfer	Textbook introduction and study transfer		2019.03-2022.07

9. Recommendations

Current construction of elderly care information service system by subprojects, in general, has caused excessive repeated procurement of software and hardware as well as software development.

It is recommended to abstract information construction costs from the total project investments. Provincial Project Office should establish elderly care information center, uniformly deploy and manage hardware and software, construct elderly care information service platform, and develop elderly care information management and service software. Subproject units should serve as system users. Through customization, subproject units can enjoy distinctive personalization systems. Unified system is beneficial to stable system operation; subprojects should eliminate the systems for operation and maintenance costs during system operation, greatly reducing overall operation and maintenance costs.

At present, the total investment of subproject information has been as high as RMB 48.8 million. According to the practical experience of Hebei Provincial Water Resources Department in terms of the project, Capacity Building for the Monitoring of National Water Resources, the department has constructed water resources management system (already in use) for the uniform application of provincial, municipal, and county-level users (nearly 200 remote application units) with the total investment of hardware and software as RMB 20 million (software development costs and integration costs approximate RMB 80 million and operation and maintenance costs are expected to RMB 500,000), which can prove that centralized development can better allocate system resources and provide application experiences.

Hebei Elderly Care Development Project

Final Report

Volume Three

Document 3-G

Initial Environmental Examination

(with Environmental Management Plan incorporated)

Initial Environmental Examination

I. EXECUTIVE SUMMARY

A. Introduction

1. This Initial Environmental Examination (IEE) is for the Asian Development Bank (ADB) financed Hebei Elderly Care Development Project (the project), Hebei province, People's Republic of China (PRC). The impact of the project is aligned with the government's goal that a three-tiered elderly care (EC) system (home, community, and residential) is established. The expected outcome is that the quality of EC services in Hebei Province is improved. The project will help create a platform from which other elderly care services can grow in the future. The project has four outputs: (i) Community and home care services[1] improved; (ii) Institutional elderly care service[2] capacity increased and quality improved; (iii) Development of human resources and industry capacity improved; and (iv) Capacity of the EC Sector Stakeholders Improved. The first three outputs will include the construction of residential elderly care centers, rehabilitation of facilities in local communities. The assessment sections of this IEE focus mainly on outputs 1, 2 and 3, since these comprise the major physical works of the subprojects.

2. The aim of the project is to support the six selected city and county initiatives to improve the quality and coverage of the elderly care systems. The design of individual subprojects already includes a range of environmental safeguards in the PRC Feasibility Study Reports (FSRs). These have been summed up the domestic Environmental Impact Assessment Report (EIAR) and Tabulated Environmental Impact Form (TEIF) and this IEE.

3. The project will be directly implemented by six implementing agencies (IAs) engaged and/or to be engaged in elderly care service provision, including residential, home and community base service (HCBS). These enterprises comprise government institutions and participating private enterprises (PPEs), and are collectively termed the IAs. **Table I.1** summarizes the information of subprojects and construction activities for each subproject.

4. A total of 203 mu land will be occupied in project activities, including the construction of six residential EC centers. The total construction footprint area is 161,234 m^2 with capacity of 1,896 EC residential beds. The project activities will also include renovation of 50 local community centers to be used as HCBS centers, the total renovation area is 29,064 m^2.

B. Baseline Environment

5. Most of central and southern Hebei lies within the North China Plain. The western part of Hebei rises into the Taihang Mountains (Taihang Shan), while the Yan Mountains run through northern Hebei, beyond which lie the grasslands of Inner Mongolia. The Great Wall of China cuts through northern Hebei from east to west as well, briefly entering the border of Beijing Municipality, and terminates at the seacoast of Shanhaiguan in northeastern Hebei. The highest peak is Mount Xiaowutai in northwestern Hebei, with an altitude of 2,882 m.

6. Hebei borders the Bohai Sea on the east. The Hai River watershed covers most of the province's central and southern parts, and the Luan He watershed covers the northeast. There

[1] Including day care center and small scale residential care services. Care services will be either provided at the center or delivered to the homes of the elderly.
[2] Long-term care provided to people in a larger scale residential setting rather than at own home or in a day care center.

are numerous reservoirs in Hebei's hills and mountains. The largest natural lake in Hebei is Baiyangdian, located mostly in Anxin County.

7. Hebei has a continental monsoon climate, with cold, dry winters, and hot, humid summers. Temperatures average −16 to −3 °C in January and 20 to 27 °C in July. The annual precipitation ranges from 400 to 800 mm, concentrated heavily in summer.

Table I.1: Summary of Proposed Subprojects

Subproject	IA	Nature of IA		Project location		EC Center Area (mu)	EC Center Construction Area (m^2)	HCBC Renovation Area (m^2)	PRC EIA category
		State	PPE	Municipality	District / County				
Xinji Parents' Paradise Elderly Care Community Center	Xinji Juyouleyuan Elderly Care Service Co. Ltd		√	Shijiazhuang	Xinji City	39.75	38,301.00	7,900	EIA report[3]
Julu County Healthcare and Elderly Care Integrated Service Center	Julu County Hospital	√		Xingtai	Julu County	27.64	20,945.00	3,378	TEIF
Chengde Shuangluan District Haoren Health and Elderly Care Service Center Project	Chengde Haoren Elderly Care Industry Co., Ltd		√	Chengde	Shuangluan District	30	25,008.72	7,400	TEIF
Shexian County Binhe Elderly Care and Rehabilitation Center	Hebei Runqinyuan Elderly Care Industry Development Co., Ltd		√	Handan	She County	24	25,849.88	3,100	TEIF
Baoding Lixian County Elderly Care Comprehensive Service Center	Lixian Guangrongyuan	√		Baoding	Li County	75	31,169.89	7,285.9	TEIF
Yanshan University Health and Elderly Care Integration Training Center	Yanshan Univerity	√		Qinhuangdao		6.36	19,960.00	NA	TEIF
Total		**3**	**3**	**6**		**202.75**	**161,234.49**	**29,063.90**	

IA=Implementing Agency; PPE = Participating Private Enterprise; EC = Elderly Care; EIA = Environmental Impact Assessment, TEIF = Tabular Environmental Impact Form.
Sources: domestic FSRs, September 2016.

[3] Although two EC Centers (Xinji and Chengde Shuangluan) will include hospital facilities (of 60 and 100 beds respectively) these are not surgery, radiological or pathology supported facilities. They are in one case a geriatric hospital for bed-care residents and in the other a small rehabilitation hospital focusing on surgical recovery and physiotherapy. These will produce no unusual medical waste or wastewater beyond slight increases in amounts due to the larger number of residents. This subproject (Xinji) is classified as category A in accordance to the PRC Guideline on EIA Classification for Construction Projects (MEP, 2015) because it deals with new hospital, requiring full Environment Impact Assessment Report (EIAR), as required by Xinji EPB. The Chengde Shuangluan subproject is classified by Chengde EPB as category B, requiring a TEIF.

8. Environmental baseline values for water quality, air quality, and noise environment at all subproject sites were sampled by domestic Environmental Impact Assessment (EIA) Institutes to assess compliance with relevant national standards.

9. No subproject will use groundwater. All the domestic water will be supplied from local water supply plant, and all the wastewater will be discharged after a certain pretreatment to match the wastewater discharge standards into the local wastewater treatment plant.

10. The air quality in Hebei Province is poor overall. According to the bulletins by the Ministry of Environment Protection (MEP) of the national air quality six cities in Hebei Province are in China's ten most polluted cities list. Limited sampling conducted during the TEIF, at all project sites showed compliance with Class II of the PRC national standard, which is the standard for residential, commercial, industrial and rural areas but exceedance of EHS air quality guidelines.

11. Ambient noise levels at all sites except one meet Grade II of the national standard, which is the standard for residential, commercial and mixed industrial areas. At one EC Center site additional noise protection is required.

12. It is confirmed that, no subproject sites have been used for any industrial purpose, including chemical plant, insecticide factories or other chemical processing or storage. Soil sampling has shown that the sites comply with soil quality standards suitable for residential development, with no contamination.

13. Although two EC Centers (Xinji and Chengde Shuangluan) will include hospital facilities (of 60 and 100 beds respectively) these are not surgery, radiological or pathology supported facilities. They are in one case a geriatric hospital for bed-care residents and in the other a small rehabilitation hospital focusing on surgical recovery and physiotherapy. These will produce no unusual medical waste or wastewater beyond slight increases in amounts due to the larger number of residents.

C. Impacts and Mitigation Measures

14. **Project benefits.** The Project will newly build EC facilities in selected cities, which will provide local people who want to stay in the EC residential institutions with more and better EC services including daily care, health care, rehabilitation, entertainment, and psychiatric and social support. The centers will provide services to all the elderly in the project area, particularly the poor elderly and the dementia elderly. The Project will also build or rebuild day care centers (HCBS Centers) both in urban and rural communities. They will provide the elderly living in the nearby communities with improved EC services, including nutritious meals, health screening, rehabilitation, escorting, home delivery, and respite care.

15. The Project will establish ICT systems. Information will be collected to provide better serve for the elderly. Call services will provide the elderly with convenient EC services such as home-delivery meals, housekeeping, home nursing, remote monitoring, remote medical treatment, information, medical referrals and an emergency response function.

16. **Project beneficiaries.** The Project will alleviate the burden of the adult children in looking after their elderly parents especially when their parents are half or fully dependent. With the help from the EC residential institutions or HCBS services, the adult children will be assured of the safety and wellbeing of their elderly parents staying alone at home, or in the EC institutions.

17. The construction of EC facilities and their operation will create new job opportunities for about 2,200 persons. The project will benefit a total of about 300,000 persons in the six project areas when the services are operational and 4,400 students will have been certified by YSU at project completion. The project targets low- and middle-income elderly who comprise approximately 40% of the total elderly population, and will promote improved care assessment systems to allow care to be directed to those most in need.

18. **Design and Pre-construction phase.** Measures will be implemented in the pre-construction phase to ensure the project's environment management readiness. These include:

- Institutional strengthening, including (a) appointment of a qualified environment and social officer within the Provincial PMO for the implementation phase; and (b) hiring of at least one LIEC within loan implementation consultant services by the PPMO.
- Updating the EMP. The mitigation measures defined in the project EMP (Attachment 1) will be updated based on final technical designs.
- Appointment of environmental officers within each IA.
- Contract documents. All tender documents will include the EMP obligations, including the environmental monitoring program. This will be the responsibility of the IAs, and checked by the LIEC.
- Environmental protection training. The LIEC, in conjunction with the PPMO Environment Officer and collaboration of local EPBs, will provide training on implementation and supervision of environmental mitigation measures to IAs and their contractors.

19. Design features will include (i) building materials conforming to codes and standards; (ii) Earthquake resistance; (iii) Design for fire, accident and disorientation prevention; (iv) Energy efficiency; (v) Design for noise reduction; and (vi) Design for surface and groundwater protection.

20. The use of VOC-emitting materials (including paints, coatings, adhesives, carpet and furniture's) will be strictly prohibited to ensure high indoor air quality for elderly people and working staff, including caregivers. No asbestos or asbestos-containing material will be used in construction of the facilities. To ensure that no work or community hazards exist on any subproject site before work commences, a survey of all buildings planned for demolition and all buildings planned for renovation will be undertaken to discover and report on the presence or absence of asbestos or asbestos-containing material. Where asbestos or asbestos-containing material is found, the IA and contractor will develop and implement an asbestos removal and disposal plan in conjunction with an accredited specialist contractor to safely remove the material before work commences or during construction. The plan will focus on, as a priority, the health and safety of workers and the community during the removal and long-term disposal.

21. **Climate risk.** The project has been classified a low climate risk and no Climate Risk and Vulnerability Assessment (CRVA) was required. No subproject site is located in flood-prone land or land vulnerable to sea level rise. Modern PRC building codes for structural safety and seismic resistance will ensure that the project buildings are designed for weather events likely to occur in the Hebei region. Features included in designs such as stormwater/sewage separation systems, high grade materials to improve the heat insulation and building layout to maximize the utilization of the sunlight, natural cooling and airflow will contribute to the facilities' resilience to climate change.

22. **Construction phase impacts.** Construction of new EC centers will involve site preparation earthworks and the full range of civil construction activities, requiring mitigation measures to address, dust, noise, traffic, soild waste and construction wastewater. However, the renovation of existing builings to modern HCBS standard will be much smaller scale involving internal construction, plumbing and carpentry and external works only to connect to utilities. Impacts here will be much lower.

23. The range of potential construction phase impacts are associated with soil erosion, increased noise and dust levels, liquid and solid wastes, and safety risks to community members (for renovation of HCBS centers) and workers. It is important to note that there will be no worker camps, as workers are normally from local villages and/or town/townships, can readily access the sites by road and stay in off-site accommodation. All construction sites are either cleared or existing buildings for refurbishment. Impacts on flora and fauna will be minimal. There are no reports of physical cultural resources in or around any of the sites, though a chance finds procedure will be put in place. Overall, environmental impacts associated with the construction phase are expected to be localized and short term, and can be effectively mitigated through the application of sound construction site management practices.

24. Dust, noise and community health and safety are important during the construction period because significant work will be undertaken near community facilities and in the case of HCBS Centers will involve the progressive renovation of individual units in occupied premises.

25. The major sources of noise pollution are movement of construction vehicles, the haulage of construction materials to the construction sites and the noise generating activities at the sites. To suit the special conditions of construction, work is restricted to 08:00am - 20:00pm only and will require an agreement with IAs management and nearby residents regarding the timing of heavy machinery work. Potentially affected people will be informed of works of works through advanced meaningful consultations. Dust generated from transportation vehicle operation accounts for around 60% of the total construction dust. Construction dust at this scale has a small impact area, usually within a range of 50m outside the construction site boundary, and its biggest impacts is usually happening within approximately 30m. perimeter fencing, water spraying, covering truckloads and regularly consulting nearby residents to identify concerns will all be implemented in mitigation. The community will be protected from construction hazards by a traffic control plan within and around each subproject site, site security, safety barricades around trenches and excavations and public consultation.

26. **Operation phase impacts.** These are local facilities catering mainly for local communities. There is therefore minimal increase in local populations and the operational impacts arise primarily from the concentration of water consumers and wastewater and solid waste generators on site rather than increases in numbers. No significant environmental impacts are anticipated during the operation of project facilities. Most operational issues can easily be addressed by connecting the new facilities (EC centers and HCBS centers) to the existing itilities and services (water supply, solid waste and wastewater collection and disposal), and by ensuring compliance with relevant building codes (such as for earthquake resistance, fire safety, ventilation and air-conditioning).

27. All buildings will be connected to the municipal water supply network. The increase in water demand on the local supplies as a result of the new buildings is small and the consumption can be easily met through the existing municipal water supply services.

28. The wastewater from EC facilities cannot be connected directly to the municipal WWTP since on-site pretreatment is needed which allows the WWTP to function most efficiently. This will be achieved by a period of anaerobic degradation of the wastewater solids in a pre-treatment tank. The pretreatment tank is impermeable with no seepage function. After this the sewage will be piped to existing centralized municipal WWTPs for complete treatment. The volumes of wastewater produced by the facilities can be easily met through the existing municipal wastewater treatment services and will not cause any incremental impact on any receiving water body. Because the She county EC Center subproject is within the secondary zone of a water source protection area, it will have additional safeguards to prevent leakage of wastewater to surface or groundwater.

29. The solid waste volumes generated by the facilities (kitchen waste and office solid waste) are a minute proportion of the daily municipal waste going to landfill and the facilities can be served by the current capacities of the local landfill. The medical waste generated by the subprojects is small. In all subproject sites, medical waste will be kept separately from other solid waste and no segregation into waste categories will be undertaken by EC staff. Contracts with specialized contractors for this purpose will be signed before project operation for each IA. All medical waste from the project will be disposed of via high temperature incineration. The incinerator plants have been identified and their capacity to accept the project wastes has been verified.

30. **Air Quality and ventilation.** Baseline data for the project counties and sites show that there is overall poor air quality and that there are days when the headline parameters of $PM_{2.5,}$ PM_{10} and O_3 exceed safe standards for community health. Since the project is funding facilities for the care of one of the most vulnerable sections of the community (the aged), safeguards need to be implemented to protect residents from unhealthy air conditions. Each IA will prepare an Air Quality Protection Plan which will comprise: (i) the setting up of a monitoring responsibility within the O&M Unit of the facility to monitor the real time Air Quality Index (AQI) forecasts for the local area (example for Baoding is at Figure VI.1); (ii) a response procedure triggered by days which will have “Unhealthy” or worse air quality; (iii) responses to include changing from natural ventilation to full air conditioning, close monitoring of vulnerable patients and groups, and alerting non-residential vulnerable clients of the HCBS Centers through the ICT platform.

31. **Energy consumption.** The predicted energy use by the subprojects comprises heating, electricity, water delivery (pumps) and natural gas and has been converted to total coal equivalents (TCE). From the projected TCE amounts the total CO_{2e} emissions for the project have been calculated using the IPPC conversion factor of 2.77 t CO_{2e} /TCE for PRC coal characteristics. The total emissions are 7,700 t/year. This is well below the significant level of 100,000 t/year used as a threshold level by the ADB SPS to require continuous monitoring.

32. **Emergency planning.** IAs will be required to implement the following measures in order to ensure high levels of on-site emergency response preparedness:

i. Ensure compliance with relevant health and safety regulations pertaining to ventilation, indoor air quality, lighting, noise, fire-fighting and fire survival equipment and fire escapes;
ii. Establish readiness plan and operational plan under emergency conditions, for as fire, flood, earthquake, wind, storm, water contamination, air contamination, and explosion to ensure safe environment for all elderly people and staff and visitors.
iii. Develop anti-infection protocols and response plans, including quarantine and evacuation procedures for epidemic, pest infestation, and food safety to ensure safe environment for all elderly people and staff and visitors.

D. Associated Facilities

33. All EC facilities, whether newly built (EC centers) or renovation of existing buildings (HCBS centers) will be connected to the existing utilities and services (water supply, solid waste and wastewater collection and disposal). Environmental due diligence is fully covered in the examination of anticipated impacts in the operational period and includes confirmation of existing utilities and services capacities and their readiness to accept and treat the EC facilities' wastewater and solid waste, and to provide acceptable quantities and quality of domestic water. The current environment services of local counties were assessed, and it is concluded that incremental water supply, wastewater and solid waste generation resulting from the project will not overburden existing services.

E. Public Consultation and Grievance Redress Mechanism

34. Public consultation was conducted for the project by PPTA team and domestic EIA institutes. Meetings with project local government agencies and project site nearby residents have also been conducted. A grievance redress mechanism (GRM) has been developed in compliance with ADB's SPS requirement to address environmental, health, safety, and social concerns associated with project construction and operation.

F. Environmental Management Plan

35. A project EMP (Attachment 1) has been prepared to mitigate and manage the potential environmental impacts of project construction and operation. The EMP includes institutional responsibilities, training needs, reporting schedules, operational management prescriptions, GRM, monitoring and reporting, and costs for implementing the EMP. To support EMP implementation, the Project Management Office (PMO) will: appoint a qualified environment officer within the provincial PMO (PPMO) and each IA; recruit a loan implementation environment consultant (LIEC) (as part of the loan administration consultant services); and ensure that all IAs have arranged contractual agreements with qualified environment monitoring stations (EMS) to conduct the environmental monitoring described in the EMP.

G. Conclusion

36. The project's potential impacts on community and occupational health and safety during operation were analyzed and corresponding mitigation measures have been defined in the IEE and EMP. The IEE concludes that as long as the environmental mitigation and management measures defined in the EMP are properly implemented, all adverse environmental impacts associated with the project will be prevented, eliminated, or minimized to an acceptable level. The project is feasible from an environment safeguards point of view, and the environmental categorization of "Category B" is confirmed.

II. INTRODUCTION

A. Project Rationale

37. The most significant demographic challenge facing the PRC today is the aging of the population, and the social and economic impacts that will occur as a result of the rapid pace and scale of the demographic change. The proportion of people above the age of 60 across the PRC is expected to grow from roughly 12% in 2010 to 34% by 2050. Combined with fast urbanization,

internal migration of youth away from rural areas, and the after-effects of the one child policy, traditional family support systems are stressed and increasingly unable to meet EC needs. [4] The population is aging rapidly at a time when the country's per capita income remains modest and social security systems are still insufficient to meet the needs of senior citizens. The growing demand for quality and affordable EC services exceeds current supply and is an urgent issue that must be addressed.[5]

38. Hebei Province entered into an "aging society" status in 1999 when it passed the 10% threshold of population over the age of 60. In 2016 it is projected to be 17% and is expected to rise to 31% by 2050. Within the province, there is great diversity in the distribution of elderly, their care needs, income levels, and availability of services. In some rural counties, there is a high density of elderly who are "left behind" after their children have moved to urban areas. In other cases, few elderly remain making it difficult to provide decentralized services. The urban areas are aging at different rates, resulting in a diversity of demand for services. The government has identified Hebei as a demonstration province for EC development due to its past history in developing care models (rural happiness yards), and because it is representative of the challenges other provinces face with limited government funds available for EC and growing elderly populations. There is a strong desire in the province, and nationally, to identify care models and partnerships which can deliver quality and affordable EC, and the optimum roles for government, private sector, and civil society stakeholders in the sector.

39. The PRC has developed policies to support the elderly since the late 1970s. The Twelfth Five-Year Plan, 2011–2015 supported developing a three-tiered old age care system (home, community, and residential) and improving geriatric care and health services.[6] The government strategy of developing the ECS with "home-based care as the foundation, community care as a necessary support, and residential care as supplements" is relevant and in line with international trends of supporting "aging in place", de-institutionalization and active aging.. The Thirteenth Five-Year Plan, 2016–2020 seeks to build on this framework, expand coverage, and enhance the quality of services by improving planning and developing services for elderly with care needs.[7] The Plan includes (i) strengthening human resources and management capacity for EC; (ii) developing new services, such as rehabilitation, dementia, and palliative care; and (iii) determining roles and responsibilities for public, private, and voluntary sector stakeholders.[8] Key challenges in achieving these goals include addressing unbalanced rural–urban development, tackling significant financing gaps in the sector, and developing the EC market.

40. Translating the national policies into programs on the ground in Hebei is challenging. At the residential nursing care level, only 50% (210,000) of the projected need for beds in the province

[4] The one child policy was first initiated in 1979. In October 2015, the government announced that the one child policy restriction would be lifted to allow all married couples up to two children.

[5] The project is included in the Country Operations Business Plan for the PRC, 2016–2018. ADB 2016. *Country Operations Business Plan: PRC, 2016–2018.* Manila.

[6] Government of the People's Republic of China. 2011. *Twelfth Five-Year Plan for National Economic and Social Development of the People's Republic of China, 2011–2015*. Beijing. The Government seeks to develop a system of elderly care commonly referred to as 90-7-3. The three-tiered system provides 90% of elderly to age at home supported by home care services, 7% to receive community-based services, and 3% institutional services.

[7] Government of the People's Republic of China. 2016. *The Thirteenth Five-Year Plan for National Economic and Social Development of the People's Republic of China, 2016–2020.* Beijing. The plan includes the goals of (i) home- and community-based care (HCBC) to give access to 80% of all urban and rural residents, and to (ii) significantly increase residential EC beds to keep pace with increasing demand as the elderly population expands.

[8] State Council. 2013. *Opinions on Promoting the Development of Senior Care Service Industry (Circular No. 35*), Beijing.

is currently available and public perceptions and the quality of EC facilities are low.[9] Human resources, and incentives and policies to retain and train staff are insufficient. Planning for the expansion of EC services is not systematic, and home and community care services are largely underdeveloped. Government financing of EC is limited. To help address the dearth of services, local governments are seeking ways to incentivize the development of services and increase private and voluntary sector involvement, both of which do not yet play a significant role. Poor public perceptions on the quality of services, affordability, and traditional cultural attitudes are key constraints to the uptake and sustainability of services.

41. To address these problems, the proposed project will develop five "anchor" EC residential facilities (run by both public and private sector) targeting elderly with long-term care needs. These facilities will also develop and operate home- and community-based care (HCBC) services and information and communications technology (ICT) networks to serve a broad range of elderly and support the concept of "aging in place"—a lifestyle that consultative research suggests most elderly prefer. Additional facilities and services, such as rehabilitation centers, will also be constructed to help relieve pressure on hospital beds and as a step to improved health and EC sector integration—an emerging policy drive of the government. Capacity building for implementing agencies, civil affairs bureaus (CABs), and implementation of pilots to address critical aspects of ECS development is an integral part of the project design. Yanshan University (YSU) will develop an EC training center and a range of short- and long-term new courses in five priority areas of EC: (i) caregiving and nursing, (ii) occupational therapy, (iii) EC management, (iv) geriatric psychology, and (v) ICT for EC. Combined together, the subprojects seek to create demonstration facilities and services, and expand human resources and improve industry capacity for the three-tiered ECS in Hebei.

42. The project supports the PRC's Thirteenth Five-Year Plan (2016–2020) and the Hebei Provincial Thirteenth Five-Year Plan (2016–2020), which seek to develop the ECS, stimulate investment, and define roles and responsibilities for government, the private and voluntary sectors. The project is aligned with ADB's country partnership strategy (2015–2020) pillar on inclusive growth; the midterm review of Strategy 2020, which supports social protection and health; and the Operational Plan for Health (2016–2020), which has EC as a focus area.[10]

B. The Proposed Project

43. The proposed project will support development of the elderly care system in Hebei province by improving the quality and coverage of institutional, community and home-based elderly care services and facilities in selected sub-projects. The project will improve the quality and delivery of services in collaboration with government and the participation of the private and public sectors in the project cities and counties.

44. The project is planned as a major capacity building effort in the development of the elderly care system in Hebei province, and will improve coverage, human resources and service quality. The project will be the first elderly care project for ADB and among the first elderly care projects funded by international financial institutions in PRC. The expected outcome is that the quality of EC services in Hebei Province is improved. The project will support selected cities and counties initiatives to improve the quality and coverage of the elderly care systems. The project will create

[9] Hebei is among the four fastest aging provinces in PRC and has bed to elderly ratio below the national average.

[10] ADB. 2016. *People's Republic of China: Country Partnership Strategy (2016–2020)*. Manila; ADB. 2014. *Midterm Review of Strategy 2020: Meeting the Challenges of a Transforming Asia and Pacific*. Manila; ADB. 2015. *Operational Plan for Health, 2015–2020.* Manila.

a platform from which other elderly care services can grow in the future.

45. The Project will have six subprojects comprising five facilities in individual districts/counties of Hebei that will directly enhance local service capacity and quality of service for elderly care, and one IA (Yanshan University) that will improve human resources capacity in the EC industry. The project location map is shown in Figure II.1.

Sources: PPTA team, September 2016.

Figure II.1 Project Location Map

C. Environmental Safeguards

46. The scope and magnitude of potential environmental impacts has been categorized under the PRC's EIA regulations[11]. The Directory for the Management of Different Categories of Construction Project Environmental Impact Assessment (MEP Order No. 33), of June 2015 rules that elderly care facilities with a building area more than 50,000 m^2 or community medical facilities, require a Tabular Environmental Impact Form (TEIF); and those components without hospitals and a construction footprint smaller than 50,000 m^2, require an Environmental Impact Registered Form (EIRF). All subprojects therefore require at least a TEIF.

47. Two EC Centers (Xinji and Chengde Shuangluan) will include hospital facilities (of 60 and 100 beds respectively), but these are not surgery, radiological or pathology supported facilities. They are in one case a geriatric hospital for bed-care residents and in the other a small rehabilitation hospital focusing on surgical recovery and physiotherapy. These will produce no unusual medical waste or wastewater beyond slight increases in amounts due to the larger number of residents. The Xinji subproject has been classified as category A by Xinji EPB in accordance in the PRC Guideline on EIA Classification for Construction Projects because it deals with a new hospital, requiring full Environment Impact Assessment Report (EIAR). The Chengde Shuangluan subproject is classified by Chengde EPB as category B, requiring a TEIF. The remaining subprojects all require preparation of a TEIF.

48. The project is classified as 'Category B' for environment under the ADB Safeguard Policy (SPS, 2009), requiring preparation of an IEE. This IEE has been prepared based on information in the individual FSRs and PRC environmental impact assessment documents for each IA, as well as site visits to the subprojects by the PPTA Environment Team.

49. The IEE includes an EMP (Attachment 1). This is the key guiding document for environmental-related issues in the construction and operational phases of the project. The potential impacts of project components are identified in the IEE, and the mitigation and protection measures to avoid, reduce, and/or mitigate these impacts to acceptable levels are described in the EMP. The EMP also defines the roles and responsibilities of relevant institutions, procedures and the EMP budget. The EMP draws on the findings of the project IEE, PPTA team's investigations and consultations with the relevant government agencies.

50. The EMP will be coordinated by the PMO and implemented by the IAs and their construction contractors. The EMP will be incorporated within Technical Specifications for construction, and will also be made available to the detailed design team to ensure all pre-construction mitigations are included within the Projects' final design.

[11] Based on project scale, investment level, and environmental sensitivity.

III. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

A. Policy and Planning Framework

51. Since the PRC's 3rd Plenum of the 18th Party Congress, the Hebei Provincial government has focused strongly on its response to population aging, accelerating the establishment of social service systems to care for the elderly and developing service industries for the elderly. This project is conducted within the framework of, and contributes to implementation of the following plans and policies:

- The Twelfth FYP for EC in Hebei Province;
- Notice about implementing tax reliefs to support the development of EC organizations (2011);
- Notice about land supply for the building of EC organizations, was issued by the Department of Land and Resources and the Department of Civil Affairs (2011);
- Notice about providing free training and accreditation for current EC workers (2011);
- Opinions on the implementation of rewards and subsidies for EC organizations (2012);
- Guiding opinions on speeding up the implementation of subsidy for elderly in advanced age, was issued by the Department of Civil Affairs (2012);
- Opinions on speeding up the building of an EC System (24 June 2014);
- Opinions on speeding up the development of EC, was issued by the Hebei Provincial Government (2014)";

B. Legislative framework for Environment Impact Assessment in the PRC

52. The domestic environment impact assessments (DEIAs) conducted for the project were prepared under the EIA Law of 2003, Management Guideline on EIA Categories of construction Projects (2015), and other relevant laws and regulations (Tables III.1 and Table III.2).

Table III.1 Applicable Laws

No.	Name of the Laws	Effective Data
1.	Environmental Protection Law	1 January 2015
2.	Environmental Impact Assessment Law	1 September 2016
3.	Water Law	1 October 2002
4.	Law on Prevention and Control of Environmental Pollution by Solid Wastes	June. 29, 2013
5.	Water Pollution Prevention and Control Law	Jun. 1, 2008
6.	Law on Water and Soil Conservation	25 December, 2010
7.	Law on Energy Conservation	1 April, 2008
8.	Law on the Protection of Cultural Relics	29 December, 2007
9.	Law on Promotion of Clean Production	1 June, 2003
10.	Law on Prevention and Control of Air Pollution	1 January 2016
11.	Law on Prevention and Control of Pollution from Environmental Noise	1 March, 1997
12.	Law on Protection of the Rights and Interests of the Elderly	1 July 2013
13.	Land Administration Law	2004
14.	Urban and Rural Planning Law	1 January 2008

Sources: Consolidated by PPTA Environmental Team, July 2016.

Table III.2: Applicable Administrative Regulations and Rules

No.	Name of Regulations and Rules	Effective Data
National Level		
1.	Ordinance of Urban Drainage and Sewage Treatment	State Council Order No. 641, 2014
2.	Notice on Issuing the "Detailed Rules of Implementation of the Action Plan of Air Pollution Prevention and Control in Beijing, Tianjin and Hebei and the	State Council Doc. No. 104, 2013

No.	Name of Regulations and Rules	Effective Data
	Surrounding Areas"	
3.	Notice by the State Council on Issuing the Air Pollution Prevention and Control Plan	Doc. No. 37, 2013
4.	Notice on Issuing the Guidelines of Facilitating Joint Prevention and Joint Control of Air Pollution and Improving Regional Air Quality"	State Council General Office Doc. No. 33, 2010
5.	Ordnance of the People's Republic of China on Government Information Disclosure	State Council Order No. 492, 2008
6.	Decision by the State Council on Implementing the Concept of Scientific Development and Strengthening Environmental Protection	State Council Doc. No. 39, 2005
7.	Ordnance of Environmental Protection and Management of Construction Projects	State Council Order No. 253, 1998
8.	Catalogue of Environmental Impact Assessment Classification and Management of Construction Projects	MEP Order No. 33, 2015
9.	Notice by the General Office of Ministry of Environmental Protection on Implementing the Air Pollution Prevention and Control Action Plan and Strictly Enforcing Environmental Impact Assessment Permit System	MEP Doc. No. 30, 2014
10.	Detailed Rules of Implementation of the Action Plan of Air Pollution Prevention and Control in Beijing, Tianjin and Hebei and the Surrounding Areas	MEP Doc. No. 104, 2013
11.	Notice on Issuing the Guidelines of Government Information Disclosure of Environmental Impact Assessment of Construction Projects	MEP-Office Doc. No. 103, 2013
12.	Catalogue for the Guidance of Industry Restructuring (amended in 2011)	NDRC Order No. 21, 2013
13.	Notice on Strengthening Risk Precaution and Strictly Managing Environmental Impact Assessment	MEP Doc. No. 98, 2012
14.	Notice on Further Strengthening Management of Environmental Impact Assessment and Preventing Environmental Risks	MEP Doc. No. 77, 2012
15.	Provisional Methods of Public Participation in Environmental Impact Assessment	MEP Doc. No. 28, 2006
16.	Provisional Methods of Management of Projects Financed by International Financial Institutions and Foreign Governments	NDRC Order No. 28, 2005
17.	Management Methods of Final Acceptance of Environmental Protection Aspects of Construction Projects	SEPA Order No. 13, 2002
Hebei Provincial Level		
18.	Ordnances of Public Participation in Environmental Protection in Hebei Province	January 1, 2015
19.	Several Opinions of the People's Government of Hebei Province on Addressing Livelihood Issues with Full Efforts	
20.	Stipulations on Utilization and Management of Materials and Equipment in Construction Projects in Hebei Province	Order No. 14, 2007
21.	Environmental Protection Ordnances of Hebei Province	Amended on March 25, 2005
22.	Water Pollution Prevention and Control Ordnances of Hebei Province	October 25, 1997
23.	Environmental Protection and Management Ordnances of Construction Projects in Hebei Province	Dec. 17, 1996
24.	Air Pollution Prevention and Control Ordnances of Hebei Province	Nov. 3, 1996
25.	Notice on Further Strengthening Environmental Protection Management of Construction Projects	Ji EIA No. 232, 2013
26.	Opinions on Further Strengthening the Work of Pollution Prevention and Control	JiHuanFang No. 224, 2012
27.	Notice on Further Strengthening Technical Review of Environmental Impact Assessment	JiHuanBan No. 186, 2011
28.	Notice on Further Strengthening Public Participation in EIA of Construction Projects	JiHuanBan Doc. No. 238, 2010
29.	Provisional Stipulations on a Number of Issues about Environmental Protection Management of Construction Projects	JiHuanBan Doc. No. 65, 2007
Project Municipal Level		
30.	Implementation Details of Implementing Air Pollution Prevention and Control Action Plan in Chengde City	ChengFa Doc. No. 20, 2013
31.	Notice of Issuing the Opinions of Chengde City on Implementation of Regional Banned (Restricted) Construction Projects in Hebei Province	Chengde Municipal Government – ZhengBan Doc. No. 136, 2009
32.	Methods for Prevention and Control of Dust Pollution on Construction	Order No. 185 of the People's

No.	Name of Regulations and Rules	Effective Data
	Sites of Construction Projects in Shijiazhuang City	Government of Shijiazhuang Municipality
33.	Standards for Management of Dust on Construction Sites of Construction Projects in Shijiazhuang City	Order No. 140 of the People's Government of Shijiazhuang Municipality

Sources: Consolidated by PPTA Environmental Team, July 2016.

53. Implementation of the environmental laws and regulations is supported by a series of associated management and technical specifications and standards (Table III.3).

Table III.3: Applicable Environmental Impact Assessment Guidelines

No.	Name of Guideline	Year/Code
1.	Technical guidelines for environmental impact assessment -General principles	HJ2.1-2011
2.	Technical guidelines for environmental impact assessment - Atmospheric environment	HJ2.2-2008
3.	Technical guidelines for environmental impact assessment - Surface water environment	HJ/T2.3-93
4.	Technical guidelines for noise impact assessment – Acoustic environment	HJ2.4-2009
5.	Technical guidelines for environmental impact assessment- Ecological environment	HJ19-2011
6.	Technical Guidelines for Environmental Risk Assessment on Projects	HJ/T 169-2004
7.	Technical Specifications on Comprehensive Management of Water and Soil Conservation	T16453.1~6-96
8.	(Trial) Guidelines on Identification of Solid Wastes	SEPA Announcement No. 11, 2006

Sources: Consolidated by PPTA Environmental Team, July 2016.

54. The PRC environmental quality standard system that supports the environmental laws and regulations is classified into two categories by function: pollutant emission/discharge standards; and, ambient environmental standards (Table III-4).

Table III.4: Applicable Environmental Standards

No.	Name of Standards	Code
1.	Ambient Air Quality Standard	GB3095-2012
2.	Environmental Quality Standards for Noise	GB3096-2008
3.	Environmental Quality Standard for Surface Water	GB3838-2002
4.	Water Quality Standard for Sewage Discharged into Municipal Sewers	CJ343-2010
5.	Emission Standard of Environment Noise for Boundary of Construction Site	GB 12523-2011
6.	Code for Sound Insulation Design of Civil Buildings	GB50118-2010
7.	Domestic Drinking Water Quality Standard	GB 5749-2006
8.	Standard for Pollution Control on Hazardous Waste Storage	GB 18597-2001
9.	Technical Guideline for Construction Project Environmental Risk Assessment	HJ/T 169-2004

Sources: Consolidated by PPTA Environmental Team, July 2016.

C. Evaluation Standards

55. ADB's SPS requires projects to apply pollution prevention and control technologies and practices consistent with internationally recognized standards such as the World Bank Group's Environmental, Health and Safety (EHS) Guidelines.[12]

56. It is PRC practice in environmental impact assessment for the relevant environment protection agency to nominate the water, air, soil and acoustic standards against which changes attributable to the subject development can be evaluated. Apart from noise and air quality, PRC standards are generally in line with internationally accepted standards as defined in the EHS Guidelines, PRC standards are also in classes or grades appropriate to different geographic and

[12]World Bank Group. 2007. *Environmental, Health and Safety Guidelines General EHS Guidelines.* Washington.

developmental situations. In some cases, the nominated evaluation standard for a parameter will be at a level appropriate for the environment and ambient conditions, but be less stringent than EHS targets and guidelines. In other cases (e.g. ambient acoustic quality) PRC standards are defined for categories not directly applicable to the classification of the World Health Organization. Where EHS standards exist for parameters, they are used in parallel with PRC standards in this assessment.

57. For water quality assessment, the ambient environmental standard applied in the PRC is *Surface Water Ambient Quality Standard* (GB3838—2002) (Table III.5). The class IV standard is the minimum required runoff standard for all construction projects in an urban environment. There is no EHS guideline or target for water quality in this context.

Table III.5: Surface Water Ambient Quality Standards (Unit: mg/L)

Standard	DO	I_{Mn}	BOD	COD	NH_3-N
(GB3838-2002) – Grade III	≥5	≤6	≤4	≤20	≤1.0
(GB3838-2002) – Grade IV	≥3	≤10	≤6	≤30	≤1.5
(GB3838-2002) – Grade V	≥2	≤15	≤10	≤40	≤2.0

Source: GB3838—2002.

58. The relevant ambient air quality evaluation standard for the rural areas where subprojects are to be sited has been nominated by the DOEP as Grade II of *Ambient Air Quality Standard* (GB 3095-2012). The concentration limits are shown in Table III.6. This is an example of where the nominated PRC evaluation standard is less stringent for some parameters (SO_2, $PM_{2.5}$) than the EHS guideline. $PM_{2.5}$ is the critical parameter in the project area, and this is further discussed in the environmental baseline section. Evaluation in the impacts chapter is based upon air quality index (AQI) levels since these trigger health implications which are most relevant to EC facilities.

Table III.6: Ambient Air Quality Grade II Standard

Pollutant	Averaging Period	PRC Class II (mg/m^3) Standard (GB3095-2012)	EHS (mg/m^3) (World Bank Group 2007)
SO_2	Annual average	0.06	n/a
	Daily average	0.15	0.125-0.05 (0.02 guideline)
	Hourly average	0.50	n/a
PM_{10}	Annual average	0.07	0.07-0.03 (0.02 guideline)
	Daily average	0.15	0.075-0.15 (0.05 guideline)
NO_2	Annual average	0.04	0.04 guideline
	Daily average	0.08	n/a
	Hourly average	0.20	0.20 guideline
CO	Daily average	4.0	n/a
	Hourly average	10	n/a
TSP	Annual average	0.20	n/a
	Daily average	0.30	n/a
$PM_{2.5}$	Annual average	n/a	0.015-0.035
	Daily average	0.15	0.0375-0.075
	Hourly average	0.35	n/a

Source: Ambient Air Quality Standard (GB 3095-2012).

59. In the construction phase, impacts from air pollutants from dust and earthworks will be assessed against Grade II standard (for construction in non-urban environments) specified in *Air Pollutant Comprehensive Emission Standard* (GB16297-1996). There is no EHS guideline or target for construction air emissions.

60. Noise environment for the project's settings will be evaluated against Class I standards of the *Environmental Quality of Noise Standard* (GB3096-2008). The parameter concentration

limits for this standard are shown in Table III.7.

Table III.7: Sound Environmental Quality Standards unit：dB (A)

Applicable Class	Standard Value	
	Day-Time	Night-Time
Class 1 (Area mainly for residence, cultural and educational institutions)	55	45
EHS	55	45

Source: GB3096-2008, World Bank's EHS Guidelines.

61. During construction, the level of noise from the sites will be assessed against the Emission Standard of Environment Noise for Boundary of Construction Site (GB12523-2011). There are no EHS targets of guidelines for transient construction noise. The parameter concentration limits for this standard are shown in Table III.8.

Table III.8: Construction Site Noise Limit (Unit: L_{eq}[dB(A)])

Period	Major Noise Source	Noise Limit	
		Day	Night
Construction	Bulldozer, excavators and loader; Pile driving machines; Concrete mixer, vibrator and electric saw; Hoist and lifter	70	55

Source: GB12523-2011.

62. **Vibration.** Construction activities are likely to cause vibration impact, and should comply with the Standard for Urban Area Environmental Vibration (GB10070－88). The details are shown in Table III.9. The project works are located on villages and communities, where standard 2 applies.

Table III.9: Vertical (Z) Vibration Standard Value for Various Urban Areas (Unit: L_{eq}[dB(A)]

Scope of applicable area	Day	Night
Special residential area	65	65
Residential, cultural and educational area	70	67
Mixed area and commercial center	75	72
Industrial centralized area	75	72
Both sides of traffic trunk line	75	72
Both sides of railway main line	80	80

Source: GB10070－88.

63. Because the subproject areas are not related to any special ecologically sensitive zones, the assessment of ecological environment belongs to Class III according to the Environmental Impact Assessment Technical Guidelines (HJ19-2011). Considering the characteristics of the project, the project will not use groundwater resources, cause groundwater level changes nor cause groundwater pollution. No assessment for groundwater is therefore required.

64. The soil quality standard for the rural areas of the subproject sites is Class 2 standard according to Environmental Quality Standards for Soil (GB15618-1995). The parameter concentration limits for this standard are shown in Table III.10.

Table III.10: Soil Environmental Quality Standards

Item	pH	Cu	As	Zn	Pb	Hg
Class II standard of GB15618-1995	6.5-7.5	≤100 mg/Kg	≤30 mg/Kg	≤250 mg/Kg	≤300 mg/Kg	≤0.5 mg/Kg

Sources: Environmental Quality Standards for Soil (GB15618-1995).

D. Implementation Arrangements

65. The Hebei Provincial government (HPG) will be the executing agency and the implementing agencies (IAs) will comprise both government institutions and project-participating enterprises (PPEs).

66. The Provincial Project Management Office (PPMO) under Hebei Department of Finance will be responsible for project implementation and coordination with ADB, coordination and administration of procurement activities while IAs will undertake specific subproject and procurement activities.

67. The main institutions involved in the implementation of the project and their roles in relation for the IEE and EMP are in Table III.11.

Table III.11: Roles and Responsibilities of Project Agencies

Project implementation organizations	Management Roles and Responsibilities
Executing Agency – HPG	Overall project guidance, coordination, supervision
PCG – provincial PCG	Policy guidance and interagency coordination
PPMO - within Department of Finance	On behalf of the executing agency, responsible for overall project coordination and supervision including: preparation and implementation; coordinate training and capacity development activities; safeguards compliance; prepare and submit semi-annual environmental and social safeguard monitoring progress reports; compliance with loan and project agreements
IAs. There are six IAs: • (Xinji) Xinji Juyouleyuan EC Service Co. Ltd • Julu County Hospital • Jinluan International Hotel Co., Ltd • Shexian County Runqinyuan Elderly Care Industry Development Co., Ltd • Lixian Guangrongyuan • Yanshan University, Qinhuangdao.	Implementing agencies will be both the project implementing units for construction of the subprojects and the operations and maintenance units for the completed facilities.

IV. DESCRIPTION OF THE PROPOSED PROJECT

A. Project Overview

68. The project comprises 4 outputs: (i) Community and home care services improved; (ii) Residential elderly care service capacity increased and quality improved; (iii) Elderly Care planning, development of human resources and industry capacity improved; and (iv) Capacity of the Elderly Care Sector Organizations Improved.

69. **Output 1: Community and home care services improved.** Output 1 will support the development of quality HCBC services by (i) developing selected community centers; (ii) developing services and creating links and support networks to improve and expand service delivery and quality; (iii) building capacity of the implementing agencies to create sustainable HCBC services that meet the needs of the elderly; (iv) developing ICT networks that support the elderly and EC service delivery; and (v) building capacity for CABs to monitor and ensure service quality.

70. **Output 2: Residential elderly care service capacity increased and quality improved.** Output 2 will support development of facilities, which will (i) provide residential care services for elderly with various types of need (i.e., assisted living, nursing care, dementia care, rehabilitation, etc.); (ii) establish links to existing health facilities and home and community care to support a continuum of care; and (iii) serve as demonstration models for other small cities seeking to improve EC quality and service delivery.

71. **Output 3: Development of human resources and industry capacity improved.** Output 3 will help address the EC human resources shortages and quality by supporting YSU to (i) develop training programs and faculty capacity in emerging EC service areas, such as caregiving and nursing, rehabilitation, EC management, technology to support EC, and counseling; (ii) develop curriculum and training materials in the priority areas with selected academic and training institutions across the province; and (iii) develop an EC training and research center and student dormitory on the YSU campus.

72. **Output 4: Capacity of elderly care sector organizations improved.** Output 4 will build the capacity of EC stakeholders in areas, such as planning, EC management, assessment, and quality assurance. It will also help implement innovative pilots in priority areas, such as health and EC integration, new services development (rehabilitation and dementia care), HCBC services, and ICT for EC. Training and advisory support will be provided to facilitate the efficient implementation and operationalization of the EC services to be provided through the project.

B. The Subprojects

73. Civil construction works will be significant components of Output 1 and Output 2, including the development of new EC facilities and/or upgrade of the existing community buildings for Home and Community Based Service (HCBS) Centers in five subprojects in Hebei Province. The sixth subproject will be implemented by Qinhuangdao Yanshan University (YSU) with three key focus areas: (i) EC management. YSU will develop a range of training courses in EC management; (ii) ICT for EC. YSU will design courses on ICT for EC to respond to the fast growing human resources needs in this area; (iii) Occupational therapy for EC. YSU will develop a series of training courses on rehabilitation for the elderly (e.g. physiotherapy, addressing specialist needs of patients with dementia). The proposed works include new construction of a total floor area of 161,234 m^2 of EC centers with capacity of 1,896 EC beds. The selected subprojects and proposed physical infrastructure developments are summarized in Table IV.1 and the specifications listed in Table IV.2.

Table IV.1: Subproject Activity Sheets for the Hebei Elderly Care Development Project

Name of subproject	Name of IA	Output 1: Community and home care services improved	Output 2: Institutional elderly care service capacity increased and quality improved	Output 3: Development of human resources and industry capacity [13] improved	Output 4: Capacity of the EC Sector Stakeholders Improved
Xinji Parents' Paradise Elderly Care Community Center	Xinji Juyouleyuan Elderly Care Service Co. Ltd	• Eight HCBS centers serving 5 townships will be established by renovating existing buildings (renovation* area is 7,900 m^2, with	• A new EC center and a small geriatric hospital [14] will be constructed (total construction area is 30,223m^2, with a total of 438 beds, including 60 geriatric hospital	NA	• Piloting of horizontal medical care and EC integration through cooperation with Xinji No. 1 Municipal Hospital; • 232 staff

[13] Training should at least include topics in: (1) characteristics of elderly in need of care and clinical issues of EC, (2) dementia care, (3) medical rehabilitation center, (4) generic quality assessment and (5) EC management.

[14] Level 1 hospital = 20 to 99 beds (smallest hospital type).

Name of subproject	Name of IA	Output 1: Community and home care services improved	Output 2: Institutional elderly care service capacity increased and quality improved	Output 3: Development of human resources and industry capacity [13] improved	Output 4: Capacity of the EC Sector Stakeholders Improved
		capacity of 130 beds); • Connect with ICT platform	beds – 50 geriatric/10 palliative); • An ICT center; • Rehabilitation center*; • Palliative care rooms		(including caregivers, management staff and administrative staff) for the EC center, geriatric hospital (60), and HCBS centers; • Training to caregivers and management staff
Julu County Healthcare and Elderly Care Integrated Service Center	Julu County Hospital	• Four HCBS centers will be renovated (renovation area is 3,309 m^2, with capacity of 110 beds); • Establish information center	• A new EC center with a total construction floor area of 20,945 m^2 will be constructed with a capacity of 403 beds including; • Rehabilitation center; recuperation, dementia • Palliative care rooms	NA	• Piloting of health and elderly care integration • 249 staff (including caregivers, management staff and administrative staff) for the EC center and HCBS centers; • Training to caregivers and management staff
Chengde Shuangluan District Haoren Health and Elderly Care Service Center Project	Chengde Haoren Elderly Care Industry Co., Ltd	• 25 (22 community and 3 street level) HCBS centers will established by renovating existing buildings in 25 local communities (renovation area is 7,400 m^2,); • Connect with ICT platform	• A new EC center and a rehabilitation hospital will be constructed (with a construction floor area of 25,008.72 m^2, with a total of 430 beds, including 100 beds for rehabilitation hospital**); • ICT platform; • Palliative care rooms	NA	• Piloting of: 1. EC Assessment; 2. using ICT in assessment of client needs; 3. Community based care • 396 staff (including caregivers, management staff and administrative staff) for the EC center, rehabilitation hospital, and HCBS centers; • Training to caregivers and management staff
Shexian County Binhe Elderly Care and Rehabilitation Center	Hebei Runqinyuan Elderly Care Industry Development Co., Ltd	• Three HCBS centers will established (renovation area is 3,100 m^2, with capacity of 80 beds); • Connect with ICT platform	• A new EC center with a construction floor area of 25,850 m^2 providing 360 beds will be built; • Rehabilitation center; • An ICT center; • Palliative care rooms	NA	• Piloting for: 1. EC Quality management; 2. Use of ICT in the administration, needs assessment and record-keeping of residential care and HCBC systems • 174 staff (including caregivers, management staff and administrative staff) for the EC center and HCBS centers; • Training to

Name of subproject	Name of IA	Output 1: Community and home care services improved	Output 2: Institutional elderly care service capacity increased and quality improved	Output 3: Development of human resources and industry capacity [13] improved	Output 4: Capacity of the EC Sector Stakeholders Improved
					caregivers and management staff
Baoding Lixian County Elderly Care Comprehensive Service Center	Lixian Guangrongyuan	• Ten HCBS centers will be established by renovating four existing buildings and constructing six new centers in local towns/townships (renovation area is 7,285.9 m^2, with capacity of 400 beds); • Establish call/response center	• A new residential EC center will be built (total construction floor area of 38,455.79 m^2 with a capacity of 425 beds); • Health checking center; • Rehabilitation center; • Call/response service center; • Palliative care rooms	NA	• Piloting for EC and HCBS development strategy and planning; • 276 staff (including caregivers, management staff and administrative staff) for the EC center and HCBS centers; • Training to caregivers and management staff
Yanshan University Health and Elderly Care Integration Training Center	Yanshan University	NA	NA	• A new EC training center inside the YSU campus will be constructed with a construction floor area of 13,960 m^2 will be built; • A student dormitory building with capacity of 1,000 beds, with a construction floor area of 6,000 m^2 will be built; • Training and Curriculum Development: Elderly care, EC Management, ICT for EC, Rehabilitation, Psychology and Counseling) • Staff and Management Capacity Building • Research	NA

IA=implementing agency; EC=elderly care; HCBS= home and community based service; ICT=call/response and communication technology; YSU=Yanshan University; NA=not applicable.
* Rehabilitation center: In China each province or major city has a rehabilitation center under civil affairs. Its main function is to produce rehabilitative or assistive devices and provide rehabilitation services for disabled people after a surgery from a hospital. In recent years, rehabilitative centers also began to operate rehabilitative hospital within the center, which also includes diagnosis and treatment of people with cognitive or other disabilities.
** Rehabilitation hospital: Hospital that monitors and provides rehabilitation services for disabled people, which is under the federation of people with disabilities. It does not perform surgeries.
Sources: domestic subproject FSRs, September 2016.

Table IV.2 Specifications of Civil Construction Development

Sub-project	IA	EC Centers				HCBS Centers		
		Area (mu)	Construction Area (m^2)	Beds	Geriatric Component (beds)	Building Renovation area (m^2)	No. of centers	Beds
Xinji Parents'	Xinji	39.75	38,301	378	60	7,900	8	130

Paradise Elderly Care Community Center	Juyouleyuan Elderly Care Service Co. Ltd							
Julu County Healthcare and Elderly Care Integrated Service Center	Julu County Hospital	27.64	20,945	403		3,309	4	110
Chengde Shuangluan District Haoren Health and Elderly Care Service Center Project	Chengde Haoren Elderly Care Industry Co., Ltd	30	25,009	330	100	7,400	25	370
Shexian County Binhe Elderly Care and Rehabilitation Center	Hebei Runqinyuan Elderly Care Industry Development Co., Ltd	24	25,850	360		3100	3	80
Baoding Lixian County Elderly Care Comprehensive Service Center	Lixian Guangrongyuan	75	38,456	425		7,286	10	400
Yanshan University Health and Elderly Care Integration Training Center	Yanshan University	4.7	19,960.00	NA	NA	NA	NA	NA
Total		**201.09**	**161,234.49**	**1,896**	**160**	**29,063.90**	**50**	**1,090**

IA=implementing agency, EC=elderly care, HCBS=home and community based service
Sources: domestic subproject FSRs, September 2016.

1. Xinji Parents' Paradise Elderly Care Community Center

74. The subproject site is located in Xinji City in Shijiazhuang Municipality. The implementing agency of the subproject is a private enterprise – Xinji Juyouleyuan Elderly Care Service Co. Ltd (its parent company is the Hebei Dayu Group Co., Ltd). Under Output 1, eight HCBS centers will be established by renovating existing buildings in three local urban communities and five existing garment manufacturing sites owned by the parent company. Under Output 2, a new EC center and a small geriatric hospital[15] with construction floor area of 38,301 m^2 will be constructed with 60 geriatric beds (Table IV.2). The site for the new construction for Output 2 is shown in Figure IV.1.

[15] Level 1 hospital = 20 to 99 beds (smallest hospital type).

Sources: Xinji Subproject EIA report, September 2016. Currently this site is for seeding planting by the company.

Figure IV.1: Site of EC Center for Xinji Subproject

Table IV.2: Civil Works Details of Xinji Subproject (unit: m^2, beds)

	Items	Unit	Amount	No. of beds
Output 1: HCBS centers				
Town/Township area				
1.	Xinleitou Village (existing factory)	m^2	600	20
2.	Jiucheng Village (existing factory)	m^2	600	20
3.	Zhiwiu Village (existing factory)	m^2	700	20
4.	Wangkou (existing factory)	m^2	600	20
5.	Qianying Township (existing factory)	m^2	500	20
Urban area				
6.	Aolin Shengyuan Community	m^2	100	10
7.	Fanghua Community	m^2	100	10
8.	Qinghewan Community	m^2	200	10
	Sub-total	***m^2***	***3,400***	***130***
Output 2: EC center				
9.	Dependent care, geriatrics hospital and rehabilitation center			
9.1.	1st floor Clinic	m^2	2,210	
9.2.	2nd floor Rehabilitation center	m^2	2,018	50
9.3.	3rd floor geriatrics hospital and palliative care rooms	m^2	1,356	10
9.4.	4th floor (office, calling center)	m^2	1,356	
9.5.	5th – 9th floor (dependent elderly care)	m^2	6,986	150
	Sub-total	***m^2***	**13,926**	**210**
10.	Apartments for semi-dependent elderly people	m^2		
10.1.	Daily care center	m^2	250	20
10.2.	Semi-dependent EC	m^2	12,465	208
10.3.	Staff dormitory	m^2	3,500	
	Sub-total	***m^2***	**16,215**	**228**
11.	Canteen and elderly activity center	m^2	950	

	Items	Unit	Amount	No. of beds
12.	Underground parking area	m^2	4,850	
13.	Underground facilities for geriatrics hospital	m^2	2210	
14.	Ancillary buildings	m^2	150	
	Sub-total		***8,160***	***438***
	TOTAL	**m^2**	**38,301**	**438**
15.	Floor area ratio		1.18	
16.	Building density	%	19.18	
17.	Greening rate	%	45.3	

Sources: Xinji subproject FSR, September 2016.

75. Under Output 4, an EC service call center established under an agreement between IA and China Mobile will develop and implement an Information and Communication Technology (ICT) platform, with 10 service hotlines connected. Intensive training will be provided to caregivers to improve their skills – particularly in regard to the new facilities and modern care regimes that they are designed to deliver. This subproject will also conduct piloting for medical care and EC integration through cooperation with Xinji No. 1 Municipal Hospital.

2. Julu County Healthcare and Elderly Care Integrated Service Center

76. The subproject site is located in Julu County in Baoding Municipality. The IA is a state-owned hospital – Julu County Hospital, which has experience in the EC sector. The subproject will be piloting health and elderly care integration.

77. Under Output 1, four existing HCBS centers will be renovated, with a total area of 3,384 m^2. Under Output 2, a new EC center with a total construction floor area of 20,945 m^2 will be constructed with a capacity of 403 beds (Table IV.3). The proposed EC site is shown in Figure IV.2.

Figure IV.2: Location of EC Center for Julu Subproject

Table IV.3: Civil Works Details of Julu Subproject (unit: m^2, beds)

Items		Unit	Amount	Remarks
EC center				
1	Project land area	m^2	18,424	27.64 mu
2	Total construction floor area	m^2	20,945	

Items		Unit	Amount	Remarks
2.1	Daily care center	m^2	555	
2.2	Health care center	m^2	780	
2.3	Palliative care	m^2	130	
2.4	Canteen	m^2	950	With kitchen
2.5	Rehabilitation center	m^2	1,675	With facilities room
2.6	Entertainment center	m^2	1,170	
2.7	Staff dormitory	m^2	400	With bathroom and toilets
2.8	Information center and office	m^2	640	
2.9	Dementia care	m^2	1,680	With nurse stations, bathrooms, laundry rooms
2.10	Dependent and semi-dependent care	m^2	10,175	
2.11	Multi-function room	m^2	410	
2.12	Equipment room	m^2	388	
2.13	Reception and corridor space	m^2	1,992	Including parking lots
3	Base area	m^2	6,353	
4	Greening area	m^2	6,448	
5	Road and square area	m^2	3,473	
6	Parking lots	No.	5	
HCBS				
1	Xiaolvzhai Center Clinic Center	m^2	975	Rehabilitation
2	Guanzhai Township Hezhai Center Home for Aged	m^2	478	
3	Yantong Town Elderly Center	m^2	978	
4	No.3 Civil Affair Service Center	m^2	953	
	Subtotal	m^2	3,384	

Source: Julu FSR, September 2016.

3. Chengde Shuangluan District Haoren Health and Elderly Care Service Center

78. The subproject site is located in Shuangluan District in Chengde Municipality. The IA is a private enterprise - Hebei Jinluan International Hotel Co., Ltd. Under Output 1, 25 HCBS centers will established by renovating existing buildings in 25 local communities. Under Output 2, a new EC rehabilitation center in Dayuanbaoshan Village of Shuangtashan Town will be constructed with a construction floor area of 25,008.72 m^2. The project site for the proposed EC Center are in Figure IV.3 and civil works components summarized in Table IV.4.

Table IV.4: Civil Works Details of Shuangluan Subproject (Unit: m^2, beds)

	Items	Unit	Amount	No. of beds
Output 1: HCBS centers				
1.	25 Communities (rehabilitation)	m^2	7,400	
	Sub-total	***m^2***	***7,400***	
Output 2: EC center				
2.	EC center	m^2	16,023	330
2.1.	EC building	m^2	10,039	
2.2.	Comprehensive Service area	m^2	5,736	
2.3.	Smart EC service information platform (Output 3)	m^2	249	
3.	Rehabilitation Hospital	m^2	8,985	100
	Sub-total	***m^2***	***25,009***	***430***
	TOTAL	**m^2**	**32,409**	**430**
4.	Building/ site density	%	25.92	
5.	Greening rate	%	15.8	

Sources: Shuangluan subproject FSR, September 2016.

Sources: Shuangluan subproject FSR, September 2016

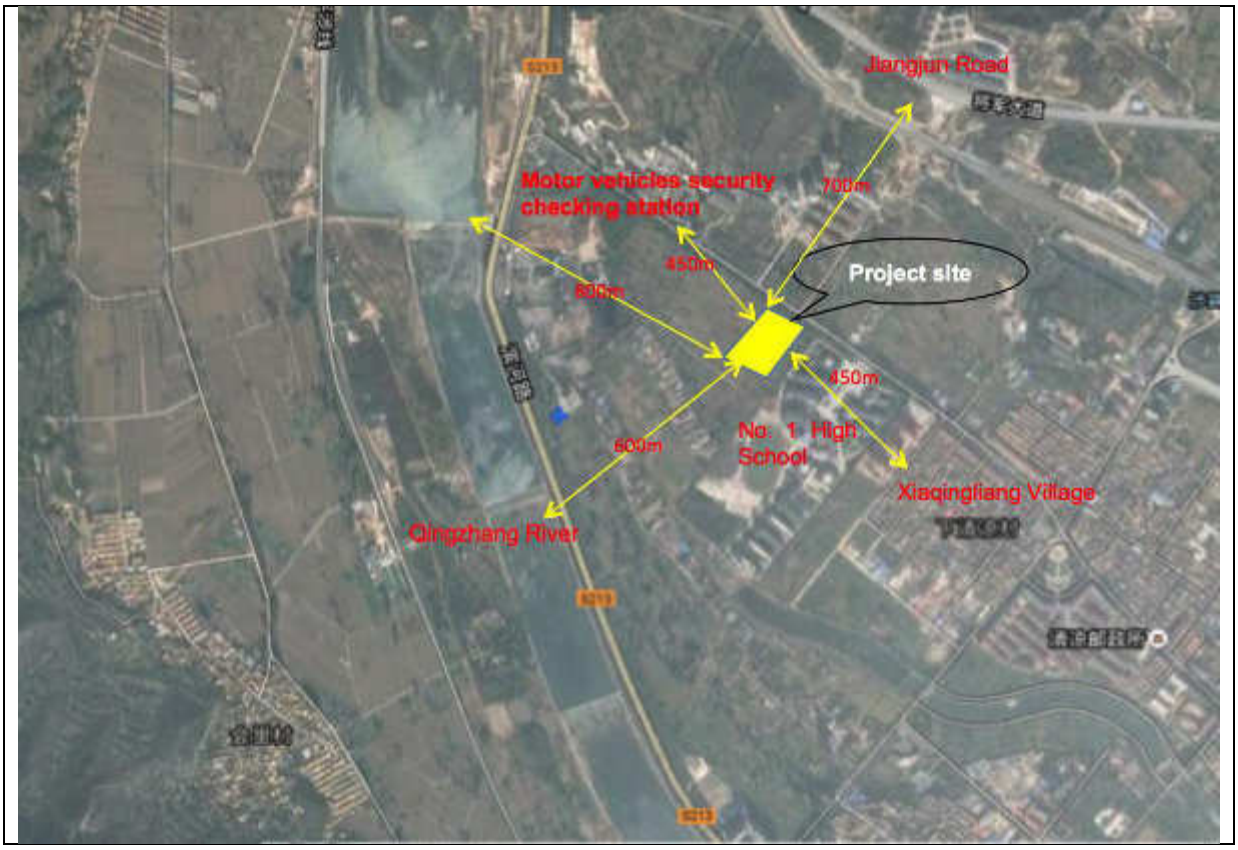
Figure IV.3: Sites of EC Center for Shuangluan Subproject

79. Under Output 4, the subproject will construct an information/service platform for the 25 community HCBS centers to provide full-time, monthly, weekly and day care. The “Internet of Things” and other advanced technologies will be used for daily management and service. The project will use mobile terminal equipment and environment monitoring devices to perceive elderly health status and understand the demand for service, applying network cloud platform for information collection, data management, and data analysis and provides the elderly with housekeeping, nursing, first aid, medical rehabilitation and transportation. All the caregivers will be trained to gain professional certificates before they provide EC services in practice. Medium level management staff will be given further development training and study tours to other EC centers will be organized. Staff will also receive training provided by the Committee on Aging.

4. Shexian County Binhe Elderly Care and Rehabilitation Center

80. The subproject site is located in She County in Handan Municipality. The IA of the subproject is a private enterprise - Hebei Runqinyuan Elderly Care Industry Development Co., Ltd. Under Output 1, three HCBS centers will established by renovating the existing buildings in two local communities (Junziju and Lanbaowan Communities) with a total area of 3,100 m^2.

81. Under Output 2, a new EC rehabilitation center with a construction floor area of 25,850 m^2 will be built. The EC project site is shown in Figure IV.4 and a summary of civil works is at Table IV.6.



Sources: Shexian Subproject FSR, September 2016

Figure IV.4: Site of EC Center for She County Subproject

Table IV.6: Civil Works Details of Shexian Subproject

No.	Items	Unit	Amount	No. of beds
1	Land occupation area	m^2	16,000	
2	Total floor area	m^2	25,850	360
2.1	Above ground construction area	m^2	19,600	
2.1.1	Independent EC	m^2	9,592	222
2.1.2	Dependent and semi-dependent EC	m^2	10,008	138
2.2	Underground construction area	m^2	6,250	
3	Base area	m^2	5,347	
4	Greening area	m^2	5,600	
5	Building density		33.42%	
6	Floor area ratio		1.22	
7	Greening rate		35.00%	
8	Area of HCBCs	m^2	3,100	

Sources: Shexian subproject FSR, September 2016.

82. Under Output 4, a regional ICT network will be established in the core EC center and covering the three HCBS centers, to monitor the EC service performance and conduct electronic care records collection, and reach the combination of the EC center with community centers. The subproject will be piloting service quality management and use of ICT in the EC center and HCBS centers. Training will be provided to caregivers to improve their skills, in compliance with the “national vocational standards for EC caregivers”. A certificate at the end of seven days

training is required before they can commence work. During the project operation, outsourced specialists will be invited to provide further training to caregivers on-site, and the IA will select staff to attend external national-level, municipal-level or local level trainings. The IA will institute incentive mechanisms to encourage staff to undertake more studies and obtain higher level certification.

5. Baoding Lixian County Elderly Care Comprehensive Service Center

83. The subproject site is located in Lixian County in Baoding Municipality. The IA of the subproject is a state-owned entity – Lixian Guangrongyuan. Under Output 1, ten HCBS centers will be established by renovating five existing buildings (community centers and village committee rooms) and constructing five new centers in local towns/townships.

84. Under Output 2, a new residential EC center with construction floor area of 38,455.79 m^2 will be built. The location and site for the EC development is at Figure IV.5 and civil works are summarized in Table IV.7.

Sources: Lixian Subproject FSR, June 2016.

Figure IV.5: Location of EC Center for Li County Subproject

Table IV.7: Civil Works Details of Lixian Subproject

Items	Unit	Amount	No. of beds
Output 1: HCBS centers			
Junpengshangpin daily care center (renovation)	m^2	586	
Liuwu Town Wenliu North daily care center	m^2	753	
Liuwu Town Junpeng Garden daily care center (renovation)	m^2	576	

Items	Unit	Amount	No. of beds
Liuwu Town Dongnan Street daily care center	m^2	752	
Baoxu Township daily care center	m^2	720	
Liushi Town daily care center (renovation)	m^2	1,176	
Xinxing Town daily care center	m^2	432	
Nanzhuang Town daily care center	m^2	800	
Beiguodan Town daily care center	m^2	723.2	
Xinxiang Village daily care center (renovation)	m^2	768	
Sub-total	***m^2***	***7,286***	***425***
Output 2: EC center			
Residential EC center	m^2	15,527	400
Registration service room	m^2	694	
Information service center	m^2	409	
Health checking center	m^2	872	
Rehabilitation center	m^2	1,613	
Entertainment activity center	m^2	4,339	
Palliative care	m^2	1,031	
Administrative office	m^2	1,329	
Canteen, kitchen, laundry room, staff dormitory, and public bathrooms	m^2	4,372	
Sub-total	**m^2**	***30,186***	***400***
TOTAL	**m^2**	**37,472**	**825**
Floor area ratio		0.60	
Building density	%	23.9	
Greening rate	%	50	

Sources: Lixian subproject FSR, September 2016.

85. Under Output 4, the subproject will build up its own team for professional EC service provision by recruiting professionals and providing intensive training to the caregivers and management staff. Training will cover EC service provision, human resources development, and career development. It will also develop a volunteer system involving local village committees and the Civil Affairs Bureau. The subproject will demonstrate the development of a dedicated local EC strategy, by establishing a working group, including consultants and relevant local government agencies, to examine ways of improving EC sector development locally.. The working group will analyze the demand for elderly care services, devise an EC strategy in response and initiate its implementation as a demonstration for other funded subprojects and others elsewhere in Hebei Province.

6. Yanshan University Health and Elderly Care Integration Training Center

86. The subproject site is located in Haigang District of Qinhuangdao Municipality. The IA is a public university – Yanshan University (YSU). YSU campus covers an area of 4,000 mu (or 267 hectares) with a total floor space of 1 million m^2. At present, the university has a faculty and staff of 3,000, including 2,000 teachers, of which 413 are professors (including 200 doctoral advisors) and 630 associate professors. The university has a student population of 39,000.

87. Under Output 3, a new EC training center (with student dormitory building) inside the YSU campus will be constructed with a construction floor area of 19,960 m^2 will be built. The project site is shown in Figure IV.4 and a summary of civil works is at Table IV.5. Yanshan University will construct an EC training center and student dormitory and develop a range of long- and short-term new courses and curricula in five areas of EC (geriatric nursing, occupational therapy, EC management, geriatric psychology, and ICT for EC).

Sources: Yanshan University Website for the campus layout, and Google map, October 2016.

Figure IV.6: Site of EC Center for YSU Subproject

Table IV.5: Civil Works Details of YSU Subproject (unit: m^2)

Items	Unit	Amount
Land area	m^2	4,240
Total floor construction area	m^2	19,960
Area of square	m^2	5,000
Greening area	m^2	2,500

Sources: Yanshan University subproject FSR, October 2016.

7. HCBS Centers – General Description

88. The HCBS Centers will be located in existing community center buildings, village committee buildings, and surplus commercial or manufacturing dormitory buildings. The ex-commercial and ex-manufacturing premises have been selected on the basis of their environmental suitability (non-polluted sites; non-contaminated building materials; and separation from active commercial and industrial enterprises). The candidate HCBS Centers are summarized in Table IV.8. All buildings provide a structural shell which will be internally renovated to provide the HCBS facilities, and the outside curtilage will be landscaped to provide essential amenity. Figure IV.7 shows typical HCBS renovation sites in three counties.

Table IV.8: Candidate HCBS Centers

Subproject	IA	Candidate Building for renovation
Xinji Parents' Paradise Elderly Care Community Center	Xinji Juyouleyuan Elderly Care Service Co. Ltd	Existing community centers and garment assembly center dormitories.
Julu County Healthcare and Elderly Care Integrated Service Center	Julu County Hospital	Existing HCBS Centers
Chengde Shuangluan District Haoren Health and Elderly Care Service Center Project	Chengde Haoren Elderly Care Industry Co., Ltd	Existing community centers and parts of village committee buildings
Shexian County Binhe Elderly Care and Rehabilitation Center	Hebei Runqinyuan Elderly Care Industry Development Co., Ltd	Existing community centers

Subproject	IA	Candidate Building for renovation
Baoding Lixian County Elderly Care Comprehensive Service Center	Lixian Guangrongyuan	Existing community centers and parts of village committee buildings
Yanshan University Health and Elderly Care Integration Training Center	Yanshan Univerity	NA

(a) Existing HCBS Julu

(b) Interior existing HCBS Julu

(c) Community Center Lixian

(d) Factory dormitory Xinji

Figure IV.7: Typical candidate HCBS Centers for renovation to modern HCBS standard.

V. DESCRIPTION OF THE ENVIRONMENT (BASELINE DATA)

A. Regional Environmental Setting

1. Landform

89. Most of central and southern Hebei lies within the North China Plain with an elevation mostly below 50 m, accounting for 43.4% of the total provincial area. The western part of Hebei rises into the Taihang mountains (Taihang Shan), while the Yan mountains (Yan Shan) run through northern Hebei, beyond which lie the grasslands of Inner Mongolia. The Yan Shan and Taihang shan, including highlands and basins, mostly lie within an elevation below 2,000 m and cover about 48% of the province's area. The highest peak is mount Xiaowutai in northwestern Hebei, with an altitude of 2,882 m.

2. Climate

90. Hebei enjoys a warm temperate semi-humid and semi-arid continental monsoon climate, characterized by distinctive seasonal difference, with cold, dry winters, and hot, humid summers. Temperatures average −16 to −3 °C (3 to 27 °F) in January and 20 to 27 °C (68 to 81 °F) in July. The annual precipitation ranges from 400 to 800 mm (16 to 31 inches), concentrated heavily in summer. The coincidence of highest rainfall and highest temperature periods is illustrated by the yearly climate chart for Shijiazhuang in Figure V.1.

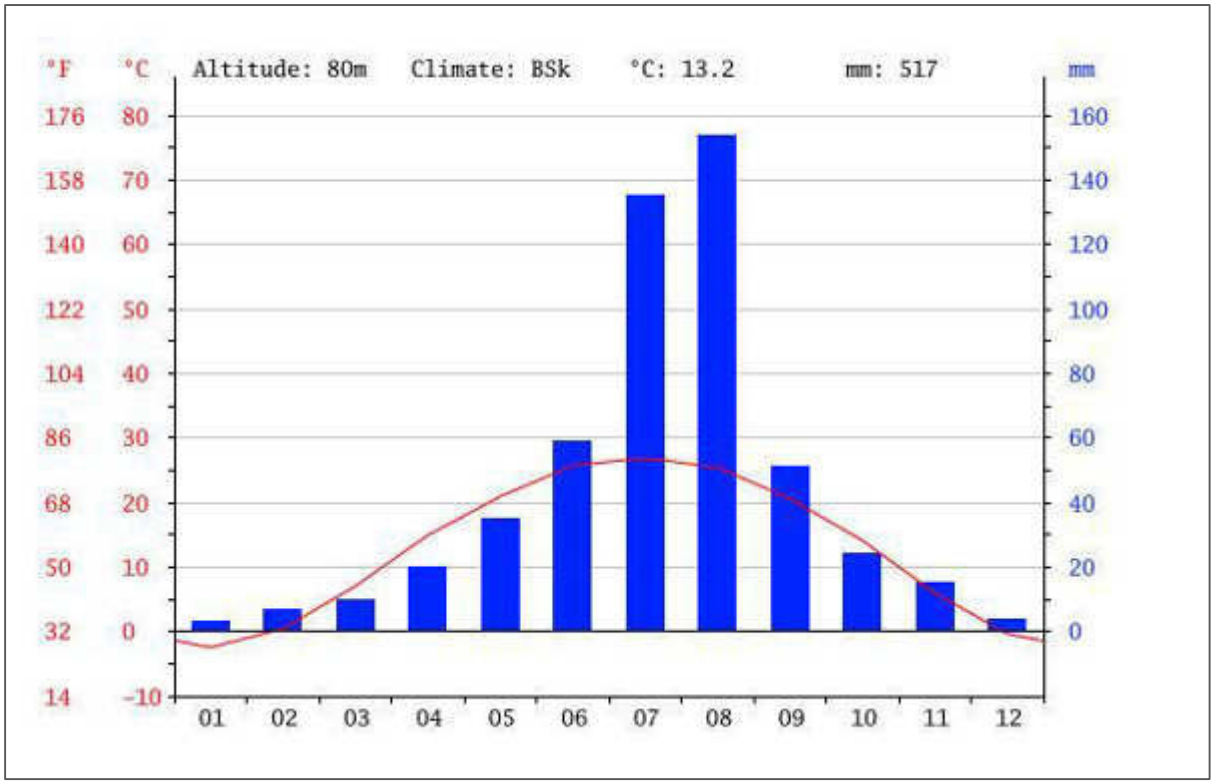


Figure V.1: Average Yearly Climatic Parameters for Shijiazhuang (Source: climate-data.org)

3. Hydrology Resources

91. **Surface water.** Hebei borders the Bohai Sea on the east. Major rivers are the Hai River and Luan River. The Hai watershed covers most of the province's central and southern parts and has an average discharge at its mouth of 717 m^3/s. The Luan watershed covers the northeast of the province and is half the length of the Hai River, with an average discharge into the Bohai Sea of around 400 m^3/s. Hebei's surface water resources in 2014 was recorded at 46.94 x 10^8 m^3. Numerous reservoirs are located in Hebei's hills and mountains. The largest natural lake in Hebei is Baiyangdian, located mostly in Anxin county.

92. **Groundwater.** Groundwater resources of Hebei (at 89.29 x 10^8 m^3) exceed the surface water resource. Throughout Hebei, the local groundwater is extracted for both domestic (drinking) and industrial use. Commonly, the groundwater quality for hardness, total dissolved solids, ammonia-nitrogen (NH_4-N) and sulfate do not comply with Class III category of the Groundwater Quality Standard (GB3095-1996). The groundwater quality can only therefore be categorized as GB3095-1996 Class IV, which requires treatment for drinking water purpose. This is due to the depletion of the groundwater resources, and hence concentration of contaminants, due to the saline soil background and exacerbated by over-extraction.

93. Reversing the depletion of groundwater resources has been targeted by the provincial and local governments. In many counties, measures for monitoring and enforcing the closure of unpermitted groundwater extraction are being implemented. As a result, in many local areas the groundwater depletion has been alleviated and groundwater level is reported recovering in recent years. Clean water re-injection for groundwater replenishment is currently being considered by the HPG if the recovery of groundwater resource is not significant over the long-term.

94. The project makes no use of groundwater resources and subprojects will be designed to minimize the potential for groundwater pollution through connection to municipal sewerage systems.

4. Air Quality

95. Hebei is one of the most air polluted provinces in China. According to the Ministry of Environmental Protection (MEP) for the severe fog-haze month of Jan. 2013, seven of the top ten most polluted cities in China were located in Hebei Province. Within the Province, the air pollution in the southern cities is much more severe than the northern cities. Particulate matter (PM) is the major air pollutant, sulfur dioxide (SO_2) and nitrogen oxides (NO_X) pollutions are also considerable. Ozone (O_3) pollution in larger cities, such as Shijiazhuang, is significant. The major industries in Hebei are iron, steel, coke and cement. In 2011, 45.5% of the steel in the world was produced in China, out of which 24.0% was produced in Hebei. China's coke production accounted for more than 60% of the world, of which 14.5% was produced in Hebei. Hebei's cement production is 6.9% of the national total amount[16]. Additionally, Hebei is surrounded by the other three most populated and industrialized provinces of PRC, Shandong, Henan and Shanxi.

96. According to bulletins released by MEP of the national air quality status in the first six months of 2016, Shijiazhuang and five surrounding Hebei cities including Baoding, Xingtai, Handan, Tangshan, and Hengshui, are among China's 10 most polluted cities, while Shijiazhuang itself ranked 9th in the list.

97. Although Hebei Province has made a great effort on air quality, pollutant emissions such as SO_2 and fly ash showed a notable increase in 2001 to 2006. However, after 2006 the emissions started to decrease due to the strict implementation of the national 11th Five Year Plan (FYP). Recent media releases from MOEP indicate that air pollution levels in Hebei have fallen 28.7% between 2013 and 2015, making Hebei one of the China's four fastest improving provinces. In addition, regional joint air pollution control and prevention strategies are expected in the future to substantially change the severe air pollution status in Hebei Province.

5. Natural Disasters

98. Hebei is subject to a range of natural disasters. The proximity to the coast and the large internal watershed of the Hai River results in yearly flood and weather fluctuations. A summary of the magnitude of these events (in terms of land area affected) over the last 14 years is summarized in Table V.1.

[16] Wang L et al 2013, A Review of Air Pollution and Control in Hebei Province, China, *Open Journal of Air Pollution*, 2013, 2, 47-55

Table V.1: Areas Affected by Natural Disasters ('000 ha)

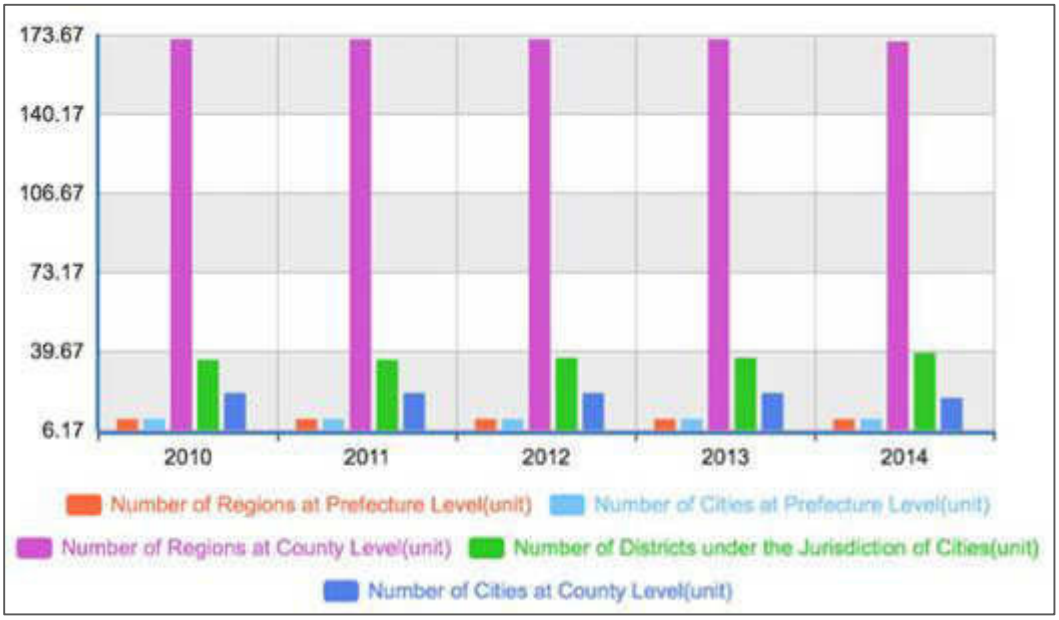
Event	2000	2005	2010	2013	2014
Drought	2974.7	934.15	844.65	195.7	976.12
Flood	114.16	108.8	127.12	226.45	17.463
Wind Hail	256.15	347.47	149.83	247.33	125.496
Frost	1.74	18.29	252.98	36.94	26.387
Disease and Insect	203.4	247.75	118.8	29.89	12.383

Sources: Hebei 2015 Year Statistic Book.

99. The most recent flood event in Hebei was on 23 July in Daxian Village in Xingtai (one of the project municipalities for the Julu subproject), which flooded a large area 30 km northeast of the project site.

6. Socioeconomic Conditions

100. Hebei is made up of seven prefectural-level divisions (Figure V.1). These seven prefecture-level divisions are subdivided into 170 county-level divisions. The area and population of Hebei Province and the project's municipalities are summarized in Table V.2.



Sources: http://data.stats.gov.cn/

Figure V.1: Divisions of Administrative areas in Hebei Province

Table V.2: Area and Population in Hebei and Project Municipalities

Name of city	Area in km^2	Population	Districts	Counties
Hebei Province	187,700	71,854,202	44	99
Shijiazhuang	14,052.56	9,547,869	8	11
Xingtai	12,433.00	7,104,114	2	15
Chengde	39,512.98	3,473,197	3	5
Tangshan	14,334.59	7,577,284	7	5
Handan	12,066.00	9,174,679	4	14
Baoding	22,185.00	10,029,197	5	15

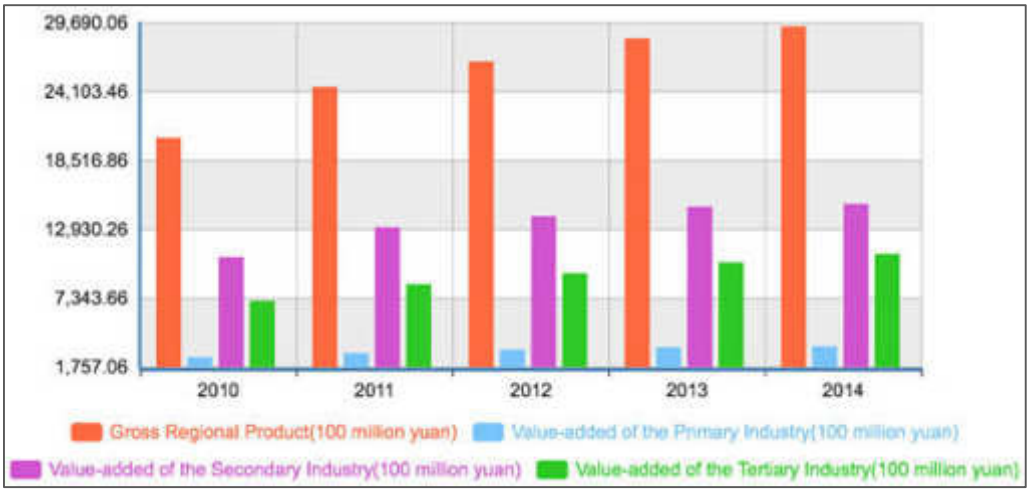
Sources: local Civil Affairs Bureaus, July 2016.

101. **Elderly population**[17]**.** The elderly population in Hebei Province is increasing. In 2013, people aged 60+ reached 15% (10,742,300) of the total population (73,326,300). It is expected to reach 17% (13,300,000) by 2020.[18] Among the 6 municipalities where the sub projects are located, proportion of elderly population will increase from 17% in 2015 to 21% in 2020 in Chengde (Shuangluan); 16% to 20% in Shijiazhung (Xinji); 17% to 19% in Boading (Lixian) and 14% to 17% in Handan (Shexian). Based on international practice, a community will be an aging community when the proportion of people aged 65+ exceeds 10 – 12% of its total population. In China however, the age when people are classified as elderly is >60+. In general, there are more elderly in rural than in urban area. The ratios of urban and rural elderly in the five sub project areas are: Lixian (1:2.34); Xinji (1:2.32); Zhuhua (1:1.72); Shexian (1:1.65) and Shuangluan – Chengde (1:0.46). Even though Chengde is one of the rapidly ageing municipalities, there are more urban than rural elderly[19].

102. **Resources.** Hebei's main agricultural products are cereal crops including wheat, maize, millet, and sorghum. Cash crops like cotton, peanut, soya bean and sesame are also produced. Kailuan, with a history of over 100 years, is one of PRC's first modern coal mines, and remains a major mine with an annual production of over 20 million tons. Much of the North China Oilfield is found in Hebei, and there are also major iron mines at Handan and Qian'an. Hebei's industries include textiles, coal, steel, iron, engineering, chemical production, petroleum, power, ceramics and food.

103. In 2014, Hebei's gross domestic product (GDP) was CNY 2.942 trillion (US$479 billion) and ranked the sixth in the PRC. GDP per capita reached CNY 39,984. As of 2014, disposable income per capita in urban areas was CNY 17,589, while rural net income per capita was CNY 7,023. The primary, secondary, and tertiary sectors of industry contributed CNY 344.746 billion, CNY 1,501.29 billion, and CNY 1,096.08 billion, respectively. GDP and industry production values in 2010-2014 are shown in Figure V.2. People's income affects their ability and willingness to purchase EC services. In 2013, annual disposable income per capita of urban residents in Xinji were CNY 23,000; Shuangluan – CNY 22,000; Baoding (Lixian)[20] – CNY 21,181 and Shexian – CNY 13,000. Per capita disposable income of rural residents in Xinji were CNY 11,000; Baoding (Lixian) – CNY 8,700; Shuangluan and Shexian – CNY 7,600.

[17] PPTA Technical report – Residential Care, July 2016.
[18] Xinji FSR, 2016. p. 5.
[19] Wang Xiaobo (2015). Section 3.1, Hebei Elderly Care System Development. A report prepared for ADB (SC 104708).
[20] Lixian's information was unavailable, based on Baoding.



Sources: http://data.stats.gov.cn/.

Figure V.2: GDP and Industry Value in 2010-2014

104. **Labor force**. 40% of Hebei's labor force works in the agriculture, forestry and animal husbandry sectors, with the majority of production from these industries going to Beijing and Tianjin. Hebei's main agricultural products are cereal crops including wheat, maize, millet, and sorghum. Cash crops like cotton, peanut, soybeans and sesame are also produced.

105. **Ethnic minorities.** The population is mostly Han Chinese with minorities of Mongol, Manchu, and Hui Chinese. The very low proportion of ethnic minorities living in the project areas is shown in Table V.3.

Table V.3: Ethnic Groups in Hebei, 2000 census

Nationality	Population	Percentage
Han Chinese	63,781,603	95.65
Manchu	2,118,711	3.18
Hui	542,639	0.78
Mongol	169,887	0.26
Zhuang	20,832	0.031

Source: Department of Population, Social, Science and Technology Statistics of the National Bureau of Statistics of China and Department of Economic Development of the State Ethnic Affairs Commission of China, eds. *Tabulation on Nationalities of 2010 Population Census of China*. 2 vols. Beijing: Nationalities Publishing House 2013.

B. Subproject Prefectures Environmental Setting

1. Shijiazhuang Municipality (Xinji Parents' Paradise Elderly Care Community Center)

106. **Terrain.** Shijiazhuang is situated east of the Taihang Mountains, a mountain range extending over 400 km from north to south with an average elevation of 1,500 to 2,000 m (4,900 to 6,600 feet); making Shijiazhuang a place for hiking, outdoor trips and cycling.

107. **Climate.** The city has a continental, monsoon-influenced semi-arid climate, characterized by hot, humid summers due to the East Asian monsoon, and generally cold, windy, very dry winters that reflect the influence of the Siberian anticyclone. Spring can see sandstorms blowing in from the Mongolian steppe, accompanied by rapidly warming, but generally dry, conditions. Autumn is similar to spring in temperature and lack of rainfall. January averages −2.3 °C (27.9 °F), while July averages 26.8 °C (80.2 °F); the annual mean is 13.38 °C (56.1 °F).

With the monthly percent possible sunshine ranging from 45 percent in July to 61 percent in May, the city receives 2,427 hours of sunshine annually. More than half of the annual rainfall occurs in July and August alone.

108. **Air pollution.** Shijiazhuang city is 9th in the MEP list of the top 10 worst air quality cities. A snapshot of this is provided by the real-time Air Quality Index (AQI) in Shijiazhuang is shown in Figure V.3. The headline parameter for AQI bulletins is $PM_{2.5}$, and air quality is graded according to this as "unhealthy", "moderate" or "good".

109. The worst time for air pollution is during the winter months, when coal burning is highest and weather conditions least favorable to dispersion. However, the AQI for this day, in the middle of summer when air pollution is at lower levels, shows that the $PM_{2.5}$ level on 24 July and was rated unhealthy for sensitive groups. Figure V.3 shows that for parts of the same day, $PM_{2.5}$ level was significantly high – reaching "very unhealthy" levels. PM_{10} also reached "unhealthy" levels during the same day. Other parameters maintained levels in the "moderate-good" range.

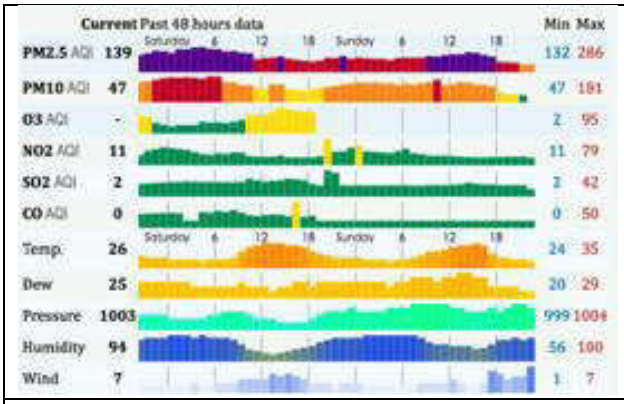


Figure V.3: Shijiazhuang Air Pollution Real-time AQI on 24 July 2016 [21]

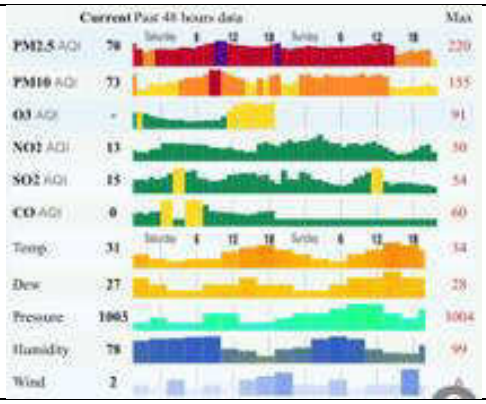


Figure V.4: Xingtai Air Pollution Real-time AQI on 24 July 2016 [22]

2. Xingtai Municipality (Julu County Healthcare and Elderly Care Integrated Service Center)

110. **Climate.** It is located in a temperate zone and the climate there belongs to the semi-humid continental climate. Each of four seasons is distinct, dry and windy in the spring. The mean annual air temperature is 12.5°C, with the maximum of 42°C and a minimum of –23.3°C. The annual precipitation is 488.6 mm, with an average yearly rainfall period of 71 days. Summer rain accounts for 67% of the total rainfall. The prevailing wind direction is near north in winter and near south in summer, the average wind speed is 2.6 m per second. The maximum thickness of frozen soil is 0.44 m.

111. **Air Quality.** Xingtai is among China's 10 most polluted cities, ranked 2nd in the list. There is a seasonal variation, with pollution heavier in winter heating season and lower in non-heating seasons. The real-time Air Quality Index in Xingtai on a summer day (24 July) when pollution levels are generally lower, is in Figure V.4. This snapshot shows that the $PM_{2.5}$ level was rated unhealthy for sensitive groups. The figure shows that for parts of the day, $PM_{2.5}$ level was significantly higher – reaching "very unhealthy" levels. PM_{10} also reached "unhealthy" levels

[21] http://aqicn.org/city/shijiazhuang/
[22] http://aqicn.org/city/xingtai/

during the same day. Other parameters maintained levels in the “moderate-good” range.

112. **Engineering Geography.** Xingtai City is located on the east side of Taihang Mountain Uplift and there are two faults nearby its urban center from activities of the Cenozoic Era. Its ground motion peak acceleration is 0.10g and the design seismic fortification intensity is Grade 7.

3. Chengde Municipality (Chengde Shuangluan District Haoren Health and Elderly Care Service Center)

113. **Terrain.** Chengde is located in the northeastern portion of Hebei, with latitude 40° 12'-42° 37' N, and longitude 115° 54'-119° 15' E, and contains the northernmost point in the province. From north to south the prefecture stretches 269 km, and from west to east 280 km, for a total area of 39,702.4 square km, thus occupying 21.2% of the total provincial area. It is by area the largest prefecture in the province, though as most of its terrain is mountainous, its population density is low.

114. **Climate.** Chengde has a four-season, monsoon-influenced humid continental climate, with widely varying conditions through the prefecture due to its size: winters are moderately long, cold and windy, but dry, and summers are hot and humid. Near the city, however, temperatures are much cooler than they are in Beijing, due to the high altitude of at least 1000 metres: the monthly 24-hour average temperature ranges from −9.1 °C (15.6 °F) in January to 24.5 °C (76.1 °F) in July, and the annual mean is 9.11 °C (48.4 °F). Spring warming is rapid, but dust storms can blow in from the Mongolian steppe; autumn cooling is similarly quick. Precipitation averages at 512 mm for the year, with more than two-thirds of it falling during the three summer months. With monthly percent possible sunshine ranging from 50% in July to 69% in October, the city receives 2,746 hours of sunshine annually.

115. **Protected areas.** The Mountain Resort is currently a UNESCO World Heritage Site. The whole mountain resort covers an area of 564 km^2. It is the largest royal garden in China with a walled enclosure over 10,000 m in length. Another popular attraction of the Chengde area is Sledgehammer Peak (Qingchuifeng), a large rock formation in the shape of an inverted sledgehammer. The World Heritage site is 7km northeast of the project site, and the peak is a further 4 km to the northeast.

116. **Engineering Geography.** Located in a part of North China Earthquake Zone with a low level of seismic activity. Chengde City has not experienced any strong earthquake in history and the level of small and medium-sized seismic activities has remained quite low since 1970. The 1720 earthquake in the west part of Beijing is the earliest earthquake in record in which Chengde has experienced seismic damages while the 1976 Tangshan Earthquake is the one in record with the most serious damages, but its maximum impact intensity was less than Grade 6. The ground motion peak acceleration of Chengde City is 0.05g while the seismic fortification intensity is Grade 6.

117. **Air Quality.** According to the air quality monitoring results in 2014 of the Urban Center of Chengde City, the air quality met and exceeded Grade II standard in 249 days of the year, equivalent to a yearly compliance rate of 68.2%. The air quality met Grade I standard in 40 days. SO_2, NO_2 and CO, respectively with an annual average concentration of 40 μg/m^3, 39 μg/m^3 and 2.3 mg/m^3, satisfied Class II standard specified in the Ambient Air Quality Standard (GB3095-2012). The inhalable particulate matter (PM_{10}), fine particular matters ($PM_{2.5}$) and ozone (O_3), with an annual average concentration of 111 μg /m^3, 52 μg /m^3 and 167 μg/m^3,

exceeded the requirements specified in the Ambient Air Quality Standard. The key causes of noncompliance of the air-borne particular matters (PM_{10} and $PM_{2.5}$) and O_3 include coal burning by heating plants and industry, domestic and restaurant premises smoke emissions, construction dust, and motor vehicle exhaust. There is a seasonal variation, with pollution heavier in winter heating season and lower in non-heating seasons. The real-time Air Quality Index in Chengde on a summer day (25 July) when pollution levels are generally lower, is in Figure V.5. It shows that for parts of the day, $PM_{2.5}$ level was high – reaching "unhealthy" levels. PM_{10} also reached "unhealthy for sensitive groups" levels during the same day. Other parameters maintained levels in the "moderate-good" range.

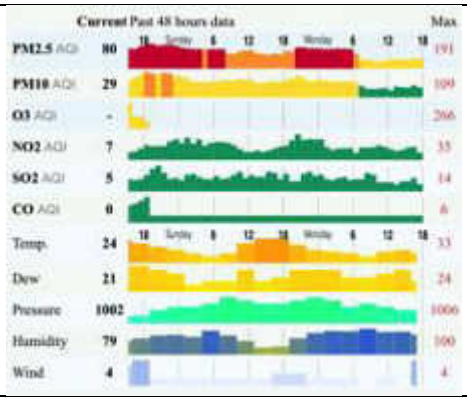


Figure V.5: Chengde Air Pollution Real-time AQI on 25 July 2016 [23]

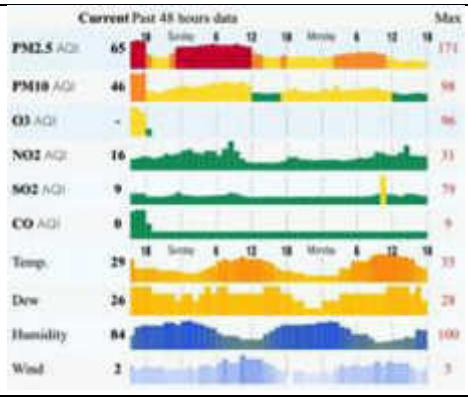


Figure V.6: Handan Air Pollution Real-time AQI on 25 July 2016 [24]

4. Handan Municipality (Yanshan University Health and Elderly Care Integration Training Center)

118. **Climate.** Handan is located in temperate zone and the climate there belongs to the continental climate. The daily temperature difference is considerable. The mean annual air temperature is 12.7°C, with the maximum of 41.8°C and a minimum of –22.4°C. The annual precipitation is 554.5 mm. The prevailing wind is from northeast in summer and west in winter. The maximum thickness of frozen soil is 0.41m.

119. **Air quality.** Handan is ranked 3rd in the MEP national air quality status list of China's 10 most polluted cities. There is a seasonal variation, with pollution heavier in winter heating season and lower in non-heating seasons. The real-time Air Quality Index in Handan on a summer day (25 July) when pollution levels are generally lower, is in Figure V.6. It shows that for parts of the day, $PM_{2.5}$ level was high – reaching "unhealthy" levels. PM_{10} also reached "unhealthy for sensitive groups" levels during the same day. Other parameters maintained levels in the "moderate-good" range.

5. Qinhuangdao Municipality (Shexian County Binhe Elderly Care and Rehabilitation Center)

120. **Climate**. Qinhuangdao has a monsoon-influenced humid continental climate, with four distinct seasons. Winters are cold and dry due to the Siberian high, which often causes winds to blow in from the northwest, minimizing the oceanic influence: the monthly daily average temperature in January is −4.8 °C (23.4 °F), colder than Beijing's −3.7 °C (25.3 °F). Summers

[23] http://aqicn.org/city/chengde/
[24] http://aqicn.org/city/Handan/

are hot and humid due to the East Asian Monsoon, often allowing onshore flows; summer is also when the coast moderates the weather the most: the average high temperature in July here is 28.1 °C (83 °F), as compared to 30.9 °C (88 °F) in Beijing. As measured by daily mean temperature, July and August are equally warm, averaging 24.7 °C (76.5 °F). The annual mean is 11.0 °C (51.8 °F), and 70% of the annual precipitation falls from June to August.

121. **Air quality.** There is a seasonal variation, with pollution heavier in winter heating season and lower in non-heating seasons. The real-time Air Quality Index in Qinhuangdao on an autumn day (25 September) when pollution levels are generally lower, is in Figure V.7. It shows that for parts of the day, $PM_{2.5}$ level was high – reaching "unhealthy" levels. PM_{10} and O_3 also reached "unhealthy for sensitive groups" levels during the same day. Other parameters maintained levels in the "moderate-good" range. and is ranked good air quality, with primary pollutant PM_{10}.

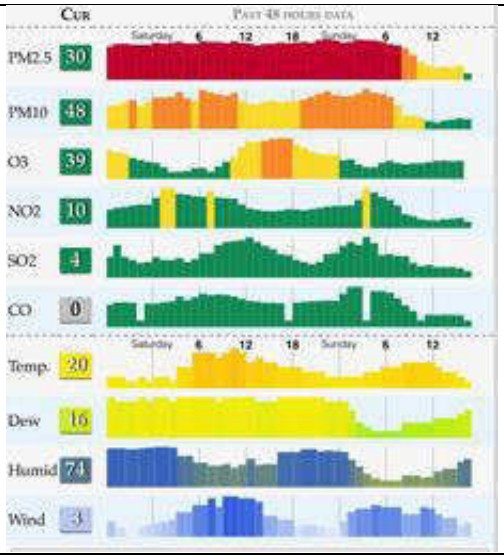


Figure V.7: Qinhuangdao Air Pollution Real-time AQI on 25 September 2016 [25]

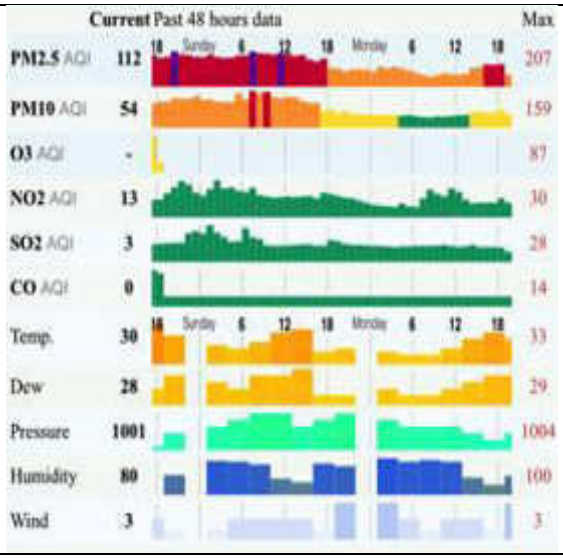


Figure V.8: Baoding Air Pollution Real-time AQI on 25 July 2016 [26]

6. Baoding Municipality (Baoding Lixian County Elderly Care Comprehensive Service Center)

122. **Geography.** Baoding is a city in Hebei province, approximately 150 km southwest of the national capital, Beijing. At the 2010 census, Baoding City had 11,194,372 inhabitants out of which, 2,176,857 lived in the built-up (or metro) area made of 3 urban districts and Qingyuan and Mancheng counties largely being conurbated, on 1,840 km^2. Baoding is among 13 Chinese cities with a population of over 10 million, ranking seventh.

123. **Climate**. Baoding has a continental, monsoon-influenced semi-arid climate, characterized by hot, humid summers due to the East Asian monsoon, and generally cold, windy, very dry winters that reflect the influence of the vast Siberian anticyclone. Spring can bear witness to sandstorms blowing in from the Mongolian steppe, accompanied by rapidly warming, but generally dry, conditions. Autumn is similar to spring in temperature and lack of rainfall. The annual rainfall, about 60% of which falls in July and August alone, is highly variable and not

[25] http://aqicn.org/city/Qinhuangdao/
[26] http://aqicn.org/city/Baoding/

reliable. In the city itself, this amount has averaged to a meagre 513 mm per annum. The monthly 24-hour average temperature ranges from −3.2 °C (26.2 °F) in January to 26.8 °C (80.2 °F) in July, and the annual mean is 12.9 °C (55.2 °F). There are 2,500 to 2,900 hours of bright sunshine annually, and the frost-free period lasts 165−210 days.

124. **Air quality.** Baoding is ranked 1st in the MEP national air quality status list of China's 10 most polluted cities. There is a seasonal variation, with pollution heavier in winter heating season and lower in non-heating seasons. The real-time Air Quality Index in Baoding on a summer day (25 July) when pollution levels are generally lower, is in Figure V.8. It shows that for parts of the day, $PM_{2.5}$ level was significantly high – reaching "very unhealthy" levels. PM_{10} also reached "unhealthy" levels during the same day. Other parameters maintained levels in the "moderate-good" range., and ranked unhealthy for sensitive groups. which means everyone may begin to experience health effects and that members of sensitive groups may experience more serious health effects.

C. Environmental Baseline at Subproject Sites

1. Xinji Parents' Paradise Elderly Care Community Center

125. The EC center will be located in East side of Chaoyang Road, North side of Shiji Street, West side of Leitouxi Road and South side of Wenti Street. 500m away from Angucheng Village in the southeast direction, 900m to Xinleitou Town in the northeast direction and more than 1,000m to other sensitive points.

126. **Air quality.** The local air quality of the Xinji subproject areas was sampled in the points, indicators and monitoring frequency in Table V.4 from 8-15 August 2016 by Hebei Qingyuan Environmental Monitoring Co., Ltd, the value for O_3, CO and $PM_{2.5}$ were taken from Xinji Municipal Air Quality Real-time Online Monitoring data.

Table V.4: Air Quality Monitoring Indicators and Frequency

No.	Monitoring points	Direction of the project site	24 Hours Average	1 Hour Average	Monitoring frequency
1#	Xinleitou Town	N	TSP, PM_{10}, SO_2, NO_2,	SO_2, NO_2	Continuous monitoring for 7 days. 24h concentration (20 hours sampling daily): TSP, PM_{10}, SO_2, NO_2; 4 times daily (02:00am, 08:00am, 14:00pm, 20:00, 45 mins for each time) for 1 hour concentration: SO_2, NO_2
2#	Project site	--			
3#	Kangle Community	S			

Sources: Xinji EIA report, September 2016.

127. Concentration values of all parameters for all monitoring points (Tables V.5 and V.6) satisfy the requirement of Grade II air quality of *Ambient Air Quality Standard (GB3095 – 2012)* except PM $_{2.5}$ due to the haze. However, general poor and often unhealthy air quality in the county will require special safeguards for the EC and HCBS Centers.

Table V.5: 1 Hour Average Monitoring Values

Indicator	No.	Monitoring points	Concentration (mg/m^3)	Standard value (mg/m^3)
SO_2	1	Xinleitou Town	0.007~0.02	0.5
	2	Project site	0.007~0.024	
	3	Kangle Community	0.007~0.026	
NO_2	1	Xinleitou Town	0.013~0.033	0.2

	2	Project site	0.01~0.027	
	3	Kangle Community	0.011~0.029	
CO	1	Xinji Municipal government	0.313~1.882	10
O_3	1	Xinji Municipal government	0.003~0.171	0.2
NH_3	1	Xinleitou Town	0.097~0.121	0.2
	2	Project site	0.081~0.139	
	3	Kangle Community	0.124~0.143	
H_2S	1	Xinleitou Town	0.003~0.004	0.01
	2	Project site	0.002~0.004	
	3	Kangle Community	0.002~0.005	

Sources: Xinji EIA report, September 2016.

Table V.6: 24 Hours Average Monitoring Values

Indicator	No.	Monitoring points	Concentration (mg/m^3)	Standard value (ug/m^3)
SO_2	1	Xinleitou Town	0.009~0.016	150
	2	Project site	0.008~0.015	
	3	Kangle Community	0.01~0.015	
NO_2	1	Xinleitou Town	0.019~0.027	80
	2	Project site	0.018~0.028	
	3	Kangda Community	0.016~0.026	
PM_{10}	1	Xinleitou Town	0.128~.0.14	150
	2	Project site	0.129~0.136	
	3	Kangda Community	0.128~0.141	
TSP	1	Xinleitou Town	0.165~0.192	300
	2	Project site	0.165~0.191	
	3	Kangda Community	0.174~0.228	
$PM_{2.5}$	1	Xinji Municipal government	0.053~0.086	75

Sources: Xinji EIA report, September 2016.

128. **Drinking water quality.** The project will connect the water supply pipe from Xinji Municipal water supply plant. Table V.7 shows that all indicators can meet the standards of Drinking Water Sanitation Standard (GB5749—2006).

Table V.7: Drinking Water Quality from Xinji Municipal Water Supply Plant

Indicators	Unit	Standard value	Monitoring results
pH	—	[6.5, 8.5]	7.6
COD	mg/L	3	0.73
NH_4-N	mg/L	0.5	<0.02
TP	mg/L	1000	403
Volatile phenol	mg/L	0.002	<0.002
Pb	mg/L	0.01	<0.004
Cr^{6+}	mg/L	0.05	0.007
Cd	mg/L	0.005	<0.001
As	mg/L	0.01	<0.002
Hg	μg/L	0.001	$<1*10^{-4}$
Nitrate	mg/L	20	1.97
Sulfate	mg/L	250	143
Fecal coliform	MPN/L	Not detected	No detected

COD=chemical oxygen demand, MPN=most probable number. Sources: Xinji Water Supply Plant, 6 August 2015.

129. **Acoustic environment.** Noise level at four boundaries of project site and each HCBS center were monitored on 8-15 August 2016. Monitoring was conducted twice a day including

once in the daytime and once at nighttime. Table V.8 summaries the monitoring results. Noise levels in EC site boundaries and each HCBS centers of daytime and nighttime meet the requirement of Grade I of *Environmental Quality Standards for Noise* (GB3096-2008).
130.

Table V.8: Noise Level of Xinji Subproject (unit: dB(A))

Monitoring points		8-15 August 2016	
		Day time	Night time
EC center	East project site boundary	49.2	40.0
	South project site boundary	50.0	41.0
	West project site boundary	53.5	41.5
	North project site boundary	53.8	43.3
8 HCBS centers	Wangkou Town daily care center	48.8	42.6
	Nanzhiqiu daily care center	50.8	47.3
	Jiuchengzhen daily care center	54.0	43.8
	Xizebei daily care center	50.2	40.1
	Xinleitou Town daily care center	54.5	41.8
	Fanghua Community servie center	49.8	39.7
	Aolinshengyuan Community servie center	53.4	42.2
	Qinghewan Community servie center	50.4	43.9

Sources: Xinji subproject EIA report, September 2016.

131. **Land cover and ecology.** The site for the EC center is vacant land owned by the IA. It is currently sown to poplar and maple seedling to preclude opportunistic cultivation by adjoin farming communities (Figure V.9). There are no natural habitats or ecosystems on the site.

Figure V.9: Land cover of EC Center Site at Xinji.

132. **Soil.** The soil samples were taken from the project site on 8 August 2016 and monitored on 8-13 August 2016. The monitoring results show that the soil environment satisfies the requirement of Soil Environment Quality Standard (GB15618-1995) – Grade II and is suitable for residential and commercial use. The details are summarized in Table V.9:

Table V.9: Existing Soil Quality Monitoring (mg/kg, except for pH)

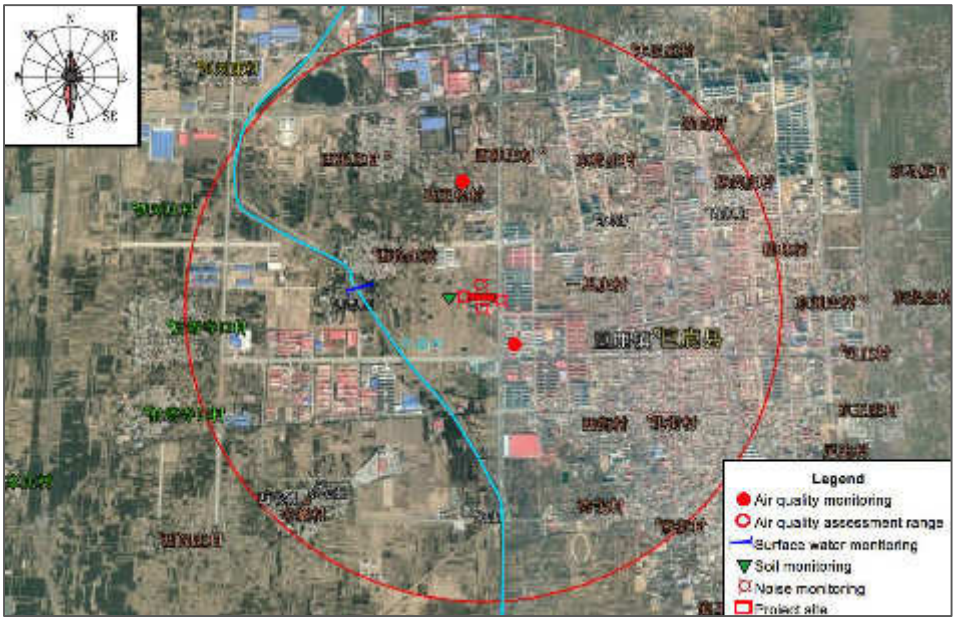
Monitoring points	Indicators	pH	Hg	As	Cu	Pb	Zn	Cd	Cr	Ni
	GB15618-1995 Grade II	>7.5	≤0.5	≤25	≤100	≤300	≤250	≤0.3	≤300	≤50
EC center site	Upper layer soil	8.3	0.162	0.198	17.6	3.64	9.18	0.24	10.3	14.8

Sources: Xinji subproject EIA report, September 2016.

133. **Cultural heritage.** During site inspections carried out by the EIA Institute, no ruins, relics or indications of cultural heritage were recorded within the project site.

2. Julu County Healthcare and Elderly Care Integrated Service Center

134. Sampling locations for surface water, air quality, noise and soil are shown in Figure V.10.



Sources: Julu subproject TEIF, September 2016.

Figure V.10: Monitoring Points Sampling Locations

135. **Surface water quality.** The subproject location is 730 m away from the Hongyi River (to the west). The wastewater produced in the EC center will be discharged to Julu County WWTP. The surface water quality has been monitored in the Xixuzhuang Village section on 3-5 August 2016 by Hebei Maoda Environmental Monitoring Technical Co., Ltd. Table V.10 shows that the river quality meets the Class V standards of GB/T14848-93.

Table V.10: Surface water quality monitoring results for Julu subproject

Indicators	Unit	Standard value	Monitoring results
pH	-	6-9	7.14
COD	mg/L	≤40	25
BOD_5	mg/L	≤10	1.1
TP	mg/L	≤0.4	0.1
NH_4-N	mg/L	≤2.0	0.1
Petroleum	mg/L	≤1.0	0.08
Fecal coliform	MPN/L	≤400,000	3,500
DO	mg/L	≤2	1.9

COD=chemical oxygen demand, BOD_5=5-day biochemical oxygen demand, DO=dissolved oxygen.
Sources: Julu subproject TEIF, September 2016.

136. **Air quality.** One regular air quality sampling point is setting up by local environmental protection bureau (EPB) in the Julu County Administrative Service Center, which is 1,200m away from the project site, by the data received by EIA institute, which shows that the PM2.5 value on 3-5 August 2016 was 0.0441-0.0495 mg/m^3, meets Class II standard in Environmental Air Quality Standard (GB3095-2012). Samples were also taken on 3-5 August 2016 in Xiwangyang Village and Community in the Southeast direction as indicated in Table V.11.

Table V.11: Air Quality Monitoring Indicators in Julu Subproject

Monitoring point	Direction against project site	Distance to project site (m)	Functional zone	Indicator	
				24-hour average	1-hour average
Xiwangyang Village	N	860	Standard II zone	PM_{10}, SO_2, NO_2, CO	SO_2, NO_2, O_3, CO
Community in the Southeast	S	96			

Sources: Julu subproject TEIF, September 2016.

137. Table V.12 shows that during the monitoring period, the 24-hour average monitoring value for PM_{10}, SO_2, NO_2, CO meets Class II standard in Environmental Air Quality Standards (GB 3095-2012). The 1-hour average monitoring value for SO_2, NO_2, O_3, CO can also meet the Class II standard in Environmental Air Quality Standards (GB 3095-2012). However, general poor and often unhealthy air quality in the county will require special safeguards for the EC and HCBS Centers.

Table V.12: Air Quality Monitoring Results for in Julu Subproject

Indicator	Monitoring point	1-hour average (mg/m³)		24-hour average (mg/m³)	
		Standard value	Monitoring value	Standard value	Monitoring value
PM_{10}	Xiwangyang Village	--	—	0.15	0.112-0.134
	Community in the Southeast		—		0.120-0.131
SO_2	Xiwangyang Village	0.5	0.021-0.081	0.15	0.053-0.061
	Community in the Southeast		0.021-0.077		0.050-0.070
NO_2	Xiwangyang Village	0.2	0.013-0.046	0.08	0.030-0.037
	Community in the Southeast		0.019-0.038		0.030-0.034
CO	Xiwangyang Village	4	1.3-1.9	10	1.6-1.7
	Community in the Southeast		1.3-1.9		1.6-1.8
O_3	Xiwangyang Village	0.2	0.064-0.151	--	—
	Community in the Southeast		0.076-0.148		—

Sources: Julu subproject TEIF, September 2016.

138. **Acoustic environment.** Noise level at four boundaries of project site and each HCBS center were monitored on 3-5 August 2016. Monitoring was conducted twice a day including once in the daytime and once at nighttime in two consecutive days. The monitoring results in Table V.13 shows that noise levels at all boundaries of daytime and nighttime in EC project site and four of the HCBS Centers meet the requirement of Category 0 standards in *Environmental Quality Standards for Noise* (GB3096-2008).

Table V.13: Noise Level of Julu Subproject (unit: dB(A))

Location			Daytime		Night time	
			Monitoring results	Standard value	Monitoring results	Standard value
EC Project site	East boundary	1#	48.1	70	38.5	55
	South boundary	2#	48.9	50	39.0	40
	West boundary	3#	48.2		38.7	
	North boundary	4#	48.7		37.9	
Xiaolvzhai Town Clinic	East boundary	1#	47.6	50	37.4	40
	South boundary	2#	47.3	70	39.4	55
	West boundary	3#	48.1	50	39.1	40
	North boundary	4#	46.3		37.8	
Yantong Town Kangle EC Center	East boundary	1#	48.5	50	38.4	40
	South boundary	2#	48.3		39.2	
	West boundary	3#	48.1		37.4	

	North boundary	4#	47.9		38.5	
No.3 Civil Affair Service Center	East boundary	1#	48.0	50	38.4	40
	South boundary	2#	48.3		39.2	
	West boundary	3#	48.1		37.4	
	North boundary	4#	47.9		38.5	
Hezhai Village Aged Home	East boundary	1#	47.1	50	38.8	40
	South boundary	2#	48.3		39.0	
	West boundary	3#	46.8		38.5	
	North boundary	4#	48.5		38.7	

Sources: Julu subproject TEIF, September 2016.

139. **Soil.** The soil samples were taken from the EC project site and the sample testing was conducted by 5 August 2016. The monitoring results show that the soil environment satisfies the requirement of Soil Environment Quality Standard (GB15618-1995) – Grade II. The details are summarized in Table V.14:

Table V.14: Existing Soil Quality Monitoring of Julu subproject in EC project site

(mg/kg, except for pH)

Monitoring points	Indicators	pH	Cd	Cr	Ni	As	Cu	Pb	Zn
	GB15618-1995 Grade II	>7.5	≤0.60	≤350	≤60	≤25	≤100	≤350	≤300
Soil from project site	Monitoring results	7.87	0.24	31	42	11.8	21	3.2	56.5
	Standard index	—	0.40	0.088	0.012	0.70	0.21	0.009	0.19

Sources: Julu subproject TEIF, September 2016.

140. The results conformed with Grade II of GB15618-1995, indicating it is safe for residential or commercial use. During the preparation of domestic EIA, it was confirmed that the project site has not been involved in any heavy industrial before, the site is suitable to be used for EC facilities construction.

141. **Land cover and ecology.** The site for the EC center is zoned for commercial purpose. The site is cultivated on an opportunistic basis by neighboring farmers, with areas plated to corn and millet. The EIA institute confirmed that there are no rare or endangered species of animal or plants, no natural habitat or valuable ecosystems on site (Figure V.11).

Figure V.10: Land cover of EC Center Site at Julu

142. **Cultural heritage.** During site inspections carried out by the EIA Institute for the TEIF preparation, no ruins, relics or indications of cultural heritage were recorded within the project site.

3. Chengde Shuangluan District Haoren Health and Elderly Care Service Center

143. The location of noise and soil sampling points is shown in Figure V.11.

Sources: Shuangluan subproject TEIF, July 2016.

Figure V.11: Monitoring Points Sampling Locations (Red dots: noise samples; blue dot: soil sample)

144. **Air quality.** The project is located in Shuangluan District of Chengde Municipality. The local air quality is sourced from Hebei Province Chengde Municipality Environmental Quality Report (2015). The results are summarized in Table V.15.

Table V.15. Air Quality in Chengde Municipality (2015)

Item	SO_2	NO_2	CO	TSP	PM_{10}
Daily average concentration (μg/m^3)	1-120	4-108	0.2-4.3	13-890	4-216
Annual average concentration (μg/m^3)	22	35	-	92	43
GB3095-2012 Standard II (μg/m^3) (daily average)	150	80	4,000	300	150
GB3095-2012 Standard II (μg/m^3) (annual average)	60	40		200	70

Sources: Hebei Province Chengde Municipality Environmental Quality Report (2015).

145. Table V.14 shows that in 2015, the annual average air quality for the Municipality can meet standard II in GB3095-2012, while air quality in daily average could not meet the standard. The daily averages show significant exceedance on some days of PM_{10}, TSP, CO and NO_2. No air sampling was undertaken for the local site in Dayuanbaoshan Village of Shuangranshan Town in Shuangluan District, but it is likely that it will experience some days of poor and unhealthy air quality. General poor and often unhealthy air quality in the county will require special safeguards for the EC and HCBS Centers.

146. **Acoustic environment.** Monitoring points location map is in Figure V. 11. Noise level at four boundaries of project site and Dayuanbaoshan Village were monitored on 26-27 June 2016. Monitoring was conducted twice a day including once in the daytime and once at nighttime in two consecutive days. Table V.16 summaries the monitoring results.

147.

Table V.16: Noise Level of Shuangluan Subproject (unit: dB(A))

Location	Daytime		Night time	
	26 June 2016	27 June 2016	26 June 2016	27 June 2016
East boundary	53.7	52.7	41.7	41.6
South boundary	53.5	53.7	40.6	40.7
West boundary	52.8	52.7	41.9	41.7
North boundary (close to road)	65.7	66.6	53.7	54.2
Dayuanbaoshan Village	54.2	55.0	40.7	40.4
GB3096-2008, Grade I	55		45	
GB3096-2008, Grade 4a	70		55	

Source: Shuangluan subproject TEIF, July 2016.

148. The monitoring results show that acoustic environment is good in the project area. Noise levels in east, south and west boundaries of daytime and nighttime meet the requirement of Environmental Quality Standards for Noise, Grade I (GB3096-2008), and the north boundary meets the requirement of Environmental Quality Standards for Noise, Grade 4a (GB3096-2008). Exceedance of standard along the road side (north boundary) indicates the need for permanent noise amelioration works on the site.

149. **Surface water quality.** The surface water body in project area is the Luan River, which is 6km away from the west side of the project site. There are 7 water monitoring sections in Luan River. According to the monitoring results in 2015, the water quality belongs to Class III in Section Guojiatuan, Dazhangzi, Gonghou, Chenggang Bridge and Pianqiaozi Bridge, which accounting for 71.4% of the total; and in Section Shangbancheng Bridge, Wulongji Bridge, water quality belongs to Class IV, which accounting for 28.6%. The overall water quality in Luan River has been slightly polluted, and surface water quality has no major change compare with that in 2014. The municipal sewage will be pretreated from the project facilities and discharged into Shuangluan District wastewater treatment plant. Therefore, the construction and operation of the project will not increase the pollution to surface water.

150. **Soil.** The soil samples were taken from the project site (sampling map is in Figure V.9). The sample testing was conducted by 26 June 2016. The monitoring results show that the soil environment satisfies the requirement of Soil Environment Quality Standard (GB15618-1995) – Grade II except pH value. The details are summarized in Table V.17:

Table V.17: Existing Soil Quality Monitoring (mg/kg, except for pH)

Monitoring points	Indicators	pH	Hg	As	Cu	Pb	Zn
	GB15618-1995 Grade II	6.5-7.5	≤0.5	≤30	≤100	≤300	≤250
Soil from project site	Monitoring results	7.82	0.006	6.00	22	68.4	17.8
	Standard index	—	0.012	0.2	0.22	0.228	0.0712

Sources: Shuangluan subproject TEIF, July 2016.

151. The results conformed with Grade II of GB15618-1995, indicating it is safe for residential or commercial use. During the preparation of TEIF, it is confirmed that the project site has not been involved in any heavy industrial before, the site is suitable to be used for EC facilities construction.

152. **Land cover and ecology.** The site is totally cleared and levelled. It is occupied by a construction company for temporary material storage for road construction. The site will revert to the IA in December 2016. There is no natural habitat or valuable ecosystems on site (Figure V.12).

Figure V.12: Land cover of EC Center Site at Chengde.

153. **Cultural heritage.** During site inspections carried out by the EIA Institute for the TEIF preparation, no ruins, relics or indications of cultural heritage were recorded within the project site.

4. Yanshan University Health and Elderly Care Integration Training Center

154. **Air Quality.** Qinhuangdao Municipal Environmental Annual Report in 2015 showed that, in 2015, there was 269 days (accounting for 73.7% of the total) have air quality better than Class II standard, and 74 days (accounting for 20.27% of the total) have air quality better than Class III standard. Table V.18 shows that air quality at the automatic monitoring point located in Construction Building (2.5 km away from the northeast of project site) can meet Class II standard in Environmental Air Quality Standards (GB 3095-2012).

Table V.18: Air Quality of YSU project site

Pollutants	Monitoring point	Annual average value (μg/m^3)	Compliance
$PM_{2.5}$	Construction Building (2.5 km away from the northeast of project site)	35	Class II
SO_2		27	Class II
NO_2		38	Class II

YSU=Yanshan University
Sources: YSU TEIF, September 2016.

155. **Soil quality.** Soil samples were taken from the subproject site on 27 September 2016. sample analysis results show that the soil environment satisfies the requirement of Soil Environment Quality Standard (GB15618-1995) – Grade II. Sampling location is shown in Figure V.13 and the results are summarized in Table V.19:

Sources: YSU TEIF, October 2016.

Figure V.13: Soil Monitoring Points Sampling Location

Table V.19: Existing Soil Quality Monitoring

Parameters	Monitoring results	Standards index	Standard (Class II)
pH	7.1	/	6.5~7.5
Pb	45mg/kg	0.15	≤300mg/kg
Cu	25mg/kg	0.25	≤100mg/kg
Zn	19.4mg/kg	0.0776	≤250mg/kg
As	3mg/kg	0.1	≤30mg/kg
Hg	0.008mg/kg	0.016	≤0.5mg/kg

YSU=Yanshan University
Sources: YSU TEIF, October 2016.

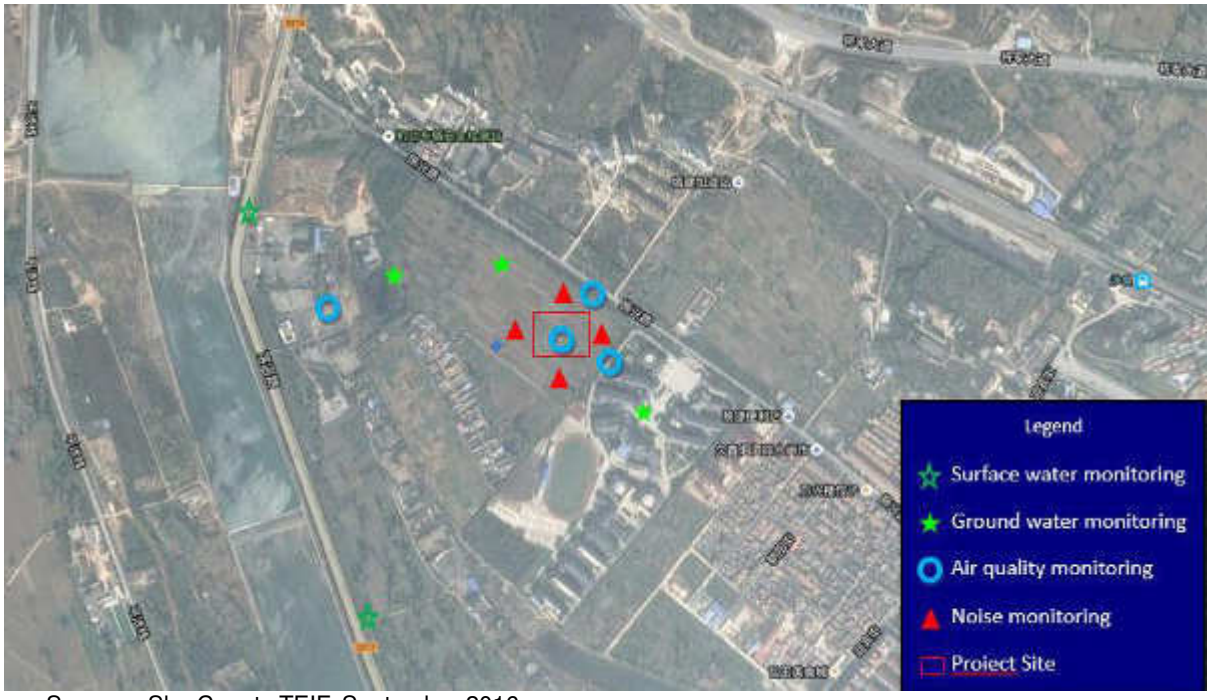
156. **Noise levels.** The Qinhuangdao Municipal Environmental Annual Report in 2015 showed that the average noise value at daytime in the project site is 55.5 dB(A), which can meet the Grade I standard in the *Environmental Quality Standards for Noise* (GB3096-2008), which is appropriate for on-campus developments.

157. **Land cover and ecology.** The project site is located in the existing YSU campus, all water supply and wastewater discharge, solid waste disposal will be connected with existing facilities. The site is cleared and prepared for construction. There is no natural habitat or valuable ecosystems on site.

158. **Cultural heritage.** During site inspections carried out by the EIA Institute for the TEIF preparation, no ruins, relics or indications of cultural heritage were recorded within the project site.

5. Shexian County Binhe Elderly Care and Rehabilitation Center

159. Sampling locations for surface water, air quality, noise and soil are shown on Figure V.14.



Sources: She County TEIF, September 2016.

Figure V.14: Monitoring Points Sampling Locations

160. **Air quality.** The air quality of the She County subproject area was sampled on 19-25 September 2016 at four monitoring points (Table V.20). Concentration values of all parameters for all monitoring points satisfy the requirement of Grade II air quality of Ambient Air Quality Standard (GB3095 – 2012) except CO. Only the concentration of SO_2 can meet EHS guidelines. These findings, plus the general poor and often unhealthy air quality in the county will require special safeguards for the EC and HCBS Centers.

Table V.20: 24 Hour Average Monitoring Values (μg/m^3)

Monitoring points	1#			2#			3#			4#		
Indicators	PM_{10}	SO_2	NO_2	PM_{10}	SO_2	NO_2	PM_{10}	SO_2	NO_2	PM_{10}	SO_2	NO_2
2016.9.19	147	3.1	17	141	3.1	19	145	3.5	15	148	3.1	18
2016.9.20	149	4.1	23	146	3.6	28	144	5.5	25	149	3.5	23
2016.9.21	147	3.5	36	145	2.6	34	147	4.5	28	146	4	29
2016.9.22	148	3.1	18	147	4	25	146	4	19	148	5	24
2016.9.23	149	3.6	20	144	4.6	23	144	3.6	23	147	5.1	25
2016.9.24	148	4.6	19	147	3.1	29	148	3.1	24	148	3.5	28
2016.9.25	148	4.5	27	146	3.5	32	145	4.6	27	146	4.6	30

Sources: She County TEIF, September 2016.

161. **Acoustic environment.** Noise level at the four boundaries of the site were monitored on 22-23 September 2016. Monitoring was conducted twice a day - once in the daytime and once at nighttime. Table V.21 summaries the monitoring results. Noise levels at all EC site

boundaries except the western boundary meet the requirement of Grade I *in Environmental Quality Standards for Noise* (GB3096-2008) in daytime and nighttime. Exceedance of standard along the eastern boundary indicates the need for permanent noise amelioration works on the site.

Table V.21: Noise Level of She County Subproject (unit: dB(A))

Monitoring points		22 September 2016		23 September 2016	
		Day time	Night time	Day time	Night time
EC center	East project site boundary	52.5	44	55.5	47.8
	South project site boundary	52.5	45	56.9	49.9
	West project site boundary	55.3	48	55.8	43.9
	North project site boundary	54.6	46.3	55.2	46.1
	Grade I standards in GB 3096-2008	55	45	55	45

Sources: She County TEIF, September 2016.

162. **Soil.** Soil samples were taken from the project site and analyzed. The results show that the soil environment satisfies the requirement of Soil Environment Quality Standard (GB15618-1995) – Grade II and is suitable for residential and commercial use. The details are summarized in Table V.22.

Table V.22: Existing Soil Quality Monitoring (mg/kg, except for pH)

Monitoring points	Indicators	pH	Hg	As	Cu	Pb	Zn	Cd	Cr	Ni
	GB15618-1995 Grade II	6.5-7.5	≤0.5	≤30	≤100	≤300	≤250	≤0.3	≤300	≤50
EC center site	Upper layer soil	7	0.244	0.909	42.4	31.4	188	0.198	104	41.4
	Medium layer soil	8.3	0.028	0.788	35.6	25.4	172	0.152	95.6	33.7
	Deep layer soil	8.43	0.035	2.96	37.2	27.6	181	0.171	99.7	37.2

Sources: She County TEIF, September 2016.

163. **Land cover and ecology.** The site is zoned for development (urban or commercial) and has been cleared and leveled. Current land cover is weeds and bare soil (Figure V.15). There is no natural habitat or valuable ecosystems on site.

Figure V.15: Land cover of EC Center Site at Shexian.

164. **Surface water quality.** Two surface water quality monitoring points have been sampled for 2 continuous days (23-24 September 2016). Table V.23 shows the monitoring values for both locations. All indicators except TP and TN, can meet the Class III standards of Surface Water Quality Standard (GB3838－2002). Exceedance of TP and TN levels indicate domestic and

sewage runoff and highlight the need to control wastewater from the subproject.

Table V.23: Surface Water Sampling and Monitoring Results

Sampling point	Indicators	Monitoring date		Sampling point	Monitoring date		GB3838-2002
		2016.9.23	2016.9.24		2016.9.23	2016.9.24	Grade III
Qingzhang River upstream of site	Water temp.	21°C	20°C	Qingzhang River downstream of site	21°C	20°C	
	pH	7.92	7.96		7.51	7.56	6-9
	Dissolved oxygen	8.2	8.0		8.1	7.9	≥5
	Permanganate Index	1.3	1.2		1.2	1.1	≤6
	COD	ND	ND		ND	ND	≤20
	BOD	2.6	1.0		2.0	1.3	≤4
	NH3-N	0.53	0.46		0.50	0.44	≤1.0
	TP	0.37	0.08		0.36	0.08	≤0.2
	Cu	ND	ND		ND	ND	≤1.0
	Zn	0.003	0.003		ND	ND	≤1.0
	Fluoride	0.16	0.16		0.16	0.16	≤1.0
	Se	ND	ND		ND	ND	≤0.01
	As	3.47μg/L	1.74μg/L		0.06μg/L	ND	≤0.05
	Hg	0.06μg/L	ND		0.09μg/L	0.07μg/L	≤0.0001
	Cd	ND	ND		ND	ND	≤0.005
	Cr6+	0.02	0.02		0.02	0.02	≤0.05
	Pb	ND	ND		ND	ND	≤0.05
	Cyanide	ND	ND		ND	ND	≤0.2
	Volatile phenol	ND	ND		ND	ND	≤0.005
	Petroleum	ND	ND		ND	ND	≤0.05
	Anionic surfactant	0.05	ND		ND	ND	≤0.2
	Sulfide	0.048	0.036		0.045	0.032	≤0.2
	TN	5.58	5.46		5.54	5.38	≤1.0

Sources: She County TEIF, September 2016.

165. **Ground water quality.** Ground water quality was sampled on 23-24 September 2016. Table V.24 shows that all indicators can meet the Class III standards of Ground Water Quality Standard (GB/T 14848-93).

Table V.24: Groundwater sampling and analysis results

Sampling point	Indicators	Monitoring date		GB/T 14848-93	Unit
		2016.9.23	2016.9.24	Grade III	
No.1 High School	Chromaticity	5	5	15	EBC
	Turbidity	2	2	≤3	NTU
	pH	8.01	7.98	5-9	
	Total hardness	310	306	≤450	mg/L
	Total dissolved solids	409	423	≤1,000	
	Sulfate	80	76	≤250	
	Chloride	18.8	18.4	≤250	
	Fe	ND	ND	≤0.3	
	Mn	ND	ND	≤0.1	
	Cu	ND	ND	≤1.0	
	Zn	ND	ND	≤1.0	
	Volatile Phenol	ND	ND	≤0.002	
	Permanganate Index	0.73	0.71	≤3.0	
	Nitrate	5.8	5.7	≤20	
	Nitrite	0.001	0.001	≤0.02	
	NH_3-N	0.18	0.16	≤0.2	

Sampling point	Indicators	Monitoring date		GB/T 14848-93	Unit
		2016.9.23	2016.9.24	Grade III	
	Fluoride	0.2	0.2	≤1.0	
	Cyanide	ND	ND	≤0.05	
	Hg	0.1μg/L	0.1μg/L	≤0.001	
	As	2.35μg/L	1.07μg/L	≤0.05	
	Se	ND	ND	≤0.01	
	Cd	ND	ND	≤0.01	
	Cr6+	ND	ND	≤0.05	
	Pb	ND	ND	≤0.05	
	Ni	ND	ND	≤0.05	
	DDD	ND	ND	≤1.0μg/L	
	HCH	ND	ND	≤5.0μg/L	

Sources: She County TEIF, September 2016.

166. **Water source protection.** The EC project site is located within the secondary zone[27] of a water source protection area [28]. This zone follows the Qingzhang River and controls the development of potentially polluting developments along its banks (Figure V.16). The project site is 600 m away from the Qingzhang River. The She County Bureau of Housing and Urban-Rural Development has issued advice (28 October 2015 and 21 October 2016) that the planned development is in compliance with She County Urban-Rural Overall Planning. Further consultation with the local EPB has confirmed site suitability. Safeguards have been designed to exclude possible impacts from wastewater handling (Chapter VI Section C).

Figure V.16: Water source Protection Zone and subproject location

167. **Cultural heritage.** During site inspections carried out by the EIA Institute, no ruins, relics or indications of cultural heritage were recorded within the project site.

[27] Zone planning was approved in 2008 by local government.

[28] Prohibits the building, renovating, or enlarging of construction projects that discharge pollutants in a Grade II drinking water source protection zone.

6. Baoding Lixian County Elderly Care Comprehensive Service Center

168. **Air quality.** The local air quality of the Li County subproject areas was sampled on 16-22 June 2016 (Table V.25) by Hebei Maochengda Environmental Monitoring Technology Co., Ltd. Concentration values of all parameters for all monitoring points satisfy the requirement of Grade II air quality of Ambient Air Quality Standard (GB3095 – 2012) and Hygienic Standard for the design of Industrial Enterprises (TJ36-79), but exceeded EHS guidelines for all parameters in the guidelines. These findings plus the general poor and often unhealthy air quality in the county will require special safeguards for the EC and HCBS Centers.

Table V.25: 24 Hours Average Monitoring Values of TSP, PM_{10}, SO_2 and NO_2 (mg/m^3)

No. / Date	1#				2#				3#				Real-time monitoring in Baoding
	TSP	PM_{10}	SO_2	NO_2	TSP	PM_{10}	SO_2	NO_2	TSP	PM_{10}	SO_2	NO_2	$PM_{2.5}$
16 June 2016	0.186	0.088	0.044	0.040	0.186	0.081	0.038	0.041	0.188	0.084	0.043	0.038	0.042
17 June 2016	0.189	0.080	0.042	0.039	0.182	0.071	0.041	0.038	0.185	0.086	0.041	0.036	0.055
18 June 2016	0.180	0.078	0.042	0.036	0.161	0.074	0.044	0.042	0.187	0.083	0.042	0.038	0.036
19 June 2016	0.170	0.074	0.040	0.041	0.177	0.071	0.041	0.040	0.172	0.075	0.041	0.037	0.046
20 June 2016	0.153	0.076	0.039	0.039	0.157	0.071	0.040	0.041	0.172	0.077	0.040	0.039	0.055
21 June 2016	0.174	0.077	0.043	0.038	0.153	0.072	0.043	0.039	0.166	0.078	0.044	0.037	0.050
22 June 2016	0.165	0.076	0.041	0.037	0.156	0.068	0.042	0.040	0.158	0.074	0.042	0.036	0.044
GB3095 – 2012	0.3	0.15	0.15	0.08									0.15
EHS	-	0.05	0.02	-									0.0375-0.075

Sources: Li County TEIF, July 2016.

169. These results indicate that the proposed site is exposed to less injurious air quality than is general in Baoding, and probably benefits from its peri-urban location and prevailing winds. Additionally, the one-hour average monitoring of SO_2, NO_2, NH_3 and H_2S undertaken at the same time showed little variation of levels during the day, indicating no significant influence from traffic or industry.

170. **Surface water quality.** Two surface water quality monitoring points have been sampled for three continuous days (20-22 June 2016). Table V.26 shows the monitoring values, for #1 (200m of the upstream of outlet of Li County Wastewater Treatment Plant) can meet the Class III standards of Surface Water Quality Standard (GB3838－2002), and for #2 (1,000m of the downstream of outlet of Li County Wastewater Treatment Plant), all indicators except BOD_5 can meet the Class III standards of Surface Water Quality Standard (GB3838－2002). The result of BOD_5 can meet the Class IV standards of Surface Water Quality Standard (GB3838－2002).

Table V.26: Surface Water Sampling and Monitoring Results

Indicators	Unit	Monitoring points and date					
		20 June 2016		21 June 2016		22 June 2016	
		#1*	#2**	#1	#2	#1	#2
pH	—	6.85	7.22	6.93	7.15	7.05	7.34
COD	mg/L	7	18	6	17	6	15
BOD_5	mg/L	2.3	5.6	2.1	5.3	2.4	5.2
NH_4-N	mg/L	0.054	0.324	0.063	0.338	0.058	0.341
Petroleum	mg/L	ND	0.04	ND	ND	ND	ND
TP	mg/L	ND	0.04	0.01	0.05	ND	0.03
Volatile phenol	mg/L	ND	0.0012	ND	0.0021	ND	0.0017
Pb	mg/L	ND	ND	ND	ND	ND	ND

Indicators	Unit	Monitoring points and date					
		20 June 2016		21 June 2016		22 June 2016	
		#1*	#2**	#1	#2	#1	#2
Cr^{6+}	mg/L	ND	0.008	ND	0.011	ND	0.009
Cd	mg/L	ND	0.001	ND	ND	ND	ND
As	mg/L	ND	0.009	ND	0.008	ND	0.011
Hg	μg/L	ND	0.06	ND	0.07	ND	0.05
Nitrate	mg/L	0.85	3.45	0.77	4.21	0.82	3.76
Sulfate	mg/L	131	152	125	144	127	147
Fecal coliform	MPN/L	20	110	40	140	20	130

ND=Not detected.
*#1 means the sampling point in 200m of the upstream of outlet of Li County Wastewater Treatment Plant;
**#2 means the sampling point in 1,000m of the downstream of outlet of Li County Wastewater Treatment Plant.
Sources: Li County TEIF, July 2016.

171. **Acoustic environment.** Noise level at four boundaries of project site and each HCBS center were monitored on 17 June 2016. Monitoring was conducted twice a day including once in the daytime and once at nighttime. Table V.27 summaries the monitoring results. Noise levels in EC site boundaries and each HCBS centers of daytime and nighttime meet the requirement of Grade I *in Environmental Quality Standards for Noise* (GB3096-2008).

Table V.27: Noise Level of Li County Subproject (unit: dB(A))

Monitoring points		17 June 2016	
		Day time	Night time
EC center	East project site boundary	52.2	41.2
	South project site boundary	51.2	40.4
	West project site boundary	52.6	41.7
	North project site boundary	50.7	40.6
10 HCBS centers	Junpengshangpin daily care center	53.6	42.1
	Liuwu Town Junpeng Garden daily care center	54.4	43.2
	Liuwu Town Wenliu North daily care center	52.7	43.4
	Liuwu Town Dongnan Street daily care center	53.5	42.7
	Baoxu Township daily care center	53.1	41.5
	Liushi Town daily care center	52.6	42.3
	Xinxiang Village daily care center	51.7	41.3
	Xinxing Town daily care center	52.3	43.1
	Nanzhuang Town daily care center	54.1	43.3
	Beiguodan Town daily care center	53.5	42.5

Sources: Li County TEIF, July 2016.

172. **Soil.** The soil samples were taken from the project site. The monitoring results show that the soil environment satisfies the requirement of Soil Environment Quality Standard (GB15618-1995) – Grade II and is suitable for residential and commercial use. The details are summarized in Table V.28:

Table V.28: Existing Soil Quality Monitoring (mg/kg, except for pH)

Monitoring points	Indicators	pH	Hg	As	Cu	Pb	Zn	Cd	Cr	Ni
	GB15618-1995 Grade II	6.5-7.5	≤0.5	≤30	≤100	≤300	≤250	≤0.3	≤300	≤50
EC center site	Upper layer soil	7.54	0.157	14.75	16	2.2	82.1	0.13	104	33
	Medium layer soil	7.58	0.127	13.19	18	3.6	97.9	0.22	107	40
	Deep layer soil	7.64	0.104	10.72	17	2.2	75.6	0.16	76	32

Sources: Li County TEIF, July 2016.

173. **Land cover and ecology.** The current project site for EC center is occupied by a brickyard with a small factory workshop in the middle (Figure V.17). There is no natural habitat or valuable ecosystems on site

Figure V.17: Land cover of EC Center Site at Lixian

174. **Cultural heritage.** During site inspections carried out by the EIA Institute no ruins, relics or indications of cultural heritage were recorded within the project site.

VI. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

175. This section assesses the potential for beneficial and/or adverse environmental impacts during the project construction and operational phases, and the mitigation measures to be implemented during detailed design, pre-construction, construction, and operation.

A. Project Benefits

176. The Project will newly build EC facilities in selected cities, which will provide local people who want to stay in the EC residential institutions with more and better EC services including daily care, health care, rehabilitation, entertainment, and psychiatric and social support. The centers will provide services all the elderly in the project area, particularly the poor elderly and the dementia elderly. The Project will also build or rebuild day care centers (HCBS Centers) both in urban and rural communities. They will provide the elderly living in the nearby communities with improved EC services, including nutritious meals, health screening, rehabilitation, escorting, home delivery, and respite care.

177. The Project will establish ICT systems. Information will be collected to provide better serve for the elderly. Call services will provide the elderly with convenient EC services such as home-delivery meals, housekeeping, home nursing, remote monitoring, remote medical treatment, information and medical referrals. It will include an emergency response function which will save lives.

B. Project Beneficiaries

178. The Project will alleviate the burden of the adult children in looking after their elderly parents especially when their parents are half or fully dependent. With the help from the EC residential institutions or HCBS services, the adult children will be assured of the safety and wellbeing of their elderly parents staying alone at home, or in the EC institutions.

179. The Project will also create job vacancies for local people. During the construction period of the EC institutions or day care centers, various kinds of workers will be used, such as construction workers, plumbers, carpenters, and painters. During the operation period,

administrative staff, caregivers, nurses, cleaners, chefs and administrative staff will be hired locally. The HCBS centers will promote the development of local business (catering, house cleaning, and retailing).

180. The Project's capacity building will improve the administrative and service capacity of EC providers. The training of caregivers will improve their professional EC skills and achieve formal certificates, which will provide career pathways.

181. The PPTA's Social and Poverty Analysis Report has included benefits to households in their estimation of the number of beneficiaries, not just elderly people who will directly benefit from the increased availability and levels of care. Direct employment and training of locally recruited staff is also included.

C. Pre-construction Phase: measures to be undertaken

182. **Environmental management readiness.** The following measures will be implemented in the pre-construction phase to ensure the project's environment management readiness.

- Institutional strengthening, including (a) appointment of a qualified environment and social officer within the Provincial PMO for the implementation phase; and (b) hiring of at least one LIEC within loan implementation consultant services by the PPMO.
- Updating the EMP. The mitigation measures defined in the project EMP (Attachment 1) will be updated based on final technical designs.
- Appointment of environmental officers within each IA.
- Contract documents. All tender documents will include the EMP obligations, including the environmental monitoring program. This will be the responsibility of the local design institute, with support of the LIEC.
- Environmental protection training. The LIEC, in conjunction with the PPMO Environment Officer and collaboration of local EPBs, will provide training on implementation and supervision of environmental mitigation measures to IAs and their contractors.

183. **Building materials.** To ensure that project facilities will be safe, energy efficient and green, the IAs will comply with relevant design standards and codes. Key design assumptions and specifications for the buildings are summarized below:

i. Structural requirement: safety grade II; design service life 50 years;
ii. Building structure: Based on the code of design for building seismic resistance (GB50011-2010), frame structure will be used for elderly buildings;
iii. Main construction materials: concrete C30-C50; bearing reinforcement HPB300, HRB400 or HRB500; Steel Q235B;

184. The use of VOC-emitting materials (including paints, coatings, adhesives, carpet and furniture's) will be strictly prohibited to ensure high indoor air quality for elderly people and working staff, including caregivers. No asbestos or asbestos-containing material will be used in construction of the facilities.

185. **Earthquake resistance** The design of all buildings will follow the standards including the Code of Design for Building Seismic Resistance (GB50011-2010, revised in July 2016) (Table VI.1); the Code of Design for the Building Foundation (GB50007-2011), and the Code of Design for the Engineering Structural Reliability (GB50153-2008), Code of Design for Buildings of

Elderly Facilities (GB50867-2013), and common acceptable practices in foundation treatment methods and building structure types. Based on the available geotechnical information the designs are considered reasonable.

Table VI.1: Design Seismic Resistance Requirement in Key Cities in Hebei Province

Name of municipality	Intensity	Acceleration (g)	Category	Subproject site
Shijiazhuang	7	0.15	I	Xinji
Xingtai	7	0.15	I	Julu
Chengde	6	0.05	III	Shuangluan District
Handan	7	0.10	II	She County
Baoding	7	0.10	II	Li County

Sources: Code of Design for Building Seismic Resistance (GB50011-2010), revised in July 2016.

186. **Design for fire, accident and disorientation prevention.** The facilities must comply with the PRC standard GB 50016-2006 (Code of Design on Building Fire Protection and Prevention). Additionally, the PPTA EC specialists have prepared detailed technical guidelines for the design of all facilities to include these important preventative features. These are in the Supplementary Document SD X to the DFR and their incorporation in the final design is a requirement of this IEE.

187. For fire protection, the features include: (i) fire separation distance (to be convenient for fire-fighting and rescue within certain time) not only from the adjacent buildings but also any combustible surroundings; (ii) secured sectors (fire compartment, smoke compartment) both horizontally or vertically; (iii) fire and smoke detection and alarm systems; (iv) fireproof dividing walls, doors and windows between rooms; (v) provision of fire extinguishers in every wing of every floor; (vi) high pressure fire hydrant points for firefighter; (vii) emergency lighting; and (viii) trained staff in assisted evacuation procedures.

188. For accident prevention, includes: (i) easily operated and clearly spotted alarm-help devices; (ii) appropriate bed heights and other furniture; (iii) wall and staircases hand rails; (iv) avoidance of slippery surfaces; and (v) safe kitchens, bathrooms and toilets in assisted-living areas.

189. To prevent or minimize disorientation of dementia suffers, the facilities will include: (i) the use of design features like specific colors for specific places, easily spotting signs, use of images and photos instead of lettering, and landmarks; and (ii) attention to entrances, exits and reception areas to prevent any resident from accidentally getting lost.

190. **Energy efficient design.** Energy efficiency is a key feature of EC building design. The FSR follows the relevant national and local standards and guidelines including: (i) Code of Design for the Energy Conservation of Public Buildings (GB 50189-2005); (ii) Details on the Code of Design for the Energy Conservation of Public Buildings in Hebei Province (DB13(J)81-2009); and (iii) Regulations on Civil Building Energy Conservation in Hebei Province.

191. The FSR has considered water conservation measures such as selecting water conservation materials, devices and equipment for the piping and the toilets. Heating provision and electricity use are the major sources of energy consumption. Energy efficiency measures should therefore aim to improve the efficiency in heating and electricity consumption. The FSR has defined a set of measures to ensure such efficiencies. These are identified below, and will be included in the technical specifications for detailed design of buildings.

EC Building design

(i) The building location and alignment should be well selected to benefit from solar heating and to reduce heat loss;
(ii) The building layout should maximize the utilization of the sunlight and natural cooling and airflow;
(iii) Strict adherence to the Code of Design for the Energy Conservation of Public Buildings (GB 50189-2005) and the Details on the Code of Design for the Energy Conservation of Public Buildings in Hebei Province (DB13(J)81-2009).

Electricity design

(i) Adopt appropriate lighting standards for different functional areas;
(ii) Select energy saving lighting devices, and optimize the lighting control.

Heating and ventilation design

(i) Adopt a ventilation system which optimizes air purification and natural ventilation usage;
(ii) Select higher grade material to improve the heat insulation;
(iii) Optimize the heating system to improve the heat exchange efficiency and to reduce unnecessary heat loss;
(iv) Establish a regular inspection mechanism of the heating and ventilation system.

Water and Drainage design

(i) Adopt water conservation/flow limiter devices on water taps and toilets;
(ii) Adopt stormwater/sewage separation systems.

192. **Design for noise reduction.** Environmental baseline measurements at the northern (roadside) boundary of the Chengde Shuangluan EC Center site show excessive ambient noise levels in both day and nighttime. Design of this facilitiy will include noise protection measures, both in building design and landscape design. Since ambient noise level exceedance on the northern boundary is more than 3dB above standard. A combination of building design and landscape is therefore required. Double glazing will be installed on all northern windows and internal design will isolate noise from the northern entrance from the accommodation areas The landscaping will include a band of dense tree and shrub planting to a minimum width of 10m along the northern boundary.

193. **Design for surface and groundwater protection.** Local requirements for wastewater handling and management is for large producers of wastewater (apartment building, hotels and EC centers) to undertake pre-treatment of wastewater on-site before it enters the Sewerage network and conveyed to the WWTP. This ensures a more uniform and higher quality influent for the WWTP, allowing it to operate efficiently. Pre-treatment for EC Centers and HCBS Centers will be septage holding tanks were dwell time will allow partial anaerobic degradation of solids with consequent lowering of COD and BOD levels of the wastewater volume. There will be no seepage component to this pre-treatment and the volume of wastewater conveyed to the WWTPs will be unchanged.

194. The location of the EC Center of the She county subproject is within a secondary water source protection zone. Developments in this zone requires EIA approval by the local EPB, and the Bureau of Housing and Urban-Rural Development to give an opinion whether the site selection meets the zoning provisions. She County Bureau of Housing and Urban-Rural Development has issued an advice (28 October 2015 and 21 October 2016) that the planned development is in compliance with She County Urban-Rural Plan, including the water source

protection zone. As an additional safeguard to ensure that no accidental leakage to surface or groundwater can occur an additional impermeable layer around the holding tank and a sealed and bunded pump-out area will be installed. Regular groundwater monitoring downslope from the pretreatment tank is required by the EMP.

195. **Asbestos survey and planning.** To ensure that no work or community hazards exist on any subproject site before work commences, a survey of all buildings planned for demolition and all buildings planned for renovation will be undertaken to discover and report on the presence or absence of asbestos or asbestos-containing material. Where asbestos or asbestos-containing material is found, the IA and contractor will develop and implement an asbestos removal and disposal plan in conjunction with an accredited specialist contractor to safely remove the material before work commences or during construction. The plan will focus on, as a priority, the health and safety of workers and the community during the removal and long-term disposal.

196. **Contractor Performance and Site Management.** Following the award of construction contracts, the successful head contractor for each subproject will prepare a Site Management Plan (SMP), based on the EMP, including Occupational and Community Safety Plans and Emergency Response Plans, for approval by each IA. This will be appropriate to the scale of construction. For the new construction of EC centers it will cover site preparation earthworks and the full range of civil construction activities, requiring mitigation measures to address, dust, noise, traffic, soild waste and construction wastewater. However, the renovation of existing builings to modern HCBS standard will be much smaller scale involving internal construction, plumbing and carpentry and external works only to connect to utilities. Work schedules will be important for HCBS renovations, to minimise community disruptions.

197. Before construction commences, the contractors will locate and identify nearby sensitive receptors for noise and dust impacts at each construction site, and include them in the Site Management Plan for the implementation of mitigation measures

198. A plan for environmental training for contractors, especially related to environmental management, is included in the EMP. The contractor will take reasonable measures to minimize the impact of construction on the environment.

199. **Climate risk.** The project has been classified a low climate risk and no Climate Risk and Vulnerability Assessment (CRVA) was required. No subproject site is located in flood-prone land or land vulnerable to sea level rise. Modern PRC building codes for structural safety and seismic resistance will ensure that the project buildings are designed for weather events likely to occur in the Hebei region. Features included in designs such as stormwater/sewage separation systems, high grade materials to improve the heat insulation and building layout to maximize the utilization of the sunlight, natural cooling and airflow will contribute to the facilities' resilience to climate change.

D. Impacts and Mitigation Measures during Construction Period

200. Potential construction phase impacts are associated with soil erosion, increased noise and dust levels, liquid and solid wastes, and safety risks to community members (for rehabilitation of HCBS center) and workers. It is important to note that there will be no worker camps, as workers are normally from local villages and/or town/townships, can readily access the sites by road and stay in off-site accommodation. All construction sites are either cleared or existing buildings for refurbishment. Impacts on flora and fauna will be minimal. There are no

reports of physical cultural resources in or around any of the sites, though a chance finds procedure will be put in place. Overall, environmental impacts associated with the construction phase are expected to be localized and short term, and can be effectively mitigated through the application of sound construction site management practices. Main impacts during construction, as well as mitigation measures, are discussed below.

201. **Impact on air pollution and mitigation measures.** Air pollutants generated in the course of construction mainly come from: (1) dust generated during the course of road excavation and backfill, stockpiling and transportation of materials and debris; (2) exhaust gas emitted by the various kinds of construction machinery; (3) Dust generated by transport vehicle and its exhaust gas.

202. **Dust**. Construction dust causes the biggest impact to air quality during the construction period. Origins of such dust include site excavation and backfill, stockpiling and transportation of materials and debris. The amount of dust on construction sites is related to a number of factors including conditions and management of construction sites, level of mechanization, season of construction, soil texture, and weather conditions. However, dust generated from transportation vehicle operation accounts for around 60% of the total construction dust. Construction dust at this scale has a small impact area, usually within a range of 50m outside the construction site boundary, and its biggest impacts is usually happening within approximately 30m.

203. Mitigation measures, included in the EMP, comprise: (i) installing perimeter fences at each site prior to construction; (ii) spraying water about 4-5 times a day where fugitive dust is generated during deconstruction of old buildings and civil works; (iii) covering trucks carrying earth, sand or stone with tarps or other suitable cover to avoid spilling and dust generation; (iv) undertaking regular air quality monitoring in accordance with the monitoring plan; (v) regularly consulting nearby residents to identify concerns, and implement additional dust control measures as necessary.

204. **Machinery exhaust gas.** Construction machinery will generate exhaust gases during use. Pollutants contained in the exhaust gas mainly include TSP, NO_x, CO, and hydrocarbons However, the machines will be distributed around the site, and the level of pollution will be low and their impacts on the surrounding areas of short in duration. Machinery will be required to meet the new National V Emission Standard (MEP 2016), which is due to come into effect in Hebei Province at the beginning of 2017.

205. **Impacts on soil and mitigation measures**. The construction sites in 6 subprojects, including residential institutions and newly built HCBS centers targeted by the project are relatively small. The potential impacts on soil include: (i) soil erosion; (ii) soil contamination; and (iii) inappropriate management of spoil disposal.

(i) Soil erosion: May be caused by construction, excavation, and borrow pits, stockpiles and spoils from earthwork during construction of buildings and grading. The factors that are expected to contribute to accelerated erosion in the project area are winds and rainfall.
(ii) Soil contamination: Contamination of soil in the construction phase may result from the inappropriate transfer, storage, and disposal of petroleum products, liquids and solid waste.
(iii) Spoil disposal: Significant spoil disposal will not be required, and potential impacts will be short-term and localized.

206. The impacts on soil will be mitigated through a number of remedial measures which are defined in the EMP, which shall be defined in construction contracts and the site management plans, to be developed by Contractors:

(i) For soil erosion protection: (a) prepare a soil erosion control plan (showing how runoff will be controlled at site perimeter to control soil and water runoff, and how disturbed areas will be reclaimed); (b) minimize active open excavation areas; (c) construct intercepting ditches and drains to prevent runoff entering construction sites, and divert runoff from sites to existing drainage; (d) stabilize all earthwork disturbance areas within maximum 14 days after earthworks have ceased; and (e) contour and re-vegetate disturbed surface.

(ii) For soil contamination prevention: (a) store hazardous products and waste on impermeable surfaces in secure, covered areas; (b) remove all construction wastes from the site to approved waste disposal sites; (c) provide spill cleanup measures and equipment at each construction site; and (d) conduct training in emergency spill response procedures.

207. **Impacts and mitigation measures on surface and groundwater**. The major risk to groundwater and surface waters is through spills of dangerous substances, and inappropriate construction waste management. The potential risks to surface and groundwater will be mitigated through a number of activities defined in the EMP, which will be incorporated in construction contracts with the Contractors:

(i) Install water collection basins and sediment traps in all areas where construction equipment is washed;

(ii) Recycle wastewater generated from the washing down of mixer trucks and drum mixers and similar equipment;

(iii) Discharge surplus wastewater and wastewater generated from building construction activities, including concreting, plastering, cleaning of works and similar activities into sewer after removal of solids in a silt removal facility;

208. **Solid waste management**. Inadequate disposal of construction wastes could have adverse impacts on soil, water and health of workers and the community. Waste streams will include inert construction wastes (soil, debris, and concrete waste), municipal type wastes (construction workers' food and packaging wastes from construction consumables) and hazardous wastes (fuel containers, oil filters, oily rags etc.). All subprojects will rehabilitate existing buildings for HCBS centers. Waste from partial demolitions and renovations will mainly include concrete, bricks, glass and woods. The presence of asbestos or asbestos containing materials is highly unlikely as no asbestos containing materials were used for insulation in the buildings that will be demolished. This was confirmed through visual spot-checks during IEE preparation. Should hazardous materials be found during demolition and clearance of waste, the IAs and contractors will immediately inform the relevant local EPB and recruit a specialized service provider for final disposal.

209. In addition, the following waste management and impact mitigation measures have been defined in the EMP, which shall be defined in construction contracts with Contractors:

(i) Maximize reuse/recycling of construction and demolition wastes (e.g. iron, bricks, windows, doors, steel bars etc.);

(ii) Provide appropriate waste storage containers for workers' municipal garbage and hazardous wastes;

(iii) Install confined storage points of solid wastes away from sensitive receptors, regularly haul to an approved disposal site;

(iv) Use licensed contractors to remove and properly dispose of construction wastes and

demolition wastes from the construction sites;
(v) Prohibit burning of waste.

210. **Noise management**. The major sources of noise pollution are movement of construction vehicles, the haulage of construction materials to the construction sites and the noise generating activities at the sites. Concrete mixing and material movements are the primary noise generating activities and will be uniformly distributed over the entire construction period. Construction activities are expected to produce noise levels in the range of 70-105 dB (A). Noise will be mitigated through a number of remedial measures which are defined in the EMP, which shall be defined in construction contracts with Contractors:

(i) Maintain equipment and machinery in good working order; undertake regular equipment maintenance, ensure compliance with PRC standard of GB12523-2011 (nighttime – 50 dB (A), daytime – 60 dB (A) in the project construction area; and nighttime – 55 dB (A), daytime – 70 dB (A) close to the road side).
(ii) Operate between 08:00am - 20:00pm only and reach an agreement with IAs management and nearby residents regarding the timing of heavy machinery work, to avoid any unnecessary disturbances; nighttime works should only be conducted in exceptional cases, and a permit should be obtained for that purpose;
(iii) Inform potentially affected people including nearby residents of works through advanced meaningful consultations;
(iv) Identify sensitive receptor sites within 100m of construction (schools, medical centers) and erect temporary noise barriers to reduce noise impact on them;
(v) Locate sites for concrete-mixing and similar activities on the site at the point furthest from any sensitive receptors and equip with noise barriers to ensure noise at boundaries complies with GB12523-2011;
(vi) Monitor/observe noise within residential institutions and at nearby sensitive areas at regular intervals (as defined in the monitoring plan);
(vii) Disseminate information on procedure of handling complaints through the Grievance Redress Mechanism (GRM).

211. **Flora and Fauna.** Field investigations have established that there are no threatened or endangered flora and fauna species within the project's direct area of influence. The current land uses are cleared or abandoned construction sites, marginal agriculture or existing buildings that will be demolished. Therefore, no adverse impact on such species is likely to occur during the construction activities.

212. **Loss of Physical Cultural Resources.** There is no record of important heritage or archaeological sites on the project sites. Contractors will be required to establish chance-find procedure for physical cultural resources. If a new site is unearthed, work will be stopped and the IA and local cultural relics bureau should be notified.

213. **Risks to community health and safety**. Construction sites will be located close to existing residential areas, representing a potential risk to public health and safety, especially to nearby residents and workers. This risk will be mitigated through a number of measures defined in the EMP, which shall be defined in construction contracts with Contractors:

(i) Prepare traffic control plan within and around project site and/or communities during construction, to be approved by local traffic management administration. The plan shall include provisions for diverting or scheduling construction traffic to avoid peak traffic hours, regulating traffic at road crossings with an emphasis on ensuring public safety through clear signage;
(ii) Assign personnel to direct pedestrians around dangerous work areas;

(iii) Ensure that all sites are secure, discouraging access through appropriate fencing; place clear signs at construction sites in view of the people at risk (including workers and nearby communities), warning people of potential dangers such as moving vehicles, hazardous materials, excavations, and raising awareness on safety issues;
(iv) Return machinery to its overnight storage area/position;
(v) Erect safety barricades around all excavations;
(vi) Hold a public consultation meeting prior to commencing construction to discuss issues associated with ensuring the safety of nearby communities in vicinity of the construction site.

214. **Occupational health and safety.** The leading safety hazards on site are falls from height, excavation accidents, electrocution, and being hit by falling objects. The following measures have been defined in the EMP to ensure high level of occupational health and safety, which shall be defined in construction contracts with Contractors:

(i) Provide safe supply of clean water and an adequate number of latrines and other sanitary arrangements at the site and work areas, and ensure that they are cleaned and maintained in a hygienic state;
(ii) Provide garbage receptacles at construction site;
(iii) Provide personal protection equipment for workers in accordance with relevant health and safety regulations;
(iv) Develop an emergency response plan to take actions on accidents and emergencies; document and report occupational accidents, diseases, and incidents; organize fully equipped first-aid base at each construction site;
(v) Establish a records management system that will store and maintain easily retrievable records on occupational accidents, diseases, and incidents.
(vi) Train all construction workers in basic sanitation and hygiene issues, general health in basic sanitation and hygiene issues, general health and safety maters, and on the specific hazards of their work;
(vii) Posters drawing attention to site safety, rescue and industrial health regulations shall be made or obtained from the appropriate sources and will be displayed prominently in relevant areas of the site.

215. **Land acquisition, resettlement and leasing.** The project is classified as Category B for involuntary resettlement. The project will permanently occupy 202.75 mu of land, affecting 91 households with 310 persons. All land for EC and geriatric hospital components will be acquired for this project. Building demolition will total1,195 m^2. Land area totaling 5.2 mu and 14,143.6 m^2 of properties will be leased in the project (Table VI.2).

Table VI.2: Land acquisition, Land Leasing and Resettlement in the Project

No.	Subproject location	Land acquisition			House demolition		Land leasing	Property leasing
		Area (mu)	AHs	APs	Area (m^2)	AE	Area (mu)	Area (m^2)
1.	Xinji	39.75	0	0	250	1	0	400
2.	Julu	27.64	0	0			0	0
3.	Shuangluan	30	5	37			0	7,600
4.	YSU	6,36	0	0			0	0
5.	She County	24	86	273			0	3,100
6.	Li County	75	0	0	945	1	5.2	3,043.6
	Total	202.75	91	310	1,195	2	5.2	14,143.6

AHs=Affected households, APs=Affected people; AE=Affected enterprise; YSU = Yanshan University.
Sources: subproject resettlement plan and land use due diligence report, September 2016.

216. **Indigenous peoples.** The Project is classified as category C for potential impacts to

indigenous peoples. The assessment determined that there will not be any negative impact on indigenous peoples.

217. **Other Social Issues**. No other social risks and/or vulnerabilities are anticipated as a result of the project. The project construction workers will be engaged locally. Civil works contracts will stipulate priorities to (i) employ local people for works, (ii) ensure equal opportunities for women and men, (iii) pay equal wages for work of equal value, and to pay women's wages directly to them; and (iv) not employ child or forced labor. There will be no economic displacement associated with the Project.

E. Impacts and Mitigation Measures during Operation Period

218. These are local facilities catering mainly for local communities. There is therefore minimal increase in local populations and the operational impacts arise primarily from the concentration of water consumers on each site (rather than distributed in households) and wastewater and solid waste generators on site rather than increases in numbers.

219. No significant environmental impacts are anticipated during the operation of project facilities. Most operational issues can easily be addressed by integrating new facilities into the residential institutions, HCBS centers and the public services (water supply, solid waste and wastewater collection and disposal), or by ensuring compliance with relevant building codes (such as for earthquake resistance, fire safety, ventilation and air-conditioning). Although two EC Centers (Xinji and Chengde Shuangluan) will include hospital facilities (of 60 and 100 beds respectively) these are not surgery, radiological or pathology supported facilities. They are in one case a geriatric hospital for bed-care residents and in the other a small rehabilitation hospital focusing on surgical recovery and physiotherapy. These will produce no unusual medical waste or wastewater beyond slight increases in amounts due to the larger number of residents.

220. **Water supply.** All buildings will be connected to the municipal water supply network. The increase in water demand on the EC facilities as a result of the new buildings is small – Table VI.4 shows that the water demand of the projects facilities does not exceed 0.93%, and averages 0.37%, of the available supply - and the consumption can be easily met through the existing municipal water supply services.

221. **Wastewater Collection and Treatment.** The major potential source of water pollution during the operation phase will be the wastewater from EC facilities (bathroom, toilets and kitchens). The wastewater from EC facilities cannot be connected directly to the municipal WWTP since on-site pretreatment is needed to reduce COD and BOD level to that which allows the WWTP to function most efficiently. This will be achieved by a period of anaerobic degradation of the wastewater solids in a pre-treatment tank. The pretreatment tank is impermeable with no seepage function. After this simple pre-treatment in septage holding tanks, the sewage will be piped to existing centralized municipal WWTPs for final treatment.

222. The volumes of wastewater produced by the facilities and the capacities of local WWTPs are listed in Table VI.3. The table shows that wastewater volumes generated by the projects facilities does not exceed 0.36%, and averages 0.21%, of the capacities of the local WWTPs. It is concluded that the EC facilities' wastewater can be easily met through the existing municipal wastewater treatment services, and will not cause any incremental impact on any receiving water body.

Table VI.3: Water Consumption, Wastewater at Project Facilities

Subproject	Daily Water Consumption (m^3/d)	Annual Water Consumption ($10^4 m^3/a$)	Capacity of local water treatment plant ($10^4 m^3/day$)	Wastewater generation ($10^4 m^3/a$)	Capacity of WWTP ($10^4 m^3/day$)	Water treatment plant; Wastewater treatment plant
Xinji Parents' Paradise Elderly Care Community Center	118.68	4.11	2	3.01	10	Xinji Water Supply Plant (South plant); Xinji No.2 Wastewater Treatment Plant
Julu County Healthcare and Elderly Care Integrated Service Center	92.77	3.39	1	2.62	2	Julu County Water Supply Co., Ltd; Julu County Kelin Wastewater Treatment Technical Service Co., Ltd
Chengde Shuangluan District Haoren Health and Elderly Care Service Center Project	225.64	11.39	20	6.58	5	Chengde Water Supply Group; Chengde Municipal Zhongbao Wastewater Treatment Plant
Shexian County Binhe Elderly Care and Rehabilitation Center	93.42	3.14	3	2.51	2.5	She County Water Supply Co., Ltd-Sanjianba Water Plant; She County Qingzhang Wastewater Treatment Plant
Baoding Lixian County Elderly Care Comprehensive Service Center	97.13	2.83	4	2.19	3	Li County Water Supply Co., Ltd; Li County WWTP
Yanshan University Health and Elderly Care Integration Training Center	103.5	2.79	20	2.65	7	Qinghuangdao No. 3 Wastewater Treatment Plant

WWTP=wastewater treatment plant, YSU = Yanshan University.
Sources: subproject FSRs and EIA documents, July 2016.

223. Sludge accumulation in septage tanks will be periodically monitoring (through visual inspection), and licensed companies will be contracted to de-sludge as needed. Because the She county EC Center subproject is within the secondary zone of a water source protection area, it will have additional safeguards to prevent leakage of wastewater to surface or groundwater (see Section C above). The slightly higher wastewater volumes produced by the Xinji and Chengde Shuangluan subprojects is due to the incorporation in the facilities of a small geriatric hospital and rehabilitation hospital respectively. The higher volumes require incrementally longer on-site pretreatment and for this reason the EMP requires odor monitoring (H_2S and NH_3) at nearest residential areas.

224. **Solid waste.** During the project operation, the EC facilities will generate domestic as kitchen waste and office solid waste (Table VI.4). This waste will be segregated into biodegradable and non-biodegradable waste on-site. Biodegradable waste will be used on-site for composting for kitchen gardens at all facilities. Where non-biodegradable recycling is available, these wastes will be stored in segregated bins and removed as required. Other solid wastes will be removed by the local Sanitation Bureau on a regular basis for disposal at designated landfill sites. The table shows that the solid waste from the facilities are a minute proportion of the daily municipal waste going to landfill and that the facilities can be served by the current capacities of the local landfill for the short-medium term.

Table VI.4: Solid Waste Production at Project Facilities

Subproject	Non-medical solid waste generation (t/a)	Designated solid waste landfill site	Current landfill capacity (t/day)	Existing landfill life (years)
Xinji Parents' Paradise Elderly Care Community Center	151.66	Jiuzhai Village, Tianjiazhuang Town, Xinji City	200	5
Julu County Healthcare and Elderly Care Integrated Service Center	155	Xin Village, Julu Town, Julu County, Xingtai City	150	7
Chengde Shuangluan District Haoren Health and Elderly Care Service Center Project	60.25	Bimiaozi Village, Shuangluan District, Chengde City	200	20
Shexian County Binhe Elderly Care and Rehabilitation Center	194.91	Tai Village, Jingdian Town, She County	200	6
Baoding Lixian County Elderly Care Comprehensive Service Center	212.25	Hu Village, Xinxing Town, Li County, Baoding City	150	15
Yanshan University Health and Elderly Care Integration Training Center	81	Included in YSU waste management	NA	NA
Total	855.07			

Sources: subproject FSRs and EIA documents, July 2016.

225. **Medical waste disposal.** The medical waste generated by the subprojects is small, with the larger amounts coming from the subprojects which include small hospital facilities (Xinji with a 60 bed geriatric hospital and Chengde Shuangluan with a 100 bed rehabilitation hospital). In all subproject sites, medical waste will be kept separately from other solid waste and no segregation into waste categories will be undertaken by EC staff. Contracts with specialized contractors for this purpose will be signed before project operation for each IA. This requirement is included in the EMP. Proposed arrangements for the proper handling and disposal are summarized in Table VI.5. All project municipalities employ high temperature (850-950 ^{o}C) incineration for the disposal of medical wastes. There are no alternative disposal options available. All medical waste from the project will be disposed of via the existing high temperature incineration. The incinerator plants are identified and their capacity to accept the project wastes have been verified.

Table VI.5: Disposal arrangements for medical waste

Subproject	Annual medical waste generation (t/a)	Disposal site of medical waste	Disposal method	Total capacity (t/a)	Current spare capacity (t/a)
Xinji Parents' Paradise Elderly Care Community Center	9.198	Zhugu Village, Nanyin Town, Yuanshi County, Shijiazhuang City	High-temperature incineration	16,425	4,425
Julu County Healthcare and Elderly Care Integrated Service Center	1.5	Yongsan Village, Yongfuzhuang Town, Ren County, Xingtai City	High-temperature incineration	2,920	365
Chengde Shuangluan District Haoren Health and Elderly Care Service Center Project	7.3	Xushankou Village,Funing County, Qinhuangdao City	High-temperature incineration	40,000	35,000

Subproject	Annual medical waste generation (t/a)	Disposal site of medical waste	Disposal method	Total capacity (t/a)	Current spare capacity (t/a)
Shexian County Binhe Elderly Care and Rehabilitation Center	1.44	Beigaotong Village, Sanling Town, Congtai District, Handan City	High-temperature incineration	3,600	2,500
Baoding Lixian County Elderly Care Comprehensive Service Center	1.6	Jingsancheng Village, Dongchengfang Town, Zhuozhou City, Baoding City	High-temperature incineration	2,920	365

Sources: subproject FSRs and EIA documents, July 2016.

226. **Hygiene and cleanliness.** The success of the new facilities will depend upon how well they are maintained and whether they can offer a healthy environment for health-vulnerable people on an ongoing basis. A critical part of maintaining a healthy environment for the elderly is to ensure hygiene and cleanliness of all parts of the facilities. Janitorial staff will be employed, properly equipped and properly trained for hygiene control. Regular toilet and bathroom inspections for cleanliness and antiseptic treatment, and regular kitchens and food storage inspections for cleanliness and food safety are required by the EMP.

227. **Energy consumption.** The predicted energy use by the subprojects is summarized in Table VI.6. All energy use (heating, electricity, water delivery (pumps) and natural gas) has been converted to total coal equivalents (TCE).

Table VI.6: Annual Heat, Power, Water and Natural Gas Consumptions for Subprojects

Subproject	Heat (10^4 GJ)	TCE	Power (10^4 KW)	TCE	Water (10^4 m^3)	TCE	Natural gas (10^4 m^3)	TCE	Total TCE	CO_{2e}
Xinji Parents' Paradise Elderly Care Community Center	1.55	530.50	625	768.12	4.11	3.52	5.02	60.96	1,363.10	3,775.78
Julu County Healthcare and Elderly Care Integrated Service Center	0.62	212.64	239.04	293.78	3.39	2.90	11.75	142.68	652.00	1,806.04
Chengde Shuangluan District Haoren Health and Elderly Care Service Center Project	0.98	332.81	283.64	348.59	11.39	9.76	4.6	55.89	747.05	2,069.34
Shexian County Binhe Elderly Care and Rehabilitation Center	0.82	278.13	243.19	298.88	3.14	2.69	3.04	36.91	616.62	1,708.04
Baoding Lixian County Elderly Care Comprehensive Service Center	1.28	437.44	189.86	233.34	2.83	2.43	3.38	41.04	714.25	1,978.47
Yanshan University Health and Elderly Care Integration Training Center	0.40	135.27	39.60	9.23	2.79	2.39	0.00	0.00	146.89	406.90
Total	5.25	1,791.52	1,580.73	1,942.71	24.86	21.30	27.79	337.49	4,093.02	***11,337.67***

TCE=tons of standard coal equivalent

Sources: subproject FSRs and EIA documents, July 2016.

228. **Greenhouse Gas emissions.** From the projected TCE amounts in Table VI.6 the total CO_{2e} emissions for the project can be calculated using the IPPC conversion factor of 2.77 t CO_{2e} /TCE for PRC coal characteristics. The total emissions are 11.338 t/year. This is well below the

significant level of 100,000 t/year used as a threshold level by the ADB SPS to require continuous monitoring.

229. **Emergency planning.** IAs will be required to implement the following measures in order to ensure high levels of on-site safety:

iv. Ensure compliance with relevant health and safety regulations pertaining to ventilation, indoor air quality, lighting, noise, fire-fighting and fire survival equipment and fire escapes;

v. Establish readiness plan and operational plan under emergency conditions, for as fire, flood, earthquake, wind, storm, water contamination, air contamination, and explosion to ensure safe environment for all elderly people and staff and visitors.

vi. Develop anti-infection protocols and response plans, including quarantine and evacuation procedures for epidemic, pest infestation, and food safety to ensure safe environment for all elderly people and staff and visitors.

230. **Air Quality and ventilation.** Baseline data for the project counties and sites show that there is overall poor air quality and that there are days when the headline parameters of $PM_{2.5}$, PM_{10} and O_3 exceed safe standards for community health. Since the project is funding facilities for the care of one of the most vulnerable sections of the community (the aged), safeguards need to be implemented to protect residents from unhealthy air conditions

231. The Air Quality Index (AQI) threshold for "unhealthy for sensitive groups" $PM_{2.5}$ levels corresponds to a concentration of .0355 mg/m^3, which is within the ambient air quality standard for PRC and the guidelines for EHS. The AQI threshold for "unhealthy" $PM_{2.5}$ levels corresponds to a concentration of .0555 mg/m^3, which is also within the ambient air quality standard for PRC and partially complies with the guidelines for EHS. Similar correlations exist for PM_{10} and O_3. This illustrates that special attention needs to be paid to the management of air within the EC Centers (residential) for the wellbeing of the residents.

232. Each IA will prepare an Air Quality Protection Plan which will comprise: (i) the setting up of a monitoring responsibility within the O&M Unit of the facility to monitor the real time AQI forecasts for the local area (example for Baoding is at Figure VI.1); (ii) a response procedure triggered by days which will have "Unhealthy" or worse air quality; (iii) responses to include changing from natural ventilation to full air conditioning, close monitoring of vulnerable patients and groups, and alerting non-residential vulnerable clients of the HCBS Centers through the ICT platform. The plan will be developed and prepared in the pre-construction phase and implemented during the operation phase of the project

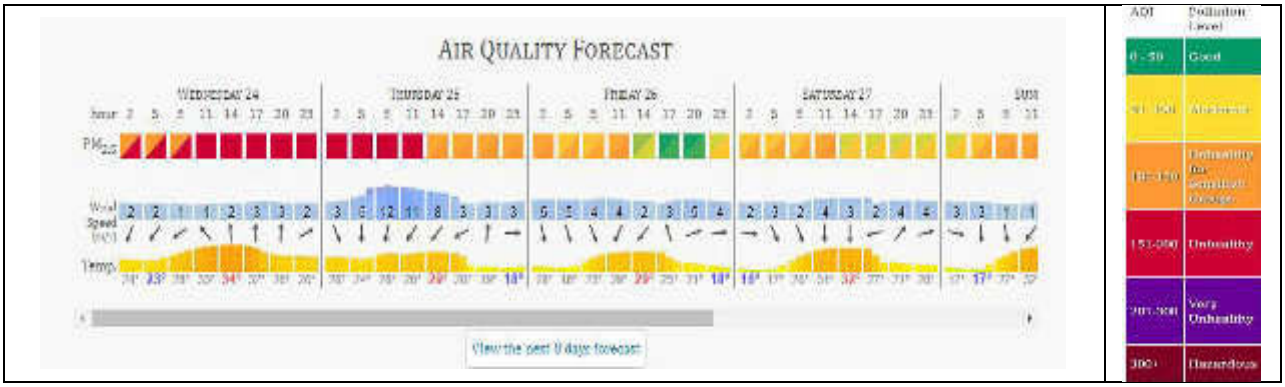


Figure VI.1: Example of Real Time AQI Forecast

233. In conjunction with the Air Quality Protection Plan for each facility, the operating and management units will regularly maintain their air conditioning systems, including cleaning and replacement of all filters as per manufacturers schedule. The units will also maintain landscape and tree and shrub plantings to catch and filter out airborne dust and particulates from outside the site.

VII. INFORMATION DISCLOSURE, CONSULTATION AND PARTICIPATION

234. To identify key environmental issues and sensitive sites, all counties/districts of the project sites were visited by the PPTA team, local design institutes and the EIA institute. Consultation meetings were held with local authorities and potentially affected people. Key findings such as resident's acceptance, environmental issues to be addressed, and suggestion from local government authorities were reviewed with the design institutes to revise the design and address environmental issues.

A. First Round Consultations

235. The first round of formal consultation meetings was held in April-July 2016 and was undertaken by the PPTA team. Public consultation meetings were held at the government office with representatives from related government agencies, and other stakeholders, such as project enterprises staff.

236. During the consultation, all the local government officials expressed their support for the project as the EC services are urgently needed due to the increasing aging population. Major environmental concern is the dust and construction impact due to the construction and rehabilitation. These concerns can be minimized by taking mitigation measures, which have already been included in the domestic EIAR and TEIFs and will be monitored regularly during the project construction period through the implementation of the EMP. No major environmental concerns for the project operation period were raised. During the consultation, it was confirmed that all the project site selections are appropriate and comply with local government planning.

Table VII.1: Stakeholder Consultation Participants

No.	Project County	Date	Participants
1.	Xinji	26-27 April 2016	EPB, CAB, FB, LRB, CPB, CDRC, Village Committee, PPE
2.	Shuangluan District	11-12 May 2016	EPB, CAB, EPB, CAB, Village Committee, PPE
3.	Qinhuangdao	12 May 2016	EPB, LRB
4.	Li County	13 May 2016	EPB, CAB, FB, LRB, CDRC, Village Committee, IA
5.	She County	13 May 2016	EPB, CAB, FB, LRB, Township Government, Village Committee, PPE
6.	Julu	16-17 June, 28 July 2016	EPB, CAB, FB, LRB, CDRC, Village Committee, County Hospital, County Chinese Medicine Hospital

EPB = Environmental Protection Bureau; CAB = Civil Affair Bureau; FB = Financial Bureau; LRB = Land and Resources Bureau; CPB = County Planning Bureau; CDRC = County Development and Reform Commission; PPE = Participating Private Enterprise; IA = Implementing Agency.
Source: PPTA Environmental Team Consolidation, September 2016.

B. Information Disclosure and Second Round Consultation

237. Information disclosure was made by the EIA institutes after the completion of the first round of consultation with government agencies. The main environmental impacts and mitigation

measures, as well as the environmental management plan described in the TEIF were notified in public media (Shuangluan District) and information boards of villages near the subproject sites for the other counties.

Table VII.2: Information Disclosure

Name of subproject	Date of information disclosure	Location of disclosure
Xinji Parents' Paradise Elderly Care Community Center	First round: 11-25 August 2016; Second round: 16-29 September 2016	Gucheng Village, Xinleitou Town, Wangkou Village, Nanzhiqiu, Xizebei Village in Qianying Township, Jiucheng Town, Fanghua Community, Aolinshengyuan Community, Qinghewan Community
Julu County Healthcare and Elderly Care Integrated Service Center	First round: 1-12 August 2016; Second round: 5-16 September 2016; Consultation meeting: 8 September 2016	Shengshishoufu, Yangguang Community, Jindouhuacheng, Wansheng Community, Xiyuan Primary School, Xixuzhuang Village, Xiwangyang Village, Xiaolvzhai Village, Hezhai Village, Yantong Village, Sujiaying Village
Chengde Shuangluan District Haoren Health and Elderly Care Service Center Project	25 June 2016	http://www.eia8.com for Shuangluan District
Shexian County Binhe Elderly Care and Rehabilitation Center	13-24 September 2016	Shangqingliang Village, Zhongyuan Village, Nanyuan Village, Beiyuan Village, Zhanwa Village, Chian Village, Huili Village, Yantou Village, Nanguan Village, Xigang Village
Baoding Lixian County Elderly Care Comprehensive Service Center	13 June – 24 June 2016	Gucheng Village, Xinleitou Town, Wangkou Village, Nanzhiqiu, Xizebei Village in Qianying Township, Jiucheng Town, Fanghua Community, Aolinshengyuan Community, Qinghewan Community

Sources: subproject EIA documents, October 2016.

238. The second rounds of public consultation and questionnaire distribution were held by EIA institutes through consultation meetings and taking questionnaires with potential affected people. The results from the questionnaire responses are summarized in Table VII.3.

Table VII.3: Questionnaire Survey Results

Subproject location	Date	Responses received	Problems in the local environment	Do you support the project?	To whom do you complain when there are environmental problems?
Xinji	11-25 August 2016	90	60%-air pollution; 7.27%-water pollution; 11.82%-noise pollution; 18.18%-solid waste pollution; 2.73%-bad ecological environment	98.89%. 1.11% do not care, or have no objection	19.51% to contractor; 9.76% to IA; 26.02% to EPB; 33.33% to village committee; 11.38% to GCO
Julu County	9-14 September 2016	121	21.01%-air pollution; 16.67%-water pollution; 15.94%-noise pollution; 29.71%-solid waste pollution; 16.67%-bad ecological environment	91.74% 8.26% do not care, or have no objection	30% to contractor; 15% to IA; 5% to EPB; 45% to village committee; 5% to GCO
Chengde Shuangluan District	11-13 July 2016	200	30%-air pollution; 29%-water pollution; 31%-noise pollution; 41%-solid waste	70%	38% to contractor; 21% to IA; 37.5% to EPB; 12% to village committee;

Subproject location	Date	Responses received	Problems in the local environment	Do you support the project?	To whom do you complain when there are environmental problems?
			pollution; 13.5%-bad ecological environment		28% to GCO
She County	25-30 September 2016	100	35%-air pollution; 41%-water pollution; 14%-noise pollution; 17%-solid waste pollution; 6%-bad ecological environment	99%, 1% do not care, or have no objection	32% to contractor; 15% to IA; 3% to EPB; 49% to village committee; 1% to GCO
Baoding Li County	25-30 June 2016	105	40.14%-air pollution; 19.73%-water pollution; 20.41%-noise pollution; 15.65%-solid waste pollution; 4.08%-bad ecological environment	96.19% 3.81% do not care, or have no objection	41.52% to contractor; 21.05% to IA; 3.51% to EPB; 29.82% to village committee; 4.09% to GCO

IA=Implementing Agency; EPB=Environmental Protection Bureau; GCO=Government Complaints Office.
Sources: subproject EIA documents, October 2016.

239. Support for the individual subprojects was high and issues raised were predominantly about the potential for facilities to cause solid waste and water pollution. These issues have been directly addressed in the IEE and EMP, and measures have already been incorporated in the design.

VIII. GRIEVANCE REDRESS MECHANISM

240. A grievance redress mechanism (GRM) has been developed in compliance with ADB's SPS (2009) requirement to address environmental, health, safety, and social concerns associated with project construction, operation, and land acquisition. The GRM is designed to achieve the following objectives: (i) provide channels of communication for local communities to raise concerns about environment- and social-related grievances which might result from the project; (ii) prevent and mitigate adverse environmental and social impacts to communities caused by project construction and operation; (iii) improve mutual trust and respect and promote productive relationships between the IAs and local communities; and (iv) build community acceptance of the project. The GRM is accessible to all members of the community, including women, youth, and poverty-stricken residents. Multiple points of entry are available, including face-to-face meetings, written complaints, telephone conversations, e-mail, and social media.

241. Public grievances related to project construction to be addressed by the GRM may include damage to public roads, interruption of public services, dust emissions, noise, soil erosion, inappropriate disposal of waste materials, and safety for the general public and construction workers. Public grievances related to land acquisition may relate to the lack, or un-timely payment of compensation monies, other allowances, and/or monies as per entitlements described in the associated documents.

242. The GRM meets the regulatory standards of the PRC that protect the rights of citizens from construction-related environmental and/or social impacts. Decree No. 431 Regulation on Letters and Visits, issued by the State Council of PRC in 2005, codifies a complaint acceptance mechanism at all levels of government and protects the complainants from retaliation. Based on the regulation, the former State Environmental Protection Administration (SEPA) published

updated Measures on Environmental Letters and Visits (Decree No. 34) in 2006.

243. Currently in Hebei Province (and generally in the PRC), when residents or organizations are negatively affected by a development, they may complain, by themselves or through their community committee, to the contractors, developers, the Township Government, the local EPB, or by direct appeal to the local courts. The main weaknesses of this system are: (i) the lack of a specialized unit to address grievances; and (ii) the lack of a specific timeframe for the redress of grievances. The project GRM addresses these weaknesses.

244. The details of the project GRM, including a time-bound flow chart of procedures, are included in the project Environmental Management Plan (Attachment 1 of this IEE).

IX. CONCLUSION

245. The proposed project will support development of the elderly care system in Hebei province through improving the quality and coverage of institutional, community and home-based elderly care services and facilities in selected sub-projects. The project will improve the quality and delivery of services in collaboration with government and the participation of the private and public sectors in the project cities and counties. The project is planned as a major capacity building effort in the development of the elderly care system in Hebei province, and will improve coverage, human resources and service quality.

246. The project is classified as 'Category B' for environment under the ADB Safeguard Policy (SPS, 2009), requiring preparation of an IEE, including an EMP, covering the design, construction and operation of the project, drawing on the data and information from FSR, domestic environmental assessments (where required), and discussions with the PMO and IAs.

247. Design features will include (i) building materials conforming to codes and standards; (ii) Earthquake resistance; (iii) Design for fire, accident and disorientation prevention; (iv) Energy efficiency; (v) Design for noise reduction; and (vi) Design for surface and groundwater protection. The use of VOC-emitting materials will be strictly prohibited. No asbestos or asbestos-containing material will be used in construction of the facilities. A survey of all buildings planned for demolition and all buildings planned for renovation will be undertaken to discover and report on the presence or absence of asbestos or asbestos-containing material. An asbestos removal and disposal plan will cover the safe removal of the material before work commences or during construction.

248. Potential construction phase impacts are associated with soil erosion, increased noise and dust levels, liquid and solid wastes, and safety risks to community members (for renovation of HCBS centers) and workers. All construction sites are either cleared or existing buildings for refurbishment. Impacts on flora and fauna will be minimal. There are no reports of physical cultural resources in or around any of the sites, though a chance finds procedure will be put in place. Overall, environmental impacts associated with the construction phase are expected to be localized and short term, and can be effectively mitigated through the application of sound construction site management practices.

249. Dust, noise and community health and safety are important during the construction period because significant work will be undertaken near community facilities and in the case of HCBS Centers will involve the progressive renovation of individual units in occupied premises.

250. The major sources of noise pollution are movement of construction vehicles, the haulage of

construction materials to the construction sites and the noise generating activities at the sites. To suit the special conditions of construction, work is restricted to 08:00am - 20:00pm only and will require an agreement with IAs management and nearby residents regarding the timing of heavy machinery work. Potentially affected people will be informed of works of works through advanced meaningful consultations. Dust generated from transportation vehicle operation accounts for around 60% of the total construction dust. Construction dust at this scale has a small impact area, usually within a range of 50m outside the construction site boundary, and its biggest impacts is usually happening within approximately 30m. perimeter fencing, water spraying, covering truckloads and regularly consulting nearby residents to identify concerns will all be implemented in mitigation. The community will be protected from construction safety hazards by a traffic control plan within and around each subproject site, site security, safety barricades around trenches and excavations and public consultation.

251. No significant environmental impacts are anticipated during the operation of project facilities. These are local facilities catering mainly for local communities. There is therefore minimal increase in local populations and the operational impacts arise primarily from the concentration of water consumers and wastewater and solid waste generators on site rather than increases in numbers. All buildings will be connected to the municipal water supply network. The increase in water demand on the local supplies as a result of the new buildings is small and the consumption can be easily met through the existing municipal water supply services.

252. The wastewater from EC facilities cannot be connected directly to the municipal WWTP since on-site pretreatment is needed which allows the WWTP to function most efficiently. This will be achieved by a period of anaerobic degradation of the wastewater solids in a pre-treatment tank. The pretreatment tank is impermeable with no seepage function. After this the sewage will be piped to existing centralized municipal WWTPs for complete treatment. The volumes of wastewater produced by the facilities can be easily met through the existing municipal wastewater treatment services and will not cause any incremental impact on any receiving water body. Because the She county EC Center subproject is within the secondary zone of a water source protection area, it will have additional safeguards to prevent leakage of wastewater to surface or groundwater.

253. The solid waste volumes generated by the facilities (kitchen waste and office solid waste) are a minute proportion of the daily municipal waste going to landfill and the facilities can be served by the current capacities of the local landfill for the short-medium term. The medical waste generated by the subprojects is small. In all subproject sites, medical waste will be kept separately from other solid waste and no segregation into waste categories will be undertaken by EC staff. Contracts with specialized contractors for this purpose will be signed before project operation for each IA. All medical waste from the project will be disposed of via high temperature incineration. The incinerator plants have been identified and their capacity to accept the project wastes has been verified.

254. An environmental management plan (EMP) has been developed for the design, construction and operation phases of the project. The EMP includes institutional responsibilities, training needs, reporting schedules, operational management prescriptions, GRM, monitoring and reporting, and costs for implementing the EMP. To support EMP implementation, the PMO will: appoint a qualified environment officer within the provincial PMO and an environmental supervisor in each IA; recruit a loan implementation environment consultant (LIEC) (as part of the loan administration consultant services); and ensure that all IAs have arranged contractual agreements with qualified environment monitoring stations (EMS) to conduct the environmental monitoring described in the EMP.

255. Public consultation was conducted for the project by domestic EIA institutes and the PPTA team. Meetings with project local government agencies and project site nearby residents have also been conducted. A GRM has been developed in compliance with ADB's SPS requirement to address environmental, health, safety, and social concerns associated with project construction and operation.

256. The IEE concludes that as long as the environmental mitigation and management measures defined in the EMP are properly implemented, all adverse environmental impacts associated with the project will be prevented, eliminated, or minimized to an acceptable level. The project is feasible from an environment safeguards point of view, and the environmental categorization of "Category B" is confirmed.

ATTACHMENT 1

ENVIRONMENT MANAGEMENT PLAN

A. Introduction

1. This Environmental Management Plan (EMP) is developed for the Hebei Elderly Care Development Project (the project) and defines all potential environmental impacts of the project components and the mitigation and protection measures with the objective of avoiding or reducing these impacts to acceptable levels and meeting applicable requirements. The EMP draws on the findings of the domestic feasibility study report (FSR), tabular domestic environmental impact assessments, the initial environmental examination (IEE), project preparatory technical assistance (PPTA) and Asian Development Bank (ADB) review mission discussions, and agreements with the relevant government agencies.

2. The EMP sets out (i) actions to implement mitigation measures; (ii) a monitoring and reporting program; (iii) institutional/organizational arrangements; (iv) capacity development and training; (v) an implementation schedule; and (vi) cost estimates. The final EMP forms part of the Project Administration Manual (PAM) and will be included as a separate annex in all bidding documents. The contractors will be made aware of their obligations to implement the EMP, to budget EMP implementation costs in their bids, and to develop site-EMPs fully responsive to the EMP.

B. Institutional Arrangement

3. Hebei Provincial Government (HPG) will be the project's executing agency and the project implementation units will be the implementing agencies (implementing agencies). The implementing agencies will be county level companies (both state-owned enterprises and private sector companies) who will develop and run the elderly care facilities. The provincial project management office (PPMO) under Hebei Department of Finance will be responsible for project implementation and coordination with ADB.

4. A provincial project coordinating group will be constituted. It will be chaired by the Hebei Department of Finance and comprise representatives of relevant departments. Its role will be to ensure smooth passage of project approvals and administration as well as coordinating policy response when required.

5. The main institutions with an executive role in the implementation of the overall project are in Table A9 1.

Table A9.1: Roles and Responsibilities of Project Agencies

Project implementation organizations	Management Roles and Responsibilities
Executing Agency – HPG	Overall project guidance, coordination, supervision
PCG – provincial Project Coordinating Group: Departments of Health, Planning and Construction and Environment Protection	Policy guidance and interagency coordination
PPMO - within Hebei Department of Finance	On behalf of the executing agency, responsible for overall project coordination and supervision including: preparation and implementation; coordinate training and capacity development activities; safeguards compliance; prepare and submit annual environmental and social safeguard monitoring progress reports; compliance with loan and project agreements
Implementing agencies. There are seven implementing agencies:	Implementing agencies will be the project implementing units for construction and the operations and maintenance units for the facilities.

Project implementation organizations	Management Roles and Responsibilities
• (Xinji) Dayu Group Co., Ltd • Julu County Hospital • Jinluan International Hotel Co., Ltd • Shexian County Runqinyuan Elderly Care Industry Development Co., Ltd • Lixian Guangrongyuan • Yanshan University, Qinhuangdao	

Source: Asian Development Bank.

C. Environmental Responsibilities

6. **Project management office.** The PPMO will have the overall responsibility delegated by the executing agency for supervising the implementation of mitigation measures, coordinating the project level grievance redress mechanism (GRM) and reporting to ADB. The PPMO will appoint an environment officer (PMO-EO) to supervise the effective implementation of the EMP and to coordinate the GRM.

7. To ensure that the contractors comply with the EMP provisions, the PMO-EO with the help and technical support of the Loan Implementation Environment Consultant (LIEC), will prepare and provide the following specification clauses for incorporation into the bidding procedures: (i) a list of environmental management and monitoring requirements to be budgeted by the bidders in their proposals; (ii) environmental clauses for contractual terms and conditions; and (iii) in the EMP. In addition, the PMO-EO will assist in preparing the environmental sections for the project progress reports.

8. **Implementing agencies.** Each implementing agency with civil works will assign one environmental supervisor from the implementing agency (IA-ES) to (i) review and approved contractors' site management plans; (ii) participate in internal monitoring; (iii) act as a local entry point for the project GRM; (iv) submit quarterly inspection results to the contractors for information, and to the implementing agency and the PMO for verification and confirmation. The implementing agency will also hire construction supervision companies (CSCs), which will support the implementing agencies in supervising construction works.

9. **Construction contractors** will be responsible for implementing the mitigation measures during construction under supervision of the implementing agencies and the PPMO. In their bids, contractors will be required to respond to the environmental management requirements defined in the EMP. Each contractor will be required to develop Site Management Plans and will assign a person responsible for environment, health and safety. The contractors, in collaboration with the IA-ESs, will undertake internal monitoring.

10. **Loan implementation environnemental consultant.** Under the loan implementation consultancy services, a loan implementation environmental specialist will be recruited to support the effective implementation of the EMP. The LIEC will:

(i) assess the project components' environmental readiness prior to implementation based on the readiness indicators defined in the EMP (Table A9.4);
(ii) update the EMP including mitigation measures, monitoring program, institutional arrangements, and training plan as necessary, to reflect the final project scope and detailed design, submit to ADB for review and disclosure;
(iii) support the executing agency, PMO, and implementing agencies to ensure that the bidding documents and civil works contracts contain provisions requiring contractors to

comply with the mitigation and monitoring measures in the EMP and that relevant sections of the project EMP are incorporated in the bidding and contract documents;

(iv) support the PMO-EO and IA-ESs in reviewing and approving contractors' Site Management Plans and conducting periodic environmental site inspections;

(v) Assist the executing agency and PMO to establish a GRM, and provide training for the PMO and GRM access points.

(vi) Conduct regular EMP compliance monitoring, undertake site visits as required, identify any environment-related implementation issues, propose necessary corrective actions, reflect these in a corrective action plan;

(vii) Conduct annual EMP compliance review;

(viii) support to the PMO-EO in the development of annual EMP monitoring reports to ADB;

(ix) provide training to PMO, implementing agencies, and contractors on environmental laws, regulations and policies, SPS 2009, EMP implementation, and GRM in accordance with the training plan defined in the EMP.

(x) Overall environmental responsibilities of the agencies and positions are outlined in Table A9.2.

Table A9.2: Environmental Responsibilities by Project Phase

Phase	Responsible Agencies	Environmental Responsibilities
Detailed Design	Design institutes	Incorporation of environmental mitigation measures in detailed designs
		Prepare: • Facility Emergency Response procedures • Air Quality Protection Procedures
	PMO, implementing agencies, LIEC	Update EMP based on detailed design, if necessary;
	ADB	Approve updated EMP, if necessary
Tendering	PMO, implementing agencies	Ensure that mitigation measures and the EMP clauses are incorporated in tendering documents, civil works contracts and contractors' site EMPs (Appendix 2)
	LIEC, ADB	Review tendering documents; confirm project's readiness, including information disclosure at construction sites
Construction	Contractors	Develop Site Management Plans; appoint one environmental specialist each to coordinate site EMP implementation; ensure health and safety
	PMO	Coordinate GRM; supervise EMP implementation; prepare environmental progress sections (with support of LIEC)
	Implementing agencies (CSCs)	Assign one environmental supervisor; conduct environmental inspections; prepare quarterly environmental inspection reports; act as local GRM entry point
	LIEC	Advise on the mitigation measures; provide comprehensive technical support to PMO and implementing agencies for environmental management; conduct training; conduct annual EMP compliance review; support to the PMO-EO in the development of annual EMP monitoring reports to ADB.
	ADB	Disclose updated EMP as appropriate; Conduct review missions; review and approve environmental progress sections of the project progress reports, including disclosure
	EMSs	Conduct periodic inspections of all construction projects relative to compliance with PRC regulations and standards (as required by the Monitoring Plan)
Operation	PMO	Monitor compliance with EMP, instruct implementing agencies on environmental management requirements; prepare annual environmental progress report for first year of operation

Phase	Responsible Agencies	Environmental Responsibilities
	Implementing agencies (O & M Units)	Implementation of mitigation measures as defined in EMP
	ADB	Review, approve and post annual EMP implementation reports on ADB project website

ADB = Asia Development Bank; DI = Design Institute(s); LIEC = Loan Implementation Environmental Consultant; PMO = Provincial Project Management Office; EMP = Environmental Management Plan; EPB = Environment Protection Bureau; O & M Units = Operations and maintenance Unit.
Source: Asian Development Bank.

D. Impacts and mitigation measures

11. Anticipated environmental impacts from elderly care infrastructure construction and operation activities, as well as the measures to mitigate these impacts to acceptable levels, are listed in Table A9.3.

Table A9.3: Anticipated Impacts, Issues and Mitigation Measures

Item/Media	Activity	Potential Environmental Impacts, risks and issues	Mitigation Measures	Measures implemented by	Implementation of measures checked by	Budget source and estimate (CNY)
A. Pre-construction						
1. Detailed Design Stage	Ensure appropriate levels of expertise for EMP implementation	Institutional strengthening appointments	– PMO to appoint PMO-EO; – Each implementing agency to appoint IA-ES; – PMO to engage LIEC.	Implementing agencies, PMO	Executing agency, ADB	PMO and implementing agencies in-kind support. LIEC included in loan funds
	Detailed design of facilities incorporating appropriate standards and safeguard measures	Design to comply with relevant applicable health, safety and environmental codes and standards, including energy-efficient building codes and specifications.	– Design buildings in compliance with relevant design standards and codes for energy-efficient, safe and green public buildings, including but not limited to: GB 50011-2010 (Building Seismic Design Code); GB 50016-2006 (Code of Design on Building Fire Protection and Prevention); GB 50189-2005 (Energy Conservation Design for Public Buildings); DB13(J)81-2009 (Hebei Energy Conservation Design) and other applicable design codes. – Ensure no-use of VOC-emitting materials (including paints, coatings, adhesives, carpet and furniture's) to protect indoor air quality; – Ensure no asbestos or asbestos-containing material is used in construction; – Incorporate energy-efficiency measures defined the FSR and IEE into building design. – Incorporate noise-minimization design for Chengde Shuangluan Elderly Care Center (comprising both double-glazing and landscaping).	Design Institutes	Implementing agencies, LIEC	Included in design costs

Item/Media	Activity	Potential Environmental Impacts, risks and issues	Mitigation Measures	Measures implemented by	Implementation of measures checked by	Budget source and estimate (CNY)
			– Design on-site wastewater pretreatment facilities appropriate to subproject scale and quality of influent – Establish contracts with specialized contractors for cleaning and de-sludging; – Incorporate additional impermeable layer and leak prevention measures on She county elderly care subproject wastewater pre-treatment facility in secondary water source protection zone (She county)			
	Preparation for the proper handling and disposal of medical wastes	Design waste disposal processes	– Design initial collection, safe temporary storage, and loading facilities for medical waste disposal – Establish contracts with specialized contractors for proper disposal of medical waste	Implementing agencies	LIEC, PMO	Included in design and operations costs
	Designing landscape features	Landscaping to combine amenity with noise reduction and dust screening.	– Include landscaping and vegetation planting in detailed design. – Include dense foliage plantings (not less than 10m deep) along boundaries with roads or noise-producing areas. – Plant trees and shrubs along building edges to screen windows from dust and particulates.	Design Institutes	Implementing agencies,, LIEC	Included in design costs
	Preparation for a wide range of emergency responses for residents and staff.	Prepare emergency planning and procedures	– Develop emergency response plan covering fire, earthquake, natural calamities, epidemic, air contamination, infestation, explosion, and food safety to ensure safe environment for all elderly people and staff and visitors.	Design Institutes	Implementing agencies, LIEC	Included in design costs
		Prepare infection	– Develop anti-infection protocols	Design	Implementing	Included in

Item/Media	Activity	Potential Environmental Impacts, risks and issues	Mitigation Measures	Measures implemented by	Implementation of measures checked by	Budget source and estimate (CNY)
		planning and procedures	and response plans, including quarantine and evacuation procedures	Institutes	agencies, LIEC	design costs
	Preparation of measures to protect residents from poor outside air quality.	Prepare Air Quality Protection and Response Plan	– Develop a set of procedures for responding to poor air quality triggers in air quality forecasts (from real time AQI forecasts by MEP) – changing from natural ventilation to full air conditioning for periods when “unhealthy”air quality is forecast.	Design Institutes	Implementing agencies, LIEC	EMP costs 70,000
2. Construction preparation stage	Transferring EMP mitigation and management measures into contractually enforceable format.	Bidding documents and contractors	– Translate EMP into Chinese and distribute to all parties – Include an environmental section in the technical specifications for bidders which lists EMP requirements; – Ensure that construction contracts are responsive to EMP provisions and that mitigation and monitoring measures are adequately budgeted.	Design Institutes, IA-ES, LIEC	Executing agency, PMO, ADB	Included in design costs
	Providing a formal, project-specific scheme for complaints to be received and addressed.	GRM	– Establish GRM in the PMO and establish local access points; – Brief and provide training to GRM access points; Disclose GRM to affected people before construction begins.	PMO-EO IA-ES LIEC	Executing agency, ADB	EMP costs 40,000
	Ensuring that staff of entities with environmental responsibilities are able to discharge them with understanding.	Training	– Provide training to, PMO, implementing agencies and contractors on implementation and supervision of EMP, GRM, reporting, in compliance with training plan. – Provide training to facility operators on emergency response, waste handling and air quality protection, in compliance with training plan.	LIEC and LIC specialists	Executing agency, ADB	EMP Training costs 120,000
	Ensuring that	Site Management	– Develop Site Management Plans,	Contractor,	PMO-EO, LIEC	Included in

Item/Media	Activity	Potential Environmental Impacts, risks and issues	Mitigation Measures	Measures implemented by	Implementation of measures checked by	Budget source and estimate (CNY)
	each construction site has an overarching plan for environmental management.	Plans	responding to (i) all clauses and requirements of this EMP; and (ii) including Occupational and Community Safety Plans and Emergency Response Plans	IA-ES		construction costs
		Sensitive receptors	– Locate and identify nearby sensitive receptors for noise and dust impacts at each construction site, and include them in the Siote Management Plan for the implementation of mitigation measures.	Contractor, IA-ES	PMO-EO, LIEC	Included in construction costs
	Ensuring no work or community hazards exist on site before work commences	Asbestos contamination	– Survey all buildings for demolition and buildings for renovation to discover and report on presence or absence of asbestos or asbestos-containing material – Where asbestos or asbestos-containing material is found develop asbestos removal and disposal plan in conjunction with accredited specialist contractor	Contractor, IA-ES	PMO-EO, LIEC	Included in construction costs 100,000
B. Construction						
1. Soil	Site leveling, earthworks, general construction activities	Soil erosion and sedimentation	– Prepare soil erosion control plan (showing how runoff will be controlled at site perimeter to control soil and water runoff, and how disturbed areas will be reclaimed) as part of the Site Management Plans; – Construct intercepting ditches and drains to prevent runoff entering construction sites, and divert runoff from sites to existing drainage; – Stabilize all earthwork disturbance areas within maximum 14 days after earthworks have ceased; – Contour and re-vegetate disturbed surface	Contractor	IA-ES, CSCs LIEC	Included in construction costs

Item/Media	Activity	Potential Environmental Impacts, risks and issues	Mitigation Measures	Measures implemented by	Implementation of measures checked by	Budget source and estimate (CNY)
2. Hazardous Materials	Use of fuels and lubricants on site; spill accidents; and production of construction wastes	Soil and water contamination .	– Store chemicals/hazardous products and waste on impermeable surfaces in secure, covered areas; – Remove all construction wastes from the site to approved waste disposal sites; – Provide spill cleanup measures and equipment at each construction site; – Conduct training in emergency spill response procedures.	Contractor	IA-ES, CSCs, LIEC	Included in construction contracts 100,000
	Removal of asbestos	Worker and community health hazard and site contamination	– Where asbestos or asbestos containing material has been found on site in pre-construction survey, implement asbestos removal and disposal plan with accredited specialist contractor.	Contractor and specialist asbestos handling firm	IA-ES, PMO-OS	Construction contingency
3. Surface and Groundwater	Runoff from water used in construction and domestic processes, and rainwater runoff from site.	Pollution of surface and groundwater resources	– Install water collection basins and sediment traps in all areas where construction equipment is washed; – Wastewater generated from the washing down of mixer trucks and drum mixers and similar equipment should wherever practicable be recycled; – Surplus wastewater and wastewater generated from building construction activities, including concreting, plastering, cleaning of works and similar activities should be discharged in to sewer after removal of solids in a silt removal facility; – Sewage from temporary toilets, kitchens and similar facilities should be stored in an on-site facility (such as septic tank), emptied regularly and transported to a designated wastewater	Contractor	IA-ES, CSCs, LIEC	Included in construction contracts 120,000

Item/Media	Activity	Potential Environmental Impacts, risks and issues	Mitigation Measures	Measures implemented by	Implementation of measures checked by	Budget source and estimate (CNY)
			treatment plant for further treatment. – Employ extra caution in control of runoff and construction wastewater at Shexian county elderly care center due to water protection zoning.			
4. Solid waste	Solid waste accumulation from demolition of existing structures, used concrete formwork, packaging and surplus building materials	Safety hazard and site management inefficiencies from waste accumulation. Reduction of neighborhood amenity from inappropriate disposal	– Maximize reuse/recycling of construction and deconstruction wastes (e.g. iron, bricks, windows, doors, steel bars etc.); – Provide appropriate waste storage containers for workers' municipal garbage and hazardous wastes; – Install confined storage points of solid wastes away from sensitive receptors, regularly haul to an approved disposal site; – Use licensed contractors to remove wastes from the construction sites; – Prohibit burning of waste.	Contractor	IA-ES, CSCs, LIEC	Included in construction contracts 30,000
5. Noise	Use of construction machinery on site and haulage vehicles bringing or removing materials	Noise impacts from construction activities	– Maintain equipment and machinery in good working order; undertake regular equipment maintenance, ensure compliance with PRC standard of GB12523-2011; – Operate between 0800H-2000H only and reach an agreement with implementing agencies management and nearby residents regarding the timing of heavy machinery work, to avoid any unnecessary disturbances; nighttime works should only be conducted in exceptional cases, and a permit should be obtained for that purpose; – Inform potentially affected people	Contractor	IA-ES, CSCs, LIEC	Included in construction contracts 100,000

Item/Media	Activity	Potential Environmental Impacts, risks and issues	Mitigation Measures	Measures implemented by	Implementation of measures checked by	Budget source and estimate (CNY)
			including nearby residents, through advanced meaningful consultations; – Identify sensitive receptor sites within 100m of construction (schools, medical centers) and erect temporary noise barriers to reduce noise impact on them; – Locate sites for concrete-mixing and similar activities on the site at the point furthest from any sensitive receptors and equip with noise barriers to ensure noise at boundaries complies with GB12523-2011; – Disseminate information on procedure of handling complaints through the GRM.			
6. Ambient Air	Wind-blown fugitive dust from unstabilized surfaces; dust from unloading and spreading soils and gravels; dust raised by haulage truck wheels and blowing off truck loads.	Dust pollution generated during construction	– Install dust-proof perimeter fences at each site prior to construction. The fence shall be at least 2m high; – Spray water at least twice a day where fugitive dust is generated; – Cover trucks carrying earth, sand or stone with tarps or other suitable cover to avoid spilling and dust generation; – Regularly consult nearby residents to identify concerns, and implement additional dust control measures as necessary.	Contractor	IA-ES, CSCs, LIEC	Included in construction contracts 100,000
	Use of petrol and diesel engines on site.	Air emissions from construction vehicles and machinery	– Maintain vehicles and construction machineries to National V emission standard (MEP 2016).	Contractor	IA-ES, CSCs, LIEC	Included in construction contracts 35,000
7. Physical cultural	Earthworks, site leveling and	Damage to known or unknown above	– Establish chance-find procedures for physical cultural resources;	Contractor	IA-ES, CSCs, LIEC	Included in construction

Item/Media	Activity	Potential Environmental Impacts, risks and issues	Mitigation Measures	Measures implemented by	Implementation of measures checked by	Budget source and estimate (CNY)
resources	trenching.	or below-ground cultural relics	– If a new site is unearthed, work must be stopped immediately and the implementing agency and local cultural relic bureau promptly notified, and construction will resume only after a thorough investigation and with the permission of appropriate authority.			costs
8. Health and Safety	All construction worker activities, ranging from building works and domestic living.	Occupational Health and Safety	– Provide safe supply of clean water and an adequate number of latrines and other sanitary arrangements at the site and work areas, and ensure that they are cleaned and maintained in a hygienic state; – Provide garbage receptacles at construction site; – Provide personal protection equipment (PPE) for workers in accordance with relevant health and safety regulations; – Develop an emergency response plan to take actions on accidents and emergencies; document and report occupational accidents, diseases, and incidents; organize fully equipped first-aid base at each construction site (part of Site Management Plan); – Establish Records Management System that will store and maintain easily retrievable records on occupational accidents, diseases, and incidents. – Train all construction workers in basic sanitation and hygiene issues, general health in basic sanitation and hygiene issues, general health and safety maters, and on the specific hazards of	Contractor	IA-ES, CSCs, LIEC	Included in construction contracts 55,000

Item/Media	Activity	Potential Environmental Impacts, risks and issues	Mitigation Measures	Measures implemented by	Implementation of measures checked by	Budget source and estimate (CNY)
			their work; – Posters drawing attention on site safety, rescue and industrial health regulations shall be made or obtained from the appropriate sources and will be displayed prominently in relevant areas of the site.			
	Community activities at or around the site – pedestrians, vehicle drivers and passengers, and people accessing site.	Community Health and Safety	– Prepare traffic control plan within and around project site and/or communities during construction, to be approved by local traffic management administration. The plan shall include provisions for diverting or scheduling construction traffic to avoid peak traffic hours, regulating traffic at road crossings with an emphasis on ensuring public safety through clear signage; – Assign personnel to direct pedestrians around dangerous work areas; – Ensure that all sites are secure, discouraging access through appropriate fencing; place clear signs at construction sites in view of the people at risk (including workers and nearby communities), warning people of potential dangers such as moving vehicles, hazardous materials, excavations, and raising awareness on safety issues; – Erect safety barricades around all excavations; – Return machinery to its overnight storage area/position; – Return machinery to its overnight storage area/position; – Hold a public consultation meeting	Contractor	IA-ES, CSCs, LIEC	Included in construction contracts 100,000

Item/Media	Activity	Potential Environmental Impacts, risks and issues	Mitigation Measures	Measures implemented by	Implementation of measures checked by	Budget source and estimate (CNY)
			prior to commencing construction to discuss issues associated with ensuring the safety of nearby communities in vicinity of the construction site.			
C. Operation						
1. Wastewater	Sewage and other wastewater from toilets, bathrooms and kitchens produced by facility.	Pollution of surface and groundwater resources. Health hazards.	– Ensure connection of new buildings to on-site pretreatment facilities (septage tanks) and to municipal sewer system; – Periodically monitor (visual inspection) sludge accumulation in septage tanks, and contract licensed company to de-sludge as needed.	Facility managers	Implementing agencies, Local EPB	Included in design and operating costs
2. Solid waste	Accumulation of domestic putrescible garbage, packaging, and containers used by staff and residents.	Health hazard and site amenity deterioration from inappropriate garbage disposal	– Provide adequate solid waste collection facilities in all buildings; – Promote segregation of waste through (i) provision of separate collection bins for paper, biodegradable waste, metallic waste, and other wastes; and (ii) provision of training and awareness raising for facility staff; – Establish contracts with waste collection service providers for different types of waste; – Regularly clean and disinfect waste collection facilities.	Facility managers	Implementing agencies, Local EPB	Included in operating costs
	Accumulation of packaging, bottles, syringes and incontinence pads used by residents.	Health hazard from inappropriate disposal of medical waste	– All medical waste to be stored separately and not segregated for recycling; – Implement ongoing contracts with specialized contractors for this purpose.	Facility managers	Implementing agencies, Local EPB	Included in operating costs
3. Health and Safety	Providing for the health and safety of Elderly Care and HCBS Center residents and	Promote community health and safety	– For fire protection, maintain (i) fire separation distance (access for timely fire-fighting and rescue) not only from the adjacent buildings but also any combustible	Facility managers	Implementing agencies, and Local emergency and occupational	Included in design and operating costs

Item/Media	Activity	Potential Environmental Impacts, risks and issues	Mitigation Measures	Measures implemented by	Implementation of measures checked by	Budget source and estimate (CNY)
	staff.		surroundings; (ii) secured sectors (fire compartment, smoke compartment) both horizontally or vertically; (iii) fire and smoke detection and alarm systems; (iv) fireproof dividing walls, doors and windows between rooms; (v) emergency lighting. – For accident prevention, maintain all: (i) alarm-help devices; (ii) appropriate bed heights and other furniture; (iii) wall and staircases hand rails; (iv) avoidance of slippery surfaces; and (v) safe kitchens in assisted-living areas. – For disorientation prevention for dementia patients, maintain: (i) design features, colors, signs, photos and internal landmarks; (ii) surveillance at entrances, exits and reception areas. – Ensure janitorial staff are employed and properly trained for hygiene control. – Regularly inspect toilet and bathroom facilities for cleanliness. – Regularly inspect kitchens and food storage for cleanliness and food safety.		health authorities	
	Protecting elderly residents from the negative health effects of poor air quality.	Air quality protection for residents	– Regularly maintain air conditioning system, including cleaning and replacement of all filters; – Maintain landscape and tree and shrub plantings to catch airborne dust and particulates from outside the site; – Implement air quality protection plan – monitor $PM_{2.5}$ forecasts (from real time AQI forecasts by MEP) and revert to fully air conditioned facility (no natural	Facility managers	Implementing agencies, Local EPB	Included in operating costs

Item/Media	Activity	Potential Environmental Impacts, risks and issues	Mitigation Measures	Measures implemented by	Implementation of measures checked by	Budget source and estimate (CNY)
			ventilation) on trigger days.			
	Ensuring readiness of staff and residents to respond to emergencies.	Implement emergency planning procedures	– Publicize, train and practice emergency response plans. – Publicize, train and practice anti-infection response plans.	Facility managers	implementing agencies, Local EPB	Included in operating costs

ADB = Asia Development Bank; LIEC = Loan Implementation Environmental Consultant; PMO = Project Management Office; EMP = Environmental Management Plan; EPB = Environment Protection Bureau.
Source: Asian Development Bank.

E. Project Readiness Assessment

12. Before construction, the LIEC and PMO-EO will assess each IA's readiness in terms of environmental management based on a set of indicators (Table A9.4) and report it to ADB and the PMO. This assessment will demonstrate that environmental commitments are being carried out and environmental management systems are in place before construction starts, or suggest corrective actions to ensure that all requirements are met. The assessment will be repeated at regular intervals to account for new works contracts, and documented in the annual environment monitoring reports to ADB.

Table A9.4: Project Readiness Assessment Indicators

Indicator	Criteria	Assessment
Environmental Supervision in place	LIEC is in place.	Yes No
	Qualified EMSs contracted by the implementing agencies,	Yes No
	Environment specialists assigned by PMO (PMO-EO) and implementing agencies (IA-ES)	Yes No
Compliance with loan covenants and assurances	The borrower complies with loan covenants related to project design and environmental management planning	Yes No
Public involvement effectiveness	Meaningful consultation completed, construction activities publicized at construction sites	Yes No
	GRM established with entry points publicized	Yes No
Chinese version EMP distributed to all parties	EMP translated and distributed to PMO and all implementing agencies	Yes No
Contracts with environmental safeguards	Bidding documents and contracts incorporating the environmental activities and safeguards listed as loan assurances	Yes No
Site construction planning (environmental)	Site Management Plan prepared for each work site by the contractors and cleared by the implementing agencies	Yes No
EMP financial support	EMP budget established, and required funds set aside for EMP implementation by each implementing agency	Yes No

EMS = Environment Monitoring Station, LIEC = Loan Implementation Environment Consultant, PMO = Project Management Office.
Source: Asian Development Bank.

F. Monitoring Requirements

13. Three types of project monitoring will be conducted under the EMP:
    (i) internal monitoring to be conducted by the contractors and the construction supervision companies (CSCs);
    (ii) external monitoring, to be conducted by local EMSs, contracted by the implementing agencies; and
    (iii) EMP compliance monitoring, to be conducted by the LIEC on behalf of the PMO.

14. **Internal monitoring** includes the monitoring of dust and noise at all construction sites as well as the quality of discharged construction wastewater, and erosion control. It also includes daily inspection and internal compliance assessment with the approved Site Management Plans of contractors, including construction site health and safety. During

operations, internal monitoring will cover the implementation of the facilities' Air Quality Protection Plan, the growth and survival of landscape plantings and features, and emergency preparedness.

15. **External monitoring** during construction measures the effects of noise and dust including the monitoring of noise and dust in the project's area of influence. For dust and noise, this extends from the construction site boundary to any nearby sensitive receptors.

16. Table A9.5 shows the environmental monitoring program designed for this project, defining the scope, location, parameter, duration and frequency, and responsible bodies, for monitoring during the construction and operational stages. Monitoring costs are estimates based on the experience of the PPTA team and PMO from other projects elsewhere in the PRC. ADB will oversee project compliance on the basis of the annual environmental monitoring reports provided by the PMO and site visits as required.

17. The results of the environmental monitoring will be compared with EMP requirements, site management plans, and relevant PRC standards as defined in Table A9.6. Non-compliance will be highlighted in the monitoring reports. Monitoring results will be submitted to the PMO and then reported by the PMO to ADB in annual environmental monitoring reports (prepared with the support of the LIEC – Table A9.7).

Table A9.5: Environmental Monitoring Program for Project Duration

Item	Parameter	Monitoring Location	Monitoring Frequency and Duration	Who Implements	Who Supervises	Cost CNY
Construction Stage						
Internal monitoring						
Dust and noise	TSP, L_{Aeq}	At each construction site boundary	One 24-hr continuous sampling period each week, during construction activity	CSC and contractor	Implementing agency, PMO	Included in construction costs 120,000
Surface water quality	SS, petroleum products	Construction wastewater released from construction sites	Once day per week during construction activity	CSC and contractor	Implementing agency, PMO	Included in construction costs 120,000
Soil erosion and contamination	(i) adequacy of soil erosion prevention measures; (ii) adequacy of soil contamination prevention techniques.	Visual inspection of the construction sites	Daily during construction period; Every ten days during peak construction period, and monthly after	CSC: IA-ES	Implementing agency, PMO	Included in construction costs 30,000
Solid and liquid waste management	(i) adequacy of solid and liquid waste management, storage and containment system; (ii) presence of solid waste dumps, waste fires	Visual inspection of the construction sites	Daily during construction period; Every ten days during peak construction period, and monthly after	CSC: IA-ES	Implementing agency, PMO	Included in construction costs 30,000
Construction site health and safety	Site inspection of OHS checklist in Site Management	Visual inspection and interviews with construction workers and contractors at	Daily during construction period; Every ten days during peak construction	CSC: IA-ES	Implementing agency, PMO	Included in construction costs 30,000

Item	Parameter	Monitoring Location	Monitoring Frequency and Duration	Who Implements	Who Supervises	Cost CNY
	Plan	construction sites	period, and monthly after			
External monitoring						
Dust and noise	TSP, L_{Aeq}	At nearest sensitive receptor for each construction site; at construction site boundary	1 day (24-hr continuous sampling) per month during construction activity	EMS	PMO	400,000
Operational Stage						
Internal monitoring						
Air quality	Check for $PM_{2.5}$ triggers in AQI forecasts for limiting natural ventilation,	All facilities	Daily	O&M Units/Implementing agencies	PMO, EPB	Included in O&M budget
Landscape	Survival of landscape and screening vegetation plantings. % survival and replacement	All facilities	Semi-annually for first 3 years of operation.	O&M Units/Implementing agencies	PMO, EPB	Included in O&M budget
Waste water and solid waste	Volume of wastewater. Weight of non-medical solid waste	All Elderly Care Centers	Ongoing, to provide data for quarterly and yearly totals for each center	O&M Units/Implementing agencies	PMO	Included in O&M budget
Toilets and bathrooms	Cleanliness of these areas to promote health and hygiene.	All facilities	Monthly	O&M Units	Implementing agencies	Included in O&M budget
External monitoring						
Construction completion	As required by local EPB requirement	Approval / inspection procedure by local EPB.	Following implementing agencies' formal applications to local EPBs	EPB	PMO	Standard fee - borne by implementing agencies
Air quality/ odor	NH_3, H_2S	Nearest residence from Xinji and Shuangluan hospital WWTPs	Quarterly for the first 3 years of operation	EMS	PMO, EPB	60,000
Ground water	TP, TK total coliform	Shallow level groundwater downstream of wastewater pretreatment tank at Shexian County Elderly Care Center	Quarterly until PCR	EMS	PMO, EPB	40,000
Total estimated cost:						**830,000**

EMS = environmental monitoring station; EPB = environment protection bureau; O&M = operation and maintenance; PMO = project management office; OHS = occupational health and safety.
Source: Asian Development Bank.

Table A9.6: Monitoring Indicators and Applicable PRC Standards and Operational Plans

Phase	Indicator	Standard
Construction	Dust and noise at	Construction Site Noise Limits (GB12523－1990)

Phase	Indicator	Standard
	construction site boundary	Emission Standard of Environmental Noise for Boundary of Construction Site (GB 12523-2011)
	Dust and noise at sensitive receptors	Ambient Air Quality Standard (GB 3095-1996) Environmental Quality of Noise Standard (GB3096-2008)
	Surface water quality	Surface Water Ambient Quality Standard (GB3838－2002)
Operation	Air Quality	Air Quality Protection Plan (using the real-time Air Quality Index (AQI) from MEP)
	Odor (NH_3, H_2S) at WWTP	Emission Standard for Odor Pollutants (GB14554－93) Class II

Source: Asian Development Bank.

18. **Compliance monitoring.** EMP compliance monitoring is the systematic evaluation of the overall progress of the implementation of EMP measures (Table A9.3). Evaluation of the compliance with the EMP will be undertaken regularly by the PMO-EO and the LIEC. The PMO-EO and the LIEC will report EMP implementation progress and compliance along with information on project implementation, environmental performance of the contractors, and environmental compliance through quarterly project progress reports and annual environmental monitoring reports (Table A9.7). The LIEC will support the PMO-EO in developing the annual environmental monitoring reports (EMR). The reports will identify any environment related implementation issues and necessary corrective actions, and reflect these in a corrective action plan. Operation and performance of the project GRM, environmental institutional strengthening and training, and compliance with all covenants under the project will also be included in the report.

G. Environmental reporting

19. **Project progress reports.** The executing agency will provide ADB with (i) Project quarterly progress reports in a format consistent with ADB's project performance reporting system; (ii) consolidated annual reports including (a) progress achieved by output as measured through the indicators' performance targets, (b) key implementation issues and solutions, (c) updated procurement plan, and (d) updated implementation plan for next 12 months; and (iii) a project completion report (PCR) within 6 months of physical completion of the project.

20. The quarterly progress reports (summary) and annual progress reports (stand-alone report) will present EMP implementation status, results of inspections, problems encountered during construction and operation, if any, and the relevant corrective actions undertaken. The annual environment monitoring report will be compiled by the LIEC, on behalf of the PMO, and be disclosed on the project website. The effectiveness of EMP implementation will also be assessed in the PCR.

H. Environmental Safeguards Reporting Requirements

21. **Environmental safeguards reporting**. Environmental monitoring and inspection activities and findings shall be documented for purposes of reporting, recording, verifying, referring on and evaluating the environmental performance of the Project. The documentation shall also be used as basis in correcting and enhancing further environmental mitigation and monitoring. Environment safeguards reporting requirements are defined below.

(i) **Monthly internal progress reports by the Contractors** during construction, submitted to the implementing agencies. These monthly reports will include; (i) physical construction progress; (ii) mitigation measures implemented; (iii) grievances received, resolved, closed and/or directed to other mechanisms; (iv) emergencies responded to; (v) internal monitoring conducted by the contractors and CSCs, and (vi) corrective actions taken.

(ii) **Quarterly progress reports by implementing agencies.** The quarterly reports by the implementing agencies to the PMO will include a separate section on EMP implementation progress and environmental performance, including annual monitoring reports by local EMSs on the results of external environmental monitoring as specified in the EMP.

(iii) **Environment monitoring reports (EMRs) by the PMO** to be submitted to the executing agency and ADB annually to comply with environmental agreement in the loan and PRC Law on EIA. The EMRs will not only report on the progress and results of environmental monitoring and compliance of EMP implementation but will also briefly: (i) assess the effectiveness of measures; (ii) point out violation/s, if any; (iii) assess/recommend corrective actions; and (iv) cite any coordination made for corrective actions and, if applicable, certifications for having instituted them effectively. The reports will also include the performance (compaints, responses) of the project GRM. Environmental monitoring reports will be reviewed and cleared by ADB and disclosed on the ADB website.

(iv) **Environmental acceptance reporting.** Following the PRC Regulation on Project Completion Environmental Audit (MEP, 2001), within three months after the completion of all project components, an environmental acceptance report for each shall be prepared by a licensed environmental monitoring institute. The report will be reviewed and approved by the relevant EPB and the approval reported to ADB.

Table A9.7: Reporting Plan

Reports	From	To	Frequency
Pre-construction Phase			
Project Readiness	LIEC, PMO	ADB	1st EMR
Construction Phase			
Construction Implementation	Contractor, CSC	Implementing agencies	Monthly
Project progress reports	Implementing agencies	PMO	Quarterly
Environment progress and monitoring reports (EMR)	PMO	ADB	Annually
Environmental acceptance	Licensed acceptance institute	EPB	Once; within 3 months of completion of physical works
Operational Phase			
Environment progress and monitoring reports (EMR)	PMO	ADB	Annually
EMP implementation completion	PMO, LIEC	ADB	At PCR stage
ADB = Asian Development Bank; EPB = Environment Protection Bureau; EMS = Environmental Monitoring Station; LIEC = Loan Implementation Environment consultant; PMO = Project Management Office			

Source: Asian Development Bank.

I. Institutional strengthening and training

22. The capacity of the implementing agencies and the PMO's staff responsible for EMP implementation and supervision will be strengthened. All parties involved in implementing and supervising the EMP must have an understanding of the goals, methods, and practices of project environmental management. The project will address any lack of capacities and expertise in environmental management through (i) institutional strengthening, and (ii) training. Both will be funded as part of the Project Implementation Support component of the project's capacity building output.

23. **Institutional strengthening.** The capacities of the PMO and implementing agencies to coordinate environmental management will be strengthened through the following measures:

(i) The appointment of a staff member within the PMO (PMO-EO) in charge of EMP coordination, including GRM;

(ii) The appointment of one national environmental consultant under the loan implementation consultancy (the LIEC) to guide PMO and implementing agencies

in implementing the EMP and ensure compliance with ADB's Safeguard Policy Statement (SPS 2009); and

(iii) The assignment of an environment specialist by each implementing agency (IA-ES) to conduct regular site inspections and coordinate periodic air and noise monitoring.

24. **Training.** The executing agency, PMO, and implementing agencies will receive training in EMP implementation, supervision, and reporting, and on the Grievance Redress Mechanism. Initially the training will be in formal workshops, then will continue with on the job training by the LIEC and other specialists hired under the consulting services. The formal training will cover EMP implementation, supervision, and reporting, and the Grievance Redress Mechanism (Table A9.8). Training will be facilitated by the LIEC with the support of other experts under the loan implementation consultant services.

Table A9.8: Training Program

Training	Attendees	Contents	Times	Total Days	No. trainees	Cost (CNY / person / day)	Total CNY
EMP implementation	PMO, implementing agencies, contractors	EMP roles and responsibilities, monitoring, supervision, reporting procedures, review of experience (after 12 months)	Once prior to, and once after, the first year of project implementation	2	20	600	24,000
Grievance Redress Mechanism	PMO, implementing agencies, contractors	Roles and responsibilities, Procedures	Once prior to, and once after, the first year of project implementation	1	20	600	12,000
Environmental protection and monitoring	PMO, implementing agencies, EPB	Pollution control on construction sites (air, noise, waste water, solid waste)	Once (during project implementation)	1	20	600	12,000
Emergency procedures	Senior operating staff of Elderly Care and HBCS facilities	Emergency response plan for fire, earthquake and natural calamities. include both readiness plans and operational plans under emergency conditions.	Once, prior to commissioning	2	30	600	36,000
Solid and medical waste handling and disposal	Senior operating staff of Elderly Care and HBCS facilities	Handling, storage and disposal of different types of solid waste.	Once, prior to commissioning	1	30	600	18,000
Air quality protection	Senior operating staff of Elderly Care and HBCS facilities	Procedures for responding to poor air quality triggers in air quality forecasts (from real time AQI forecasts by MEP).	Once, prior to commissioning	1	30	600	18,000
						Total estimated cost:	**120,000**

Source: Asian Development Bank.

J. Grievance Redress Mechanism, Consultation

25. A GRM will be established, at least 2 months before project implementation commences, as part of the project EMP to receive and manage any public environmental issues which may arise due to the Project. The PMO will ensure that potentially affected communities are informed about the GRM at an early stage of the project. During the project preparation phase, the implementing agencies and PMO personnel received training on the GRM from the PPTA team.

26. The PMO is the lead agency responsible for overall management, implementation, and reporting of the GRM. The PMO-EO coordinates the GRM and: (i) instructs the implementing agencies and contractors on their responsibilities in the GRM; (ii) establishes a simple Complaints Register, to document and track grievances received (including forms to record complaints and how they have been resolved); and (iii) reports on progress of the GRM in the annual environmental monitoring and progress reports (EMR) to ADB.

27. Each implementing agency will assign a member of staff, who is responsible for implementation of the GRM and other relevant aspects of the EMP. This will be the IA-ES. Tasks include keeping a record of complaints. At least two months before construction commences, these contacts will be publicized at each construction site and forwarded to local village committees to ensure that entry points to the GRM are well known. The list of implementing agency contact people and their addresses is set out in Table A9.9 below:

Table A9.9: GRM Contact Information

Name of subproject	Name of Environmental Supervisor	Contact information
Xinji Parents' Paradise Elderly Care Community Center	Mr. Nie Jingzhang	+86-15833911955 nie218@126.com
Julu County Healthcare and Elderly Care Integrated Service Center	Mr. Ma Shaoxing	18003192188, 15100889897@163.com
Chengde Shuangluan District Haoren Health and Elderly Care Service Center Project	Ms. Zhang Minjuan	+86-18232606059 279520114@qq.com
Yanshan University, Qinhuangdao.	Mr. Cong Xihui	18633515865, 762808@qq.com
Shexian County Binhe Elderly Care and Rehabilitation Center	Mr. Sun Xintao	+86-15933203939 15933203939@163.com
Baoding Lixian County Elderly Care Comprehensive Service Center	Mr. Zhang Weiliang	+86-13663246333 lxmzjshswg@163.com
PMO	Mr. Zhang Ming	18531128188, zhangmingwz@vip.163.com

Source: Asian Development Bank.

28. **GRM readiness procedures prior to start of construction**. To be successful and reduce the likelihood of public concerns, the following measures will be implemented before any construction:

(i) On-site procedures: (i) all contractors and CSC staff will be briefed by the PMO-EO and IA-ES on the GRM. Contractors and workers will be instructed to be courteous to local residents and, in the event they are approached by the general public with an issue, to immediately halt their work and report the issue to the foreman; (ii) at least one sign will be erected at each construction site providing the public with updated project information (the purpose of the project activity, the duration of disturbance, the responsible entities on-site), the GRM process, and contact names and details for the GRM entry points.

(ii) Non-project agencies: Prior to project construction, the PMO-EO will notify all relevant agencies about the project and GRM, so that if these agencies receive complaints, they know to contact the PMO-EO and follow up as necessary. This will include, but not be limited to, the EPB, and local police.

29. The procedure and timeframe for the GRM is shown in Figure A9.1 and is as follows.

(i) **Stage 1 (maximum 5 working days):** Affected persons can submit a written or oral complaint to the contractor, CSC or implementing agency. Complaints received by any other institutions will be referred back to the implementing agency for action. The implementing agency will notify the PMO-EO of the complaint within two days. The PMO-EO will enter the complaint in the Complaints Register.

Where the complaint has been lodged via the EPB Hotline, the EPB will advise the implementing agency and contractor and monitor the corrective actions.

The contractor, in consultation with the implementing agency, attempts to resolve the issue directly with the affected person. Within five working days of receiving the complaint, the agency will provide clear advice to the affected person on the proposed corrective action and by when it will be taken. The corrective action will be implemented not later than 10 working days from receipt of the complaint. The PMO-EO will enter the resolution in the Complaints Register.

If quick corrective action is not possible, or the implementing agency is unsure how to proceed, or the complainant is not satisfied by the initial corrective action, then the complaint will be referred to the PMO-EO for Stage 2.

(ii) **Stage 2 (maximum 5 working days):** For complaints not resolved in Stage 1, Stage 2 is initiated. The PMO-EO, contractor, CSC and implementing agency will meet with the affected person and together discuss the issue and identify possible solutions. At the meeting, a possible solution will be agreed upon. The contractor or implementing agency, as appropriate, will implement the agreed solution and report the outcome to the PMO-EO.

(iii) **Stage 3 (maximum 10 working days):** If Stage 2 is unsuccessful (i.e. no solution can be identified or the affected person is not satisfied with the proposed solution) the PMO-EO will convene a multi-stakeholder meeting and involve the Project Coordinating Group to ensure that any needed inputs from other project agencies are coordinated. The workshop will identify a solution acceptable to all. The agreed solution will be implemented and a report on the outcome provided to the PMO and ADB.

No part of the project GRM affects the existing rights of affected persons to take their complaints to the courts. If Stage 3 is unsuccessful in addressing the issue, this course is still available to affected persons.

The above steps relate to the construction phase where most complaints will be directed in the first instance to the contractor, CSC or implementing agency. During initial operations, complaints will be received by the operations and maintenance (O&M) units of the facilities.

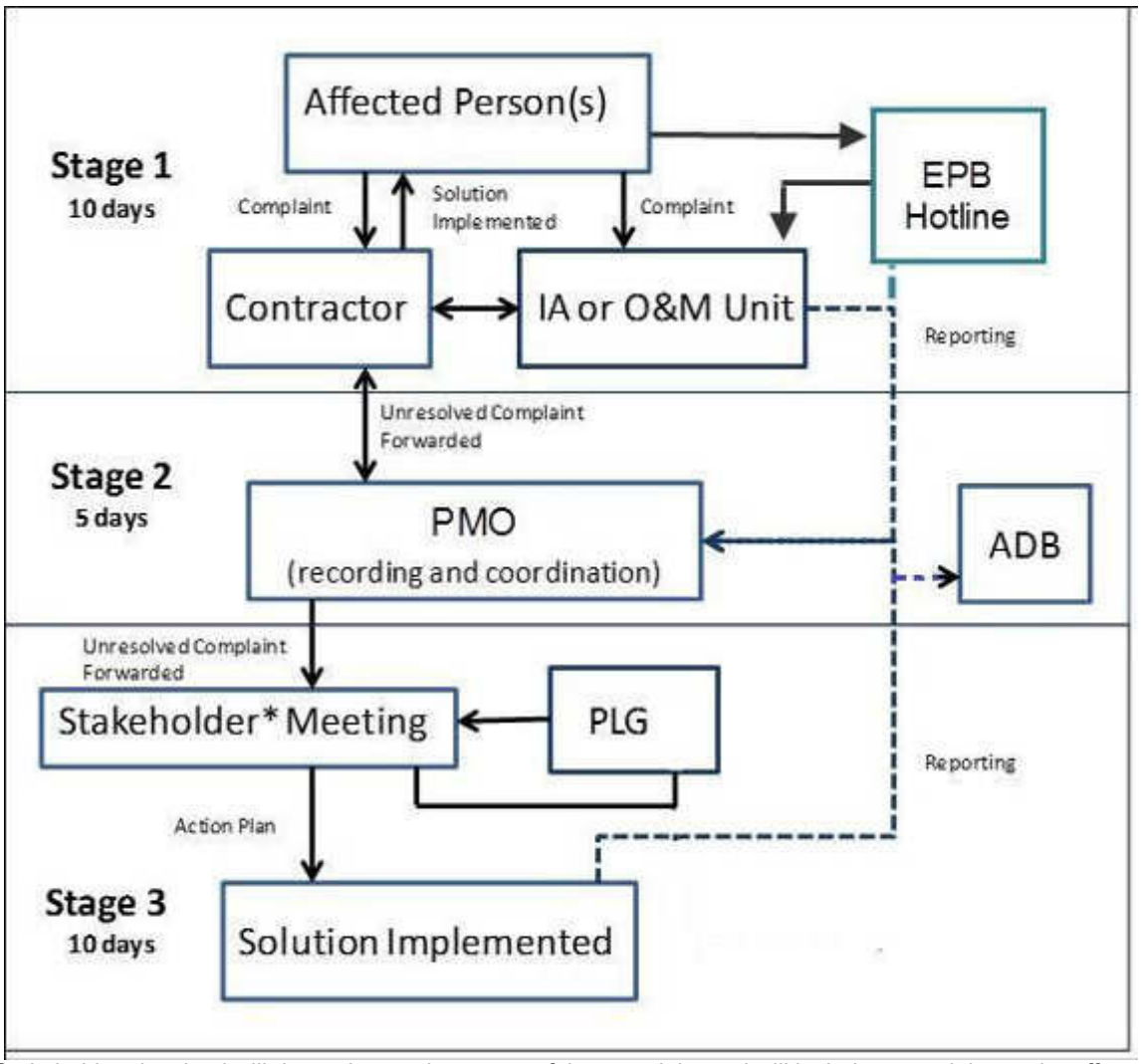
PMO will inform ADB of all complaints and actions under the GRM and include all relevant documents in its progress reports to ADB.

30. Any costs incurred to receive and document grievances will be paid by the PMO. The grievance procedures will remain valid throughout the duration of project construction and the first two years of project operation.

31. If the above steps are unsuccessful, people adversely affected by the project may submit complaints to ADB's Accountability Mechanism. All parties should employ their best

effort to solve problems that are reported through the GRM. Only when these are exhausted should the ADB's Accountability Mechanism be accessed.[1] The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures.

Figure A9.1: The Project Grievance Redress Mechanism



*Stakeholders involved will depend upon the nature of the complaint and will include as a minimum the affected person(s), PMO, implementing agency, and EPB. Other stakeholder agencies relevant to particular concerns can be called upon to contribute through the PLG.

Note: AP = affected person, EPB = environmental protection bureau, O&M = operation and maintenance, PMO = project management office; IA = Implementing Agency.

K. Cost Estimates

32. This section provides an estimate of the cost of implementing the EMP. The cost comprises three categories: mitigation and management measures (from Table A9.3); environmental monitoring (from Table A9.5); and, training (from Table A9.8). Refer to Tables A9.3, A9.5 and A9.8 for more details of each item. Costs are presented for the construction and operational phases of the project duration (until PCR stage). The costs do not include: (i) detailed design revisions and adjustments; (ii) facility operating costs (which include environmental safeguards); and (iii) the salaries of PMO environment staff. Costs for the mitigation measures are based on estimates in the domestic EIA and the experience of the

[1]See: www.adb.org/ accountability-mechanism

PPTA team and PMO in other projects. Costs for the monitoring and training are also estimates based on the experience of the PPTA team in similar projects and discussed with the PMO.

33. The total estimated cost of implementing the EMP is CNY 1.8 million over the project duration (Table A9.10). It is anticipated that about CNY 2.07 million (59%) will be paid through the construction contractors, CNY 605,000 (34%) paid through the implementing agencies (mainly for external monitoring) and CNY 125,000 (7%) through the PMO.

Table A9.10. Estimated cost (CNY) of implementing the EMP over Five Years.
See Tables A9.3, A9.5 and A9.8 for details of activities.

Item	PMO	Implementing agencies	Contractors and CSCs
MITIGATION (EMP Table A9.3)			
PRE-CONSTRUCTION			
A.1 Air Quality Protection Plan		70,000	
A..2 GRM	5,000	35,000	
A.2 Asbestos survey and removal planning			100,000
CONSTRUCTION			
B.2 Soil and water contamination			100,000
B.3 Pollution of surface and groundwater			120,000
B.4 Construction and domestic solid wastes			30,000
B.5 Noise and vibration			100,000
B.6 Dust management			100,000
B.6 Vehicle emissions			35,000
B.8 Site health and safety			55,000
B.8 Community safety			100,000
Sub-total	**5,000**	**105,000**	**740,000**
MONITORING (EMP Table A9.5)			
CONSTRUCTION			
Internal monitoring			
Dust and noise			120,000
Water quality			120,000
Soil erosion and contamination			30,000
Solid and liquid waste management			30,000
Site health and safety			30,000
External monitoring			
Dust and noise		400,000	
OPERATION			
External monitoring			
Odor from hospital WWTP (Xinji and Shuangluan)		60,000	
Groundwater quality at Shexian County Elderly Care Center		40,000	
Sub-total		**500,000**	**330,000**
TRAINING (EMP Table A9.8)			
EMP implementation	24,000		
GRM	12,000		
Environmental monitoring	12,000		
Emergency procedures	36,000		
Solid and medicinal waste	18,000		
Air quality protection	18,000		
Sub-total	**120.000**		
GRAND TOTAL CNY	**125,000**	**605,000**	**1,070,000**
Total USD (USD1=CNY6.5)	**18,939**	**91,667**	**162,121**
Proportion of total (%)	**7**	**34**	**59**

GRM = Grievance Redress Mechanism, PMO = Project Management Office CSC = Construction Supervision Company.
Source: Asian Development Bank.

34. During project implementation, the budget will be adjusted based on actual requirements. Contractors will bear the costs of all mitigation measures and internal monitoring during construction, which shall be budgeted in the bids. Implementing agencies will bear the costs related to setting up and running the GRM, mitigation measures during operation and external environmental monitoring during construction. Training costs will be part of the Project Implementation Support component of the project's capacity building output, through the PMO.

L. Mechanism for feedback and adjustment

35. Based on environmental monitoring and reporting systems in place, the PMO shall assess whether further mitigation measures are required as corrective action, or improvement in environmental management practices are required. The effectiveness of mitigation measures and monitoring and inspection plans will be evaluated by a feedback reporting system. If the PMO identifies a substantial deviation from the EMP, or if any changes are made to the project scope that may cause significant adverse environmental impacts or increase the number of affected people, then the PMO shall immediately consult ADB to identify EMP adjustment requirements.

M. Public Consultation Plan

36. Two rounds of public consultation, including information dissemination, have been undertaken during the PPTA and are described in Chapter VII of the IEE. Plans for public involvement during the detailed design, construction and operation phases have also been developed during project preparation. These plans include public participation in (i) monitoring impacts and mitigation measures during the construction and operation stages, (ii) evaluating environmental and economic benefits and social impacts, and (iii) interviewing the public after the sub-components are completed.

37. Public participation plans are part of the project implementation and management plan. The implementing agencies are responsible for public participation during project implementation and operation. Costs for public participation activities during construction are covered by project funding. The unit costs are estimated as CNY5,000 ($770) for each public workshop, and CNY6,000 ($920) for each press conference.

Table A9.11: Public Consultation Plan

Organizer	Approach	Times/Frequency	Subjects	Participants
Construction				
Implementing agencies, PMO	Public consultation and site visits	At least once a year	Adjusting mitigation measures if necessary, construction impacts, comments and suggestions	Work staff within construction area; Residents within construction area
	Public workshop	At least once a year	Adjusting mitigation measures if necessary, construction impacts, comments and suggestions	Representatives of residents and social sectors
	Consultation at HSBC Center worksites	Before construction at each site	Confirming the construction schedule based on community suggestions to minimize disruption of services. Discuss safety issues with nearby communities	Community center residents, clients and staff
Operation				

Organizer	Approach	Times/Frequency	Subjects	Participants
Implementing agencies	Public consultation and site visits	At least once	Effects of mitigation measures, impacts of operation, comments and suggestions	Residents adjacent to project sites
	Public workshop	As needed based on public consultation	Effects of mitigation measures, impacts of operation, comments and suggestions	Representatives of residents and social sectors
	Public satisfaction survey	At least once	Comments and suggestions	Project beneficiaries

PMO = project management office.
Source: Asian Development Bank.

Hebei Elderly Care Development Project

Final Report

Volume Three

Document 3-H

Resettlement Plan for Shuanglan District Subproject

ADB-financed Hebei Elderly Care Development Project

Chengde Shuangluan District Haoren Health and Elderly Care Service Center Subproject

Resettlement Plan

Chengde Haoren Elderly Care Indusry Co., Ltd. (HECI)

October 2016

Letter of Commitment

In order to cope with the trend population aging, meet elderly care needs of medium- and low-income old people in our district and surrounding areas, and promote the development of the elderly care industry, we have decided to apply for a loan with the Asian Development Bank (ADB) for the construction of the Chengde Shuangluan District Haoren Health and Elderly Care Service Center Project (hereinafter, the "Subproject"), which must be implemented in accordance with ADB's social safeguard policies. The Subproject's design and construction land will be approved by the competent authorities of Hebei Province.

This RP complies with the applicable state, provincial and local laws, regulations and policies, and ADB's Safeguard Policy Statement (2009).

We hereby acknowledge the contents of this RP, and warrant that resettlement and budgeting will be conducted pursuant to this RP. This RP is based on the Feasibility Study Report of the Subproject and data from the preliminary socioeconomic survey. If the final scope of the Subproject differs from that described in the Feasibility Study Report, thereby affecting this RP substantially, this RP will be revised accordingly, and the revised RP will be approved by ADB before implementation.

Agency	Signature	Date
		2016.10

Contents

LIST OF TABLES

LIST OF FIGURES

Abbreviations

ADB	-	Asian Development Bank
AH	-	Affected Household
AP	-	Affected Person
DMS	-	Detailed Measurement Survey
HD	-	House Demolition
IA	-	Implementing Agency
LA	-	Land Acquisition
LEF	-	Land-expropriated Farmer
M&E	-	Monitoring and Evaluation
PMO	-	Project Management Office
PRC	-	People's Republic of China
RIB	-	Resettlement Information Booklet
RP	-	Resettlement Plan
SDCAB	-	Shuangluan District Civil Affairs Bureau
SDESB	-	Shuangluan District Employment Service Bureau
SDLRB	-	Shuangluan District Land and Resources Bureau
SDLRC	-	Shuangluan District Land Reservation Center
SDLSSB	-	Shuangluan District Labor and Social Security Bureau
SDPCB	-	Shuangluan District Price Control Bureau
HECI		Chengde Haoren Elderly Care Industry Co., Ltd

Units

Currency unit	=	Yuan (CNY)
1.00 yuan	=	$0.15
1 hectare	=	15 mu

Executive Summary

1. Overview of the Subproject

Chengde City has an elderly population (60 years or above) of 583,300, accounting for 15.43% of its gross population, where most old people cannot receive appropriate elderly care services. Chengde Haoren Elderly Care Industry Co., Ltd. (HECI) [1]plans to construct an elderly care service complex for home-, community- and institution-based elderly care by applying for an ADB loan. The Subproject involves the construction of an elderly care base, 3 community elderly care centers and 22 daycare centers, and will break ground in April 2017 and be completed in March 2022.

2. Impacts of the Subproject

30 mu of collective land in Dayuanbaoshan Village, Shuangtashan Town will be acquired permanently for the elderly care base in the Subproject, including 8.37 mu of cultivated land, 2.86 mu of rural roads, 15.57 mu of construction land[2] and 3.2 mu of unused land, affecting 5 households with 37 persons in Group 6 of Dayuanbaoshan Village. The affected ground attachments are 500 pears, and 150 peaches and cloves mainly.

The 25 community elderly care centers and daycare centers will be built in leased properties, and expanded or reconstructed from existing properties, avoiding the permanent acquisition of collective land and the demolition of residential houses.

3. Policy framework and entitlements

The resettlement policies of the Subproject are based mainly on the Land Administration Law of the PRC (2004), the Decision of the State Council on Deepening the Reform and Rigidly Enforcing Land Administration (SC [2004] No.28), the Guidelines on Improving Compensation and Resettlement Systems for Land Acquisition (MLR [2004] No.238), Some Opinions of the State Council on Accelerating the Development of the Elderly Care Industry (SC [2013] No.35), the applicable policies of Hebei Province, Chengde City and Shuangluan District, and ADB's Safeguard Policy Statement (2009). All APs will receive compensation and resettlement assistance to ensure that their income is not reduced or even improved. The resettlement principles and the entitlement matrix have been established based on local conditions, and in consultation with the IAs, APs and local government.

4. Compensation rates

Collective construction land in Dayuanbaoshan Village, Shuangtashan Town will be acquired permanently for the Subproject. According to the Notice of the Hebei Provincial Government on Implementing Location-based Land Prices for Land Acquisition, and the Notice of the Hebei Provincial Government on Amending Location-based Land Prices for Land Acquisition（carried out since June 1, 2015）, the subproject area is a Tier-2 area, where the location-based land price is 134,000 yuan/mu, and the compensation rate for hilly unused land is 60% thereof which is 80400 yuan/mu. The compensation rate for young crops is 2,000 yuan per annum (for 15 years).

5. Resettlement and income restoration

The land compensation will be distributed evenly among the registered population of Group 6 (302), being 12,743 yuan per capita, while the compensation for young crops and ground attachments will be paid to their proprietors, being 27,124 yuan per capita (for the 5 AHs only).

According to the local endowment insurance policy for land-expropriated farmers (LEFs), LEFs in urban villages having attained 16 years (excluding students) and having lost at least 70% of land

[1] Chengde Haoren Elderly Care Industry Co. Ltd is the IA of this subproject, it was founded in July 25, 2016 and is a subsidiary of Jinluan International Hotel Limited (JIH). The previous resettlement survey in June to July 2016 was organized by JIH.

[2] Collective construction land is a kind of collective land not allocated to any villager which used for nonagricultural construction such as public welfare undertakings and public facilities construction, as well as rural residential land use.

may cover basic endowment insurance for urban employees. After review and disclosure by the village committee for 7 days, the town government will submit the list of candidates to the Shuangluan District Labor and Social Security Bureau (SDLSSB) to review their identities and apply for funds with the Shuangluan District Government. 10% of the land compensation will be used for urban social insurance for LEFs, while the balance will be disbursed from district-level public finance. Eligible APs in the Subproject may apply for urban social insurance.

Through repeated consultations, the owner promises to offer a certain number of temporary jobs at the construction stage, as well as such jobs as cook, cleaner, security guard, laundress and carer at the operation stage, with monthly pays of about 2,000 yuan. These jobs will be first made available to the 37 APs in Dayuanbaoshan Village.

6. Public participation

All APs (with 30% being women) have been informed of the key points of this RP by various means and involved in the Subproject, such as meeting, interview, FGD, public participation meeting and community consultation, and their opinions have been well incorporated into this RP. The Resettlement Information Booklet (RIB) will be distributed to the APs or groups in September 2016, and the first draft of this RP will be published on ADB's website by in September 2016.

7. Grievance redress

An appeal procedure has been established to settle disputes over compensation and resettlement. The aim is to respond to appeals of the APs timely and transparently. Grievances about the Subproject may be from LA. The affected town government and village committee will coordinate and handle grievances and appeals arising from resettlement. The APs may file appeals about any aspect of resettlement, including compensation rates. All agencies will accept grievances and appeals from the APs for free, and costs so reasonably incurred will be disbursed from contingencies.

8. Organizational structure

The Shuangluan District Civil Affairs Bureau (SDCAB) will make overall arrangements for the Subproject, and coordinate and solve relevant issues. The Shuangluan District Land and Resources Bureau (SDLRB) will conduct LA, and develop an LA compensation and resettlement program. The Shuangluan District Land Reservation Center (SDLRC) will be responsible for the DMS and compensation disbursement. The town government will assist in the DMS and LA, and pay compensation to the affected village and APs. SDLSSB will cover endowment insurance for LEFs. The Shuangluan District Employment Service Bureau (SDESB) will offer employment guidance and training to the APs. The Shuangluan District Price Control Bureau (SDPCB) will review compensation rates. The village committee will assist in LA, and hold a village congress to discuss the LA compensation and resettlement program.

9. RP implementation

According to the project implementation schedule, the Subproject will be constructed from 2017 to 2019. In order that the resettlement schedule is coordinated with the construction schedule, LA will begin in September 2016 and end in November 2016. The basic principles for resettlement implementation are as follows: During resettlement, the APs shall have opportunities to participate in the Subproject. Before the commencement of construction, the range of LA will be disclosed, the RIB distributed and public participation activities conducted properly. All compensation fees will be paid to the affected proprietors directly and fully within 3 months of approval of the resettlement and compensation program.

10. M&E

In order to ensure the successful implementation of this RP, resettlement implementation will

be subject to internal and external monitoring. An internal monitoring report will be submitted to ADB semiannually. The owner will appoint an independent agency to conduct M&E semiannually. M&E costs will be included in the resettlement budget.

11. Resettlement budget

The resettlement budget of the Subproject is 7,558,607 yuan, including compensation fees for permanent LA of 4,852,080 yuan, accounting for 64.19%.

1. Basic Information of the Subproject

1.1 Brief Description of the Subproject

As the Chinese society ages, such problems as family small-sizing and empty-nesting become increasingly prominent. The central and local governments have been promoting social elderly care reform in recent years. During the 12th Five-year Plan period, Hebei Province experienced more severe population aging, with an elderly population (65 years or above) of 10.74 million. In response to this, the Hebei Provincial Government has applied for an ADB loan for the Hebei Elderly Care Development Project, involving 7 cities (Shijiazhuang, Chengde, Baoding, etc.).

Chengde City has an elderly population (60 years or above) of 583,300, accounting for 15.43% of its gross population, where most old people cannot receive appropriate elderly care services. HECI plans to construct an elderly care service complex for home-, community- and institution-based elderly care by applying for an ADB loan.

The Subproject includes: 1) elderly care base: elderly supporting center with building area of 16,023 m^2(including an intelligent information platform 249 m^2), a medical rehabilitation center with building area of 8,985 m^2, a botanic garden (505 m^2) and outdoor activity spaces (3,089 m^2); 2) community elderly care service network: including 25 daycare centers which renovation of interior decoration of the existing properties. Among them 22 located in the communities of Shuangluan and Shuangqiao Districts, involving the lease of properties of 200-250 m^2 each, and 3 located in Shuangluan sub-district office along with the supply of information platforms and facilities, involving the lease of properties of 1,000 m2 each, totaling 7,400 m2. When completed, the Subproject will accommodate 370 men-times of old people per day, and serve an elderly population of 696,500 in Chengde City.

The elderly care base will be located in Dayuanbaoshan Village, Shuangtashan Town, Shuangluan District, with a floor area of 30 mu, enjoying convenient traffic and a full range of municipal facilities. See Appendix 2. The community elderly care centers will be located in Shuangluan and Shuangqiao Districts.

Table 1 Overview of the Subproject

Component	No.	Township	Village/community	HHs	Population
Elderly care base	1	Shuangtashan Town	Dayuanbaoshan Village	364	1360
Daycare centers in sub-district office	2	Yuanbaoshan Sub-district	Yuxiangyuan Community	2097	5540
	3	Gangcheng Sub-district	Yiyuan Community	1034	3018
	4	Xiushui Sub-district	Baoding Community	2066	2395
Daycare centers in the communities	5	Yuanbaoshan Sub-district	Beiyuan Community	2996	6100
	6	Yuanbaoshan Sub-district	Shuang'an Community	2564	6500
	7	Yuanbaoshan Sub-district	Xinshun Community	2421	5020
	8	Yuanbaoshan Sub-district	Dongyuan Community	1195	3143
	9	Yuanbaoshan Sub-district	Yuanbaoshan Community	1561	3646
	10	Yuanbaoshan Sub-district	Rongxin Community	1636	4632
	11	Yuanbaoshan Sub-district	Fenglinlvzhou Community	955	2318
	12	Gangcheng Sub-district	Fenghuang Community	2022	6068
	13	Gangcheng Sub-district	Xinggong Community	1982	5765
	14	Gangcheng Sub-district	Guoshan Community	2167	6502
	15	Gangcheng Sub-district	Luanjiang Community	1081	1862
	16	Gangcheng Sub-district	Luandian Community	1210	2098
	17	Gangcheng Sub-district	Xinhe Community	1066	1796
	18	Xiushui Sub-district	Shusongji Community	2836	6544
	19	Xiushui Sub-district	Ping'an Community	2935	4708
	20	Xiushui Sub-district	Jinxiucheng Community	6494	15000
	21	Xiushui Sub-district	Wanhecheng Community	1132	2796

	22	Xiushui Sub-district	Fuxidiyuan Community	2997	5480
	23	Damiao Town	Heishan Community	1639	3101
	24	Damiao Town	Fuyuan Community	697	1033
	25	Pianqiaozi Town	Yangqiao Community	212	213
	26	Xidi Xiang	Jiayuan Community	1420	3295

1.2 Beneficiary and Affected Areas

The elderly care base will involve LA in Shuangtashan Town.

The 25 daycare centers in Shuangluan and Shuangqiao Districts involve the lease and renovation of interior decoration of properties, but involving no resettlement. Therefore, the affected area is also the beneficiary area. In this report, Shuangtashan Town affected by LA for the Subproject will be included in the affected area.

1.2.1 Beneficiary Area

Chengde City

Chengde City is located in northeastern Hebei, between north latitude 40°12′-42°37′ and east longitude 115°54′-115°15′, and is one of the first historically and culturally famous cities of China. The city governs 3 districts, 5 counties and 3 autonomous counties, with a land area of 39,702.4 km^2. At the end of 2013, the city had a registered population of 3.7815 million, including 1.9547 million males and 1.8267 million females, and 95 elderly care institutions with 19,000 beds. In 2014, the city's GDP was 134.255 billion yuan, urban residents' per capita disposable income 20,637 yuan and farmers' per capita net income 6,226 yuan.

Shuangluan District

Shuangluan District is located in northeastern Hebei and the west suburb of Chengde City, between east longitude 117°37′-117°54′ and north latitude 40°48′-41°12′, governing two sub-districts, 4 towns, two Xiangs, 18 communities and 63 villages, with a land area of 451.736 km^2. At the end of 2014, the district had a resident population of 147,878 and an agricultural population of 31,793. In 2014, the district's GDP was 10.496 billion yuan and farmers' per capita net income 8,604 yuan. The district is a well-known summer resort for its mild yet moist climate, and is an ideal destination for elderly care.

Shuangqiao District

Shuangqiao District is the central district of Chengde City, bordered by Shuangluan District on the west, between east longitude 117°48′-118°03′ and north latitude 40°57′-41°05′, governing 7 sub-districts and 7 towns, with a land area of 651.67 km^2. According to the 6^{th} national census, the district has a resident population of 424,897, including 212,796 males and 212,101 females, an urban population of 383,772 and a rural population of 41,125. In 2014, the district's GDP was 14.539 billion yuan, urban residents' per capita disposable income 23,643 yuan and farmers' per capita net income 8,689 yuan.

1.2.2 Affected Area

Shuangtashan Town

Shuangtashan Town is located in northeastern Shuangluan District, 15km southwest of the main urban area of Chengde City, being the seat of the Shuangluan District Government, with a land area of 88.56 km^2 and governing 17 villages. At the end of 2015, the town had a population of 19,469, including 9,113 males and 10,210 females, and a cultivated area of 7,012 mu.

The existing elderly care institutions in Chengde City are characterized by inadequate facilities, poor service quality, and the shortage of professional carers. The Subproject has the following social and economic benefits: 1) promoting the development of the elderly care industry; 2) promoting the sharing of social and natural resources, and improving resource utilization; 3)

generating hundreds of jobs to promote social employment; and 4) freeing up labor from housework to increase household income and improve living standard.

1.3 Measures to Reduce Resettlement Impacts

Resettlement impacts have been minimized at the design stage on the following principles:

- Avoiding or minimizing occupation of existing and planned residential areas;
- Avoiding or minimizing occupation of high-quality farmland;
- Gaining access to the proposed construction sites through existing state and local roads; and
- Avoiding or minimizing occupation of environmentally sensitive areas.

The daycare centers will be built in leased properties, mostly properties reserved for community elderly care service,avoiding the permanent acquisition of collective land and the demolition of residential houses.

1.4 Gross Investment and Funding Sources

The gross investment in the Subproject is 240. 9069 million yuan, consisting of self-raised funds of 104.5819 million yuan, an ADB loan of USD 20.50 million (equivalent to 136.325 million yuan at an exchange ratio of 6.65) , including a resettlement budget of 7.5586 million yuan.

Table 2 Gross Investment and Funding Sources

Unit: 0,000 yuan

Gross investment	Composition			
	ADB loan	Domestic counterpart funds	Resettlement funds	Percent of resettlement funds
24090.69	13632.5	10458.19	755.86	3.14%

1.5 Implementation Progress of the Subproject

The preparatory work will be conducted from January 2015 to March 2017, including loan application, and document preparation and submission. Ruihe Anhui Project Management Group Co., Ltd. completed the first draft of the Feasibility Study Report in June 2016. The preliminary land examination has been approved to date. The DMS will be completed in February 2017, and LA is expected to be completed in the second half year. The Subproject will be constructed from April 2017 to March 2022, and in the following 5 stages:

(1) Preliminary design: completing and submitting the preliminary design and construction drawings (3 months);
(2) Bidding: bidding for survey, design, construction, supervision and equipment (3 months);
(3) Construction: completing civil works construction, interior and exterior decoration, equipment purchase and installation, etc. (27 months);
(4) Staff training: offering initial training to the staff (5 months), and regular training afterwards (2 months);
(5) Final inspection: March 2022

2. Preparation of the RP

The RP was prepared by the design agency under the leadership of JIH, involving staff from the district and town governments, and the village committee. The RP preparation agency conducted a field survey and prepared the RP during June-July 2016. If the range or resettlement impacts of the Subproject change(s), the RP will be updated and submitted to ADB for approval again.

2.1 Survey Methods

(1) Questionnaire survey

The questionnaire survey covers LA impacts, production level, living standard, degree of impact, satisfaction with the Subproject, etc.

(2) Interview

Face-to-face interviews were conducted with representatives of the AHs and the village committee to collect more detailed information.

(3) Field visit

A field visit was conducted in the subproject area.

2.2 Technical Route

The technical route of the fieldwork is as follows:

(1) Establishing the RP preparation agency and preparing the RP outline;
(2) Designing the survey outline, questionnaire, record form and sampling plan;
(3) Conducting a field survey;
(4) Establishing a database, conducting a comparative analysis and completing the RP.

2.3 Survey Process

During June-July 2016, the RP preparation agency was appointed to conduct a socioeconomic survey in the subproject area.

The survey involved all APs, the village committee and government departments concerned.

On June 27, 2016, the survey staff interviewed related staff from the IA to collect relevant information.

On June 28-30, 2016, the survey staff interviewed leaders concerned of SDCAB, SDLRB, SDLRC, SDLSSB, SDESB and SDPCB to collect relevant information.

On July 1-3, 2016, the survey staff interviewed the Shuangtashan Town Government and the Dayuanbaoshan Village Committee to collect relevant information, and conducted a questionnaire survey in Dayuanbaoshan Village. The interviewees are set out below:

Table 3 Interviewed Agencies

No.	Agency	Title of interviewee
1	JLH	General Manager
2	SDLRB	Section chief
3	SDLRC	Director
4	SDLSSB	Director-general
5	SDESB	Director
6	SDPCB	Director
7	SDCAB	Director-general
8	Shuangtashan Town Government	Team leader
9	Dayuanbaoshan Village Committee	Village head
10	Group 6	Group head

3. Impacts of the Subproject

30 mu of collective land in Dayuanbaoshan Village, Shuangtashan Town will be acquired permanently for the elderly care base in the Subproject, affecting 5 households with 37 persons, all being Han people. Existing roads will be utilized as access roads for the Subproject, involving no temporary land occupation. The Subproject will involve no house demolition.

3.1 LA Impacts

30 mu of collective land in Dayuanbaoshan Village, Shuangtashan Town will be acquired permanently for the elderly care base, including 8.37 mu of cultivated land, 2.86 mu of rural roads, 15.57 mu of construction land and 3.2 mu of unused land. The community elderly care centers and daycare centers will involve no permanent LA.

3.2 Current Land Use

There is a project headquarters on the proposed site of the elderly care base. 10.6 mu land of Dayuanbaoshan Village among the 15.57 mu construction land in the project site was leased by the headquarters of the Zhangjiakou-Chengde Expressway project for the temporary use of their mixing plant in 2014. Dayuanbaoshan VillageSince this project is close to completion in the end of this year, the headquarters will be relocated along with its mixing plant without affecting the Subproject.

The left cultivated land are still farming by the 5 affected households of Dayuanbaoshan Village.

Figure 1 Project Headquarters and Mixing Plant

3.3 Affected Population

30 mu of collective land in Group 6 of Dayuanbaoshan Village, Shuangtashan Town will be acquired permanently for the elderly care base, affecting 5 households with 37 persons.

The community elderly care centers and daycare centers avoid the permanent acquisition of collective land and the demolition of residential houses, and involve no directly affected population.

Table 4 Impact of Permanent LA

Type	Unit	Cultivated land	Rural road	Construction land	Unused land	Total
Area	Mu	8.37	2.86	15.57	3.2	30

AH	HH	5	—	—	—	—
AP	Person	37	—	—	—	—

Table 5 Population Affected by Permanent LA

No.	Householder	Household population	Land area (mu)			Land loss rate
			Before LA	Affected	After LA	
1	Feng Wanliang	8	4.3	2	2.3	46.51%
2	Feng Wanjin	5	4.5	1	3.5	22.22%
3	Feng Wanyin	6	4.6	2.37	1.23	51.52%
4	Feng Zhenxiang	9	5.3	2	3.3	37.74%
5	Feng Ming	9	4.2	1	3.2	23.81%
Subtotal		37	22.9	8.37	14.53	36.55%

3.4 Affected Ethnic Minorities and Vulnerable Groups

The Subproject involves no minority population.

The Subproject involves no vulnerable group.

3.5 Affected Ground Attachments

The affected ground attachments are 500 pears, and 150 peaches and 6 mu of cloves mainly.

Table 6 Summary of Affected Ground Attachments

No.	Item	Unit	Qty.
1	Pear	/	500
2	Peach	/	150
3	Clove	mu	6

3.6 Description of the community daycare center

The 25 daycare centers will be built in leased properties through renovation of interior decoration, including properties of 7,600 m2. Among them 22 located in the communities of Shuangluan and Shuangqiao Districts and 3 located in Shuangluan sub-district office along with the supply of information platforms and facilities, avoiding LA and HD impacts. The 25 daycare centers will be built in sub-district or community office space which located in the residential community but belong to the local government and managed by Civil Affair Bureau who has agreed with lease to the daycare centers and issued relevant notes. According to the instruction on consent to lease the daycare centers by Civil Affair Bureau of Shuangluan, the office rooms are currently in use and can be renovated into daycare centers at any time. Please find the instruction in Appendix 3.
According to the amended Law of the People's Republic of China on the Protection of the Rights and Interests of the Elderly, land for community elderly care service must be reserved in communities newly constructed after July 1, 2013, and properties shall be obtained through lease and renovation of interior decoration for community elderly care service in old communities constructed before 2013. These communities are the first choice of this project and the sites of the daycare centers were selected in consultation with the proprietors, who support the Subproject, and offer vacant proprietors which not used and have lease contract now. All proprietors have agreed with lease to the daycare centers and the lease contracts of the daycare centers will be entered into by IA and sub-district office through consultation before the construction implementation.
The lease term was preliminary set as 3 years and the rental level will be determined according to the location of the community. The rental will be used for public welfare and infrastructure construction of the residents in the communities mainly. The budget will come from domestic

counterpart funds and be included in the total investment separately with resettlement budget.

4. Socioeconomic Survey

The purpose of the socioeconomic survey is to learn physical impacts of LA and HD for the Subproject, and provide a basis for production and livelihood restoration, budgeting, resettlement implementation and M&E. The socioeconomic survey was conducted by the RP preparation agency in July 2016 through a combination of questionnaire survey and interview, involving all 5 households with 37 persons affected directly by the Subproject (sampling rate 100%).

4.1 Socioeconomic Profile of the Affected Village

Dayuanbaoshan Village is located in northeastern Shuangluan District, with a land area of 149,700 mu, including 2,700 mu of cultivated land, 500 mu of construction land, 146,420 mu of barren hills and woodland, and 80 mu of garden land. The village has 6 groups, and 364 households with 1,360 persons. In 2015, villagers' per capita net income was 5,200 yuan.

4.2 Results of Sampling Survey on AHs

4.2.1 Gender and Labor Analysis

All the 37 samples are Han people and fall into agricultural population, including 17 females, accounting for 45.95%; 18 laborers, accounting for 48.65%; and 11 students, accounting for 29.73%.

4.2.2 Age Distribution

Among the 37 samples, 3 are aged below 8 years, accounting for 8.11%, 7 aged 8-16 years, accounting for 18.92%; 18 aged 17-50 years, accounting for 48.65%; two aged 51-60 years, accounting for 5.41%; and 4 aged above 60 years, accounting for 10.81%. See the figure below.

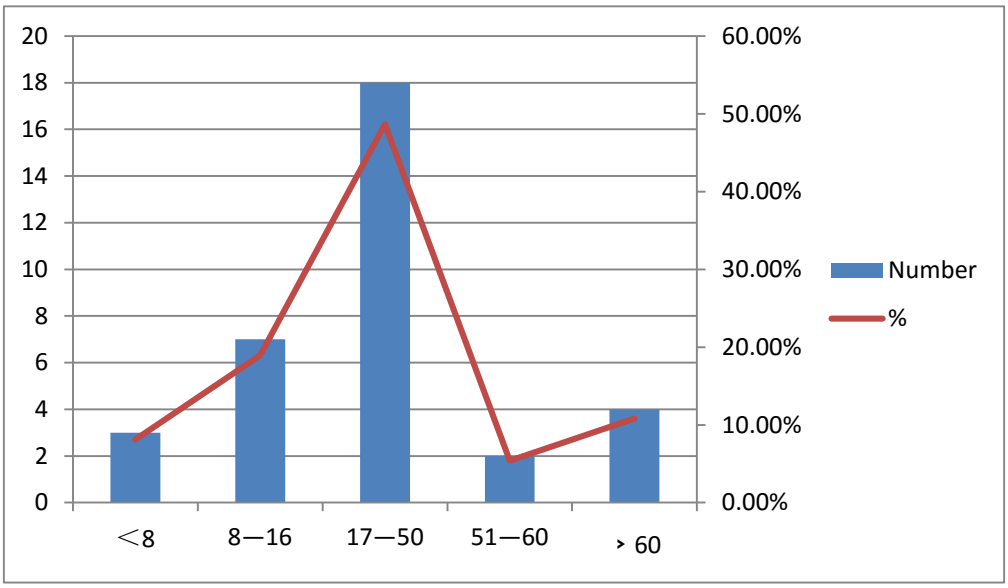


Figure 2 Age Distribution of Sample Population

4.2.3 Educational Level

Among the 37 samples, 3 are illiterate, accounting for 8.11%; 18 have received primary school education, accounting for 48.65%; 15 have received junior high school education, accounting for 40.54%; and one has received senior high school education, accounting for 2.70%. See the figure

below.

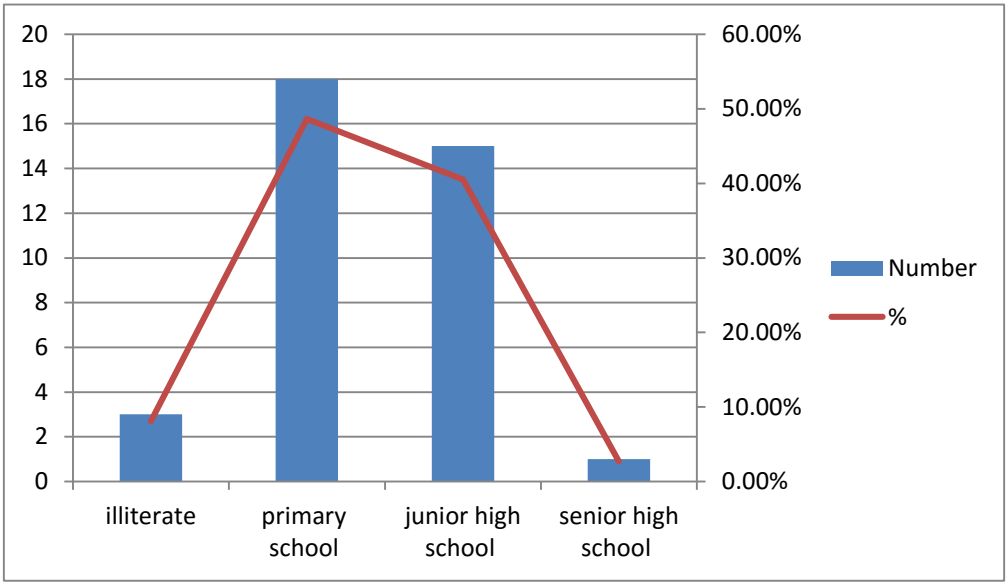


Figure 3 Educational Level Distribution of Sample Population

4.2.4 Household Properties

The sample households have high possession rates of TV sets, refrigerators, motorcycles, mobile phones, etc., which is consistent with the local living standard. See the table below.

Table 7 Statistics of Household Properties

Item	Unit	Qty.	Average possession rate
Bicycle	/	4	80%
Electric fan	/	12	240%
Recorder	/	2	40%
Washing machine	/	8	160%
TV set	/	8	160%
PC	/	4	80%
Air-conditioner	/	8	160%
Refrigerator	/	8	160%
Tractor	/	1	20%
Motorcycle	/	4	80%
Car	/	2	40%
DVD/VCD	/	6	120%
Fixed telephone	/	8	160%
Mobile phone	/	19	380%

4.2.5 Production Patterns

Dayuanbaoshan Village is located in the planning area of Culture Industry Park, Shuangluan District. The village's land has been acquired successively since 2009. Currently, villagers' per capita cultivated area is about 1.1 mu. Young villagers work in Chengde City all the year round, and those doing farm work are mostly middle-aged and elderly villagers. See the table below.

Table 8 Land and Employment of Affected Population

HH	No.	Householder	Relationship with householder	Occupation	Land area before LA	Land within subproject area	Registered for social insurance?	Want to get insured?

1	1	Feng Wanliang	Householder	Farming, part-time jobs	4.3 mu	1 mu	No	Yes
	2		Wife	Farming				
	3		Eldest son	Cosmetic wholesale				
	4		Wife of eldest son	Cosmetic wholesale				
	5		Grandson	At school				
	6		Youngest son	Cosmetic wholesale				
	7		Wife of youngest son	Cosmetic wholesale				
	8		Grandson	At school				
2	1	Feng Wanjin	Householder	Farming	4.5 mu	2 mu	No	Yes
	2		Wife	Farming				
	3		Daughter	Doing business				
	4		Eldest son	At school				
	5		Second son	At school				
3	1	Feng Wanyin	Householder	Doing business	4.6 mu	2.37 mu		
	2		Wife	Doing business				
	3		Father	Farming			Yes	
	4		Mother	Farming			Yes	
	5		Eldest son	At school				
	6		Second son	At school				
4	1	Feng Zhenxiang	Householder	Farming, part-time jobs	5.3 mu	2 mu		
	2		Wife	Farming				
	3		Father	Unemployed			Yes	
	4		Mother	Unemployed			Yes	
	5		Eldest son	Railway bureau				
	6		Wife of eldest son	Railway bureau				
	7		Granddaughter	At school				
	8		Grandson	At school				
	9		Second son	Farming				
5	1	Feng Ming	Householder	Farming, part-time jobs	4.2 mu	1 mu	No	Yes
	2		Wife	Farming				
	3		Eldest daughter	Working outside				
	4		Son-in-law	Working outside				
	5		Eldest granddaughter	At school				
	6		Second granddaughter	At school				
	7		Grandson	At school				
	8		Second daughter	Working outside				
	9		Third daughter	Working outside				

4.2.6 Income and expenditure

In 2015, the per capita net income of the sample households was 6,626 yuan, including agricultural income of 116 yuan, accounting for 1.97%; outside employment income of 863 yuan, accounting for 13.02%; business income of 4,679 yuan, accounting for 70.62%; and wage income of 628 yuan, accounting for 9.48%.

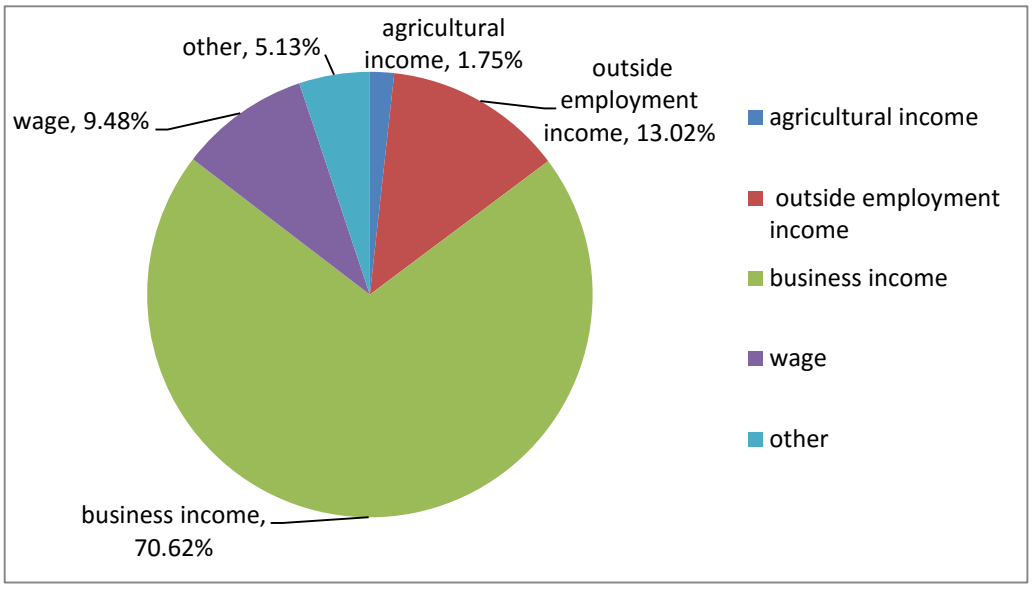


Figure 4 Per Capita Income

It can be seen that agricultural income accounts for less than 2% of household income only and in Dayuanbaoshan Village, 80% of households have been relocated to the resettlement community due to LA for other projects. Among the 5 AHs, only two still live in the village, and the other 3 were relocated to the resettlement community in 2012. They can get about 8,000 yuan of other income through renting of the extra houses. So LA will not affect household income seriously. A rational resettlement program will ensure that the APs' income is not reduced.

In 2015, the average expenditure of the sample households was 26,050 yuan, including seed expenses of 218 yuan, accounting for 0.84%; pesticide and fertilizer expenses of 232 yuan, accounting for 0.89%; irrigation expenses of 100 yuan, accounting for 0.38%; electricity expenses of 1,200 yuan, accounting for 4.61%; operating expenses of 13,400 yuan, accounting for 51.44%; communication expenses of 1,800 yuan, accounting for 6.91%; educational expenses of 800 yuan, accounting for 3.07%; medical expenses of 300 yuan, accounting for 1.15%; fuel expenses of 1,000 yuan, accounting for 3.84%; non-staple food expenses of 6,000 yuan, accounting for 23.03%; and home appliance expenses of 1,000 yuan, accounting for 3.84%.

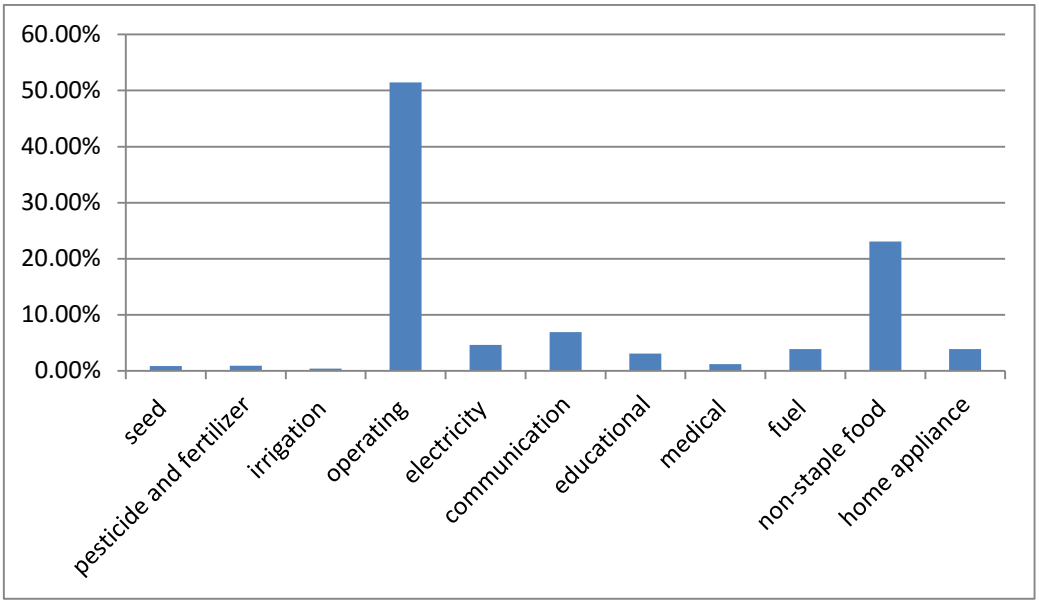


Figure 5 Per Capita Expenditure

4.3 Results of Survey on Community Elderly Care Centers

See Table 1 for details. Property rentals will depend on market conditions.

4.4 Women

Generally, local women enjoy high social status, and have the right to participate in and decide on major family and village matters.

In Dayuanbaoshan Village, women enjoy the same land tenure as men, and are entitled to equal distribution of LA compensation based on registered residence.

In Dayuanbaoshan Village, most men work outside, while some women stay at home to take care of family members and do farm work. Since the village is close to the urban area, where tertiary industries have a great demand for female labor, many middle-aged women work at urban enterprises at a pay level similar to that of men.

5. Policies, Compensation and Resettlement

5.1 Laws, Regulations and Policies Applicable to Resettlement

The resettlement policies of the Subproject have been developed in accordance with the laws and regulations of the PRC, and ADB's policy, including:

5.1.1 ADB Policy

- Safeguard Policy Statement (June, 2009)

5.1.2 PRC Laws, Regulations and Policies

- Land Administration Law of the PRC (January 1, 1999, amended on August 28, 2004)
- Regulations on the Implementation of the Land Administration Law of the PRC (Decree No.256 of the State Council) (December 27, 1998)
- Decision of the State Council on Deepening the Reform and Rigidly Enforcing Land Administration (SC [2004] No.28)
- Interim Regulations of the PRC on Farmland Occupation Tax (January 1, 2008)
- Detailed Rules for the Implementation of Farmland Occupation Tax of the PRC (Decree No.49 of the State Administration of Taxation,2008)
- Guidelines on Improving Compensation and Resettlement Systems for Land Acquisition (MLR [2004] No.238) (November 3, 2004)
- Notice of the Ministry of Land and Resources on Doing a Practical Job in Compensation for Land Acquisition (MLR [2004])
- Notice of the Ministry of Finance, and the Ministry of Land and Resources on Adjusting Compensation Fees for the Use of Additional Construction Land (CZ [2002] No.93)
- Notice of the Ministry of Land and Resources on Doing a Better Job in LA Management (MLR [2010] No.96)
- Some Opinions of the State Council on Accelerating the Development of the Elderly Care Industry (SC [2013] No.35)

5.1.3 Provincial Policies

- Land Administration Regulations of Hebei Province (amended in 2002)
- Regulations of Hebei Province on the Implementation of the Land Administration Law of the PRC (amended in 2005)
- Notice of the Hebei Provincial Labor and Social Security Department on Establishing the Endowment Insurance System for Land-expropriated Farmers (2005)
- Notice of the Hebei Provincial Government on Implementing Location-based Land Prices for Land Acquisition (HPG [2008] No.132)
- Notice of the Hebei Provincial Government on Amending Location-based Land Prices for Land Acquisition (HPG [2015] No.28)
- Opinions of the Hebei Provincial Government on Accelerating the Development of the Elderly Care Industry (2015)

5.1.4 District Policies

- Opinions of the Shuangluan District Government on Policy Issues concerning the Effecting of Basic Endowment Insurance for Urban Workers for the First Group of Urban Village Dwellers (SDG [2010] No.95)

5.2 Abstract of ADB Policies

The objectives of ADB's Policy on Involuntary Resettlement are: Involuntary resettlement should be avoided whenever feasible; where population displacement is unavoidable, it should be

minimized by providing viable livelihood options; the standard of living of displaced persons should be at least restored to the pre-project level; the standard of living of the displaced poor population and other vulnerable groups should be improved.

- Screen the project early on to identify past, present, and future involuntary resettlement impacts and risks.
- Carry out meaningful consultations with affected persons, host communities, and concerned nongovernmental organizations. Inform all displaced persons of their entitlements and resettlement options. Ensure their participation in planning, implementation, and monitoring and evaluation of resettlement programs.
- Improve or at least restore, the livelihoods of all displaced persons through (i) land-based resettlement strategies when affected livelihoods are land based where possible or cash compensation at replacement value for land when the loss of land does not undermine livelihoods, (ii) prompt replacement of assets with access to assets of equal or higher value, (iii) prompt compensation at full replacement cost for assets that cannot be restored, and (iv) additional revenues and services through benefit sharing schemes where possible.
- Conceive and execute involuntary resettlement as part of a development project or program. Include the full costs of resettlement in the presentation of project's costs and benefits.

5.3 Key Provisions of Laws, Regulations and Policies on Resettlement

5.3.1 LA Authority and Nature of Compensation

1. Real Right Law

Article 42 In order to meet the demands of public interests, it is allowed to requisition lands owned collectively, premises owned by entities and individuals or other realties according to the statutory power limit and procedures.

When requisitioning land owned collectively, it is required to, in accordance with law and in full amount, pay land compensation fees, placement subsidies, compensations for the above-ground fixtures of the lands and seedlings and other fees, arrange for social security fees for the farmers with land requisitioned, guarantee their livelihood and protect their lawful rights and interests. When requisitioning the premises owned by entities and individuals or other realties, it is required to compensate for demolishment and relocation in accordance with law and protect the lawful rights and interests of the owners of the requisitioned realties; when requisitioning the individuals' residential houses, it is required to guarantee the housing conditions of the owners of the requisitioned houses.

The compensation fees for requisition and other fees may not be embezzled, misappropriated, privately shared, detained or delayed in the payment of by any entity or individual.

2. Land Administration Law of the PRC

Article 43 Any unit or individual that need land for construction purposes should apply for the use of land owned by the State according to law, except land owned by farmer collectives used by collective economic organizations for building township enterprises or building houses for villagers or land owned by farmer collectives approved according to law for use in building public facilities or public welfare facilities of townships (towns).

Article 58 In one of the following cases, the land administrative departments of related people's governments shall recover the land use right of State-owned land with the approval of the people's governments that originally gives the approval or the people's governments with the power of approval:

1) Use land for the sake of public interests;

2) Use land for adjustment in re-building old city districts in order to implement urban construction plans;

Article 47 In acquiring land, compensation should be made according to the original purposes of the land acquired.

Article 61 In using land for building public facilities and public welfare facilities, townships (towns) shall file an application with land administrative departments of local people's governments at and above the county level after being examined by the township (town) people's governments at and the application shall be approved by the local people's governments at and above the county level according to the term of reference provided for by provinces, autonomous regions and municipalities. Where occupation of agricultural land is involved, the examination and approval procedures provided for in Article 44 of this law are required.

3. Law of the PRC on Urban Real Estate Administration

Article 22 Allocation of the land-use right refers to acts that the people's government at or above the county level approves in accordance with the law to allocate the land to a land user after the latter has paid compensation and expenses for resettlement, etc. for the allocated land, or gratuitously allocates the land-use right to the land user.

Article 23 The land-use right for the following land used for construction may, if really necessary, be allocated upon approval by the people's government at or above the county level in accordance with the law: land used for urban infrastructure or public facilities; and land used for projects of energy, communications or water conservancy, etc. which are selectively supported by the State.

4. Some Opinions of the State Council on Accelerating the Development of the Elderly Care Industry

All localities shall include land used for elderly care facilities in urban master land utilization plans and annual land utilization plans, and meet land needs rationally. Private nonprofit and public elderly care agencies shall be entitled to the same land use policy, and may use allocated state-owned land or collectively owned land. Land used for for-profit elderly care agencies shall enjoy priority in supply. Land used for elderly care facilities shall not be diverted to other purposes.

5. Guidelines on the Land Used for Elderly Care Facilities

Article 2 If land for elderly care facilities is supplied by transfer, the period of transfer shall not exceed 50 years. In case of supply by lease, the term of lease shall be specified in the contract and shall not exceed the maximum period of transfer of the same type of land.

Article 8 If any organization or individual has run a nonprofit elderly care agency by transforming or utilizing any existing unused workshop, school or community property for at least one year, it may be exempt from any increase in land rental or land income spread, or any change in land use within 5 years.

Article 9 A rural collective economic organization may use its collectively owned land according to law to run a nonprofit elderly care facility for its members. Private nonprofit and public elderly care facilities may use rural collectively owned land according to law.

6. Land Administration Regulations of Hebei Province

Article 36 Land for energy, traffic, water resources, mining, military and other nonagricultural facilities must be provided from city, village and town construction land identified in the master land utilization plan.

Article 37 If farmland is to be converted into construction land, the municipal/county administrative departments for land shall approve the conversion program according to the annual land utilization plan.

Article 38 In case of acquisition of rural collectively owned land, the municipal/county administrative departments for land shall draft a land acquisition program, which shall be approved by the competent governments level by level.

Article 47 If rural collectively owned land is to be used for rural public facilities, the original land user shall be provided with new land or resettled, or granted compensated at the specified rate.

Article 48 If rural collectively owned land is to be used for rural enterprises or rural public facilities, the land supply program shall be approved by the municipal and county governments if it is within the range of village and town construction land, or by the provincial government if it is out of this range.

5.3.2 Legal and Administrative Procedures

1. Land Administration Law of the PRC

Article 46 For acquisition of land by the State the local people's governments at and above the county level shall make an announcement and organize the implementation after the approval according to the legal procedures. Owners or users of the land acquired should, within the time limit specified in the announcement, go through the compensation registration for acquired land with the land administrative departments of the local people's governments on the strength of the land certificate.

2. Measures on Public Announcement of Land Acquisition

Article 3 In case of acquisition of rural collectively owned land, the land acquisition program, and the compensation and resettlement program shall be disclosed in the affected village and group in writing.

Article 6 The affected rural collective economic organization, villagers and other right holders shall go through the land acquisition compensation registration formalities at the designated place within the period specified in the land acquisition announcement.

5.3.3 Compensation and Resettlement Policies

1. Guidelines on Improving Compensation and Resettlement Systems for Land Acquisition

About LA compensation rates

1) Fixation of uniform AOV rates: The province-level land and resources department shall fix minimum uniform AOV rates for arable land of each county (city) within the province together with other departments concerned, and report to the provincial government for approval and implementation.

2) The uniform multiple of annual output value for land compensation fees and resettlement subsidy shall be fixed within the statutory range so that land-expropriated farmers' standard of living is not reduced; if compensation fees for land acquisition calculated from the statutory uniform multiple of annual output value are insufficient for land-expropriated farmers to maintain their former standard of living or insufficient to cover their social security costs, the multiple shall be increased appropriately with the approval of the province-level government; if an aggregate multiple of 30 for land compensation fees and resettlement subsidy is still insufficient for land-expropriated farmers to maintain their former standard of living, the local government shall allocate a certain proportion from the income from the compensated use of state-owned land for subsidization. For basic farmland occupied with lawful approval, the highest compensation rate announced by the local government shall apply.

3) Fixation of composite land prices for land acquisition areas. Where conditions permit, the province-level land and resources authority may fix composite land prices for land acquisition for different counties and cities in the province together with other competent authorities, and report such prices to the province-level government for approval, disclosure and implementation.

4) Distribution of land compensation fees: Since land compensation fees are used mainly on households affected by land acquisition, land compensation fees shall be distributed within rural collective economic organizations reasonably. The detailed distribution measures shall be formulated by the provincial government. If all land of a village is acquired and the rural collective economic organization is cancelled, all land compensation fees shall be used for the production and livelihood resettlement of land-expropriated farmers.

2. Notice of the Hebei Provincial Government on Implementing Location-based Land Prices for Land Acquisition

For collective land acquired according to law, compensation shall be calculated by multiplying the location-based land price by the acquired land area. No organization or individual shall increase or reduce land compensation rates without authorization.

20% of land compensation shall belong to the collective economic organization, and 80% to right holders or contracting households. If the acquired land has no right holder or is not contracted by the collective economic organization, land compensation shall fully belong to the collective economic organization for distribution or use according to law.

If there are attachments and young crops on the acquired land, the proprietors of such attachments and young crops shall be otherwise granted compensation. Compensation rates for attachments shall be fixed by municipal governments, and those for young crops based on output values of crops.

3. Notice of the Hebei Provincial Government on Amending Location-based Land Prices for Land Acquisition

The location-based land prices for land acquisition of Hebei Province have been amended and are hereby released, to come into effect on June 1, 2015, in order to protect the lawful rights and interests of farmers, and ensure the availability of construction land. See Table 9.

Table 9 Location-based Land Prices for LA of Chengde City

Unit: yuan/mu

Division	Average location -based land price	Tier-1	Tier-2	Tier-3	Tier-4	Tier-5	Tier-6
Hebei Province	67038						
Chengde City	66893						
Shuangluan District	115246	154000	134,000	119000	105000		

5.3.4 Other regulations

1. Guidelines on the Use of Land for Elderly Service Facilities (2014)

Article 2 If it is stipulated that the land for any elderly care facility is supplied by transfer, the period of transfer of the right to use construction land shall not exceed 50 years; in case of supply by lease, the term of lease shall be specified in the contract, and not exceed the maximum period of the same type of land.

Article 8 If any unused industrial, educational or community property is reconstructed or utilized for nonprofit elderly care services for one year or more, land rental or land income spread shall be exempted for 5 years, and the land use shall not be altered.

2. Law of the PRC on the Protection of the Rights and Interests of the Elderly (December 28, 2012)

Article 38 Local governments, competent departments, and grass-root NGOs shall include elderly care facilities in the construction plan of urban-rural community supporting facilities, and construct service facilities and outlets that meet needs of old people for living, daycare, culture, sports,

nursing, rehabilitation, etc.

3. Opinions of the Hebei Provincial Government on Accelerating the Development of the Elderly Care Industry (HPG [2014] No.67)

The construction of home elderly care service centers shall be strengthened. The urban home care service centers and community service facilities for the elderly should be supported to construct in the new city and new residential areas.

5.4 Main Differences between the ADB Policy and PRC Laws

The ADB policy is mostly consistent with the PRC laws, but there are also some differences, as detailed in Table 10.

Table 10 Main Differences between the ADB Policy and PRC Laws

Item	Difference	Solution
Compensation for land	ADB policies require that compensation should be sufficient to offset any income loss, and restore long-term income-generating potential. Chinese standards are based on AAOV.	An early-stage solution is to provide replacement land, which is hardly practical. Cash compensation is the preference of most people, though they cannot ensure the rational use of such compensation. Therefore, further technical support is needed to monitor the income of seriously affected households, especially those in vulnerable groups, and local governments should provide assistance to those in need.
Compensation and resettlement of vulnerable groups	ADB policies require that special compensation is granted to all vulnerable groups, especially seriously affected households faced with impoverishment. Chinese provisions do not require social analysis, and compensation is based only on the amount of loss.	Special funds are available to assist the vulnerable groups, who will be identified during the DMS. All measures have been specified in the RP.
Consultation and disclosure	ADB policies require APs are fully informed and consulted as soon as possible. Chinese provisions have improved the transparency of disclosure and compensation. However, APs still play a weak role in project decision-making, and the disclosure period is usually too short.	Consultation has begun at the early stage (before and during the technical assistance). The owner agrees to disclose the RP to APs as required by ADB.
Lack of legal title	ADB policies require all demolished houses, whether lawful or not, should be compensated for at the same rates. According to Chinese laws, people without local registered residence are entitled to the same compensation as local people. In addition, prevailing Chinese laws stipulate that no compensation should be provided for the acquisition of illegally owned land and houses.	For an ADB financed project, all APs, whether lawful or not, whether having ownership or right of use, will be protected, and provided with compensation or assistance.
Resettlement M&E and reporting	ADB requires that internal and external resettlement monitoring be conducted. However, there is no such requirement in Chinese laws, expect for reservoir projects.	Internal and external resettlement monitoring systems have been established for all ADB financed projects, and this has been included in the RP. The requirements for internal and external monitoring reporting are specified in the RP.

5.5 Compensation Rates and Resettlement Programs of the Subproject

5.5.1 Permanent LA

According to Document HPG [2015] No.28, LA compensation includes compensation at location-based land price, and compensation for young crops and ground attachments, in which location-based land price includes resettlement subsidy and land compensation. Group 6 of Dayuanbaoshan Village is a Tier-2 area, where the location-based land price is 134,000 yuan per

mu, and the compensation rate for hilly unused land is 60% thereof which is 80,400 yuan per mu. The main crop on the cultivated land affected by this project is corn and the annual output value is about 2000 yuan / mu. After calculating, the compensation standard is 67 times the annual rent, it is much more than the current output level of the land.

Table 11 Location-based Land Prices for LA of Shuangluan District

Unit: yuan

Division	Average price	Tier-1	Tier-2	Tier-3	Tier-4
Shuangluan District	115246	154000	134,000	119000	105000
Group 6 of Dayuanbaoshan Village			134,000		

5.5.2 Young Crops and Ground Attachments

According to Document HPG [2015] No.28, the compensation rate for young crops is 2,000 yuan per annum (for 15 years) in Dayuanbaoshan Village.

The compensation rates for ground attachments are according to the replacement price standard and the details are as follows.

Table 12 Compensation Rates for Young Crops and Ground Attachments

Item	Unit	Rate
Cereals	mu	2000 yuan
Pear	/	500 yuan; 1,000 yuan if crown diameter is 6m or more
Peach	/	500 yuan; 1,000 yuan if crown diameter is 6m or more
Clove	/	2-3 yuan
	mu	75000 yuan

5.5.3 Other Costs

Table 13 Rates of Other Costs

No.	Item	Rate
1	Compensation fees for the use of additional construction land	34 yuan/m^2
2	Land reclamation costs	90,000 yuan/mu
3	Farmland occupation tax	30 yuan/ m^2
2	Survey and design costs	0.37 yuan/ m^2
3	Implementation management costs	3% of land compensation
4	Skills training costs	1% of land compensation
5	M&E costs	1.5% of land compensation
6	Contingencies	10% of land compensation

In addition, property rentals for the community elderly care centers and daycare centers will depend on market conditions.

5.6 Entitlement Matrix

Type of impact	APs	Resettlement policy	Compensation rates
LA	5 households with 37 persons in Group 6 of Dayuanbaosha n Village	● The compensation fee included three parts which are land compensation fee for land, young crops and ground attachment. Land compensation is divided equally among 320 HHs in group 6, the average land compensation fee APs is 12,743 yuan. The compensation fee for young crops and ground attachments will be paid directly to the owners. The total amount of the three items of compensation for APs was 39868 yuan per capita.LEFs in urban villages having lost at least 70% of land may cover basic endowment insurance for urban employees, subject to review and disclosure by the village committee. ● 10% of the land compensation will be used for urban social insurance for LEFs, while the balance will be disbursed from district-level public finance. LA compensation will be disbursed by SDLRC to the town government, and distributed as discussed at a village congress. ● Skills training will be offered. ● JLH will offer jobs to the APs at the construction and operation stages.	Location-based land price for LA is 134,000 yuan/mu, 60% thereof for hilly unused land which is 80,400 yuan/mu See Tables 13 and 16 for compensation rates for young crops and ground attachments.
Ground attachments			Fruit trees: 500 yuan; 1,000 yuan if crown diameter is 6m or more Clove: 2-3 yuan each or 75,000 yuan/mu
Property lease			Depending on prevailing market conditions

6. Production and Livelihood Restoration Programs

6.1 Resettlement Objective

The objective of resettlement of the Subproject is to develop an action plan for restoration and restoration for those affected by the Subproject so that they benefit from the Subproject, and their living standard is improved or at least restored to the pre-project level. The resettlement principles of the Subproject can be summarized as follows:

- The design should be optimized to minimize involuntary resettlement;
- Involuntary resettlement should be implemented as part of the Subproject, and sufficient funds and resettlement assistance provided to the APs so that they can benefit from the Subproject as much as possible.
- Losses of the APs should be made up through cash compensation;
- The willingness of the APs should be respected, and their existing production and living traditions maintained;
- Public participation and information disclosure should be encouraged during RP preparation and implementation;
- The production level and living standard of the APs should be improved or at least restored to the pre-project levels.

6.2 Permanent LA

6.2.1 Impact Analysis

30 mu of collective land with 5 HHs and 37 APs in Dayuanbaoshan Village, Shuangtashan Town will be acquired permanently for the elderly care base in the Subproject, including farmland, collective construction land and unused land. In the Subproject, the average land loss rate is 21%. According to the survey results, the agricultural net income of APs is 116 yuan per capita ,less than 2% of the total income which means the impact of LA on the income of APs is very small.

6.2.2 Resettlement and Restoration Measures

The following resettlement measures have been proposed:

1) Social insurance for LEFs

According to the local endowment insurance policy for LEFs, LEFs in urban villages having attained 16 years (excluding students) and having lost at least 70% of land may cover basic endowment insurance for urban employees. After review and disclosure by the village committee for 7 days, the town government will submit the list of candidates to SDLSSB to review their identities and apply for funds with the Shuangluan District Government. 10% of the land compensation will be used for urban social insurance for LEFs, while the balance will be disbursed from district-level public finance. Social insurance premiums will be disbursed from land transfer fees in case of land supply by transfer, or collected from the land user upon land supply in case of land supply by allocation.

The urban social insurance fund account consists of three parts. The first part is paid by individuals according to the standard of different stages. The second part is paid by land users to LRB with the standard of 10% land compensation fee as social insurance premiums for LEFs. If the part one and part two are not enough, the remaining part will be disbursed from district-level public finance by the government as the third part. The second and third parts will put into social pooling account for the whole LEFs of the district and not directly for this project.

Among 37 APs of this project, 4 APs have joined the local endowment insurance before because of the LA of other projects. As the LA of this project is so little and the loss is less than 70%

that no one eligible for the local endowment insurance qualifications, however they can apply to join it once they lost more than 70% of their land by the LA of other project according to their own actual conditions.

The insured will receive basic pensions monthly after paying insurance premiums for 15 years when attaining 60 years for men or 55 years for women.

2) Cash compensation

LA compensation will be disbursed by SDLRC to the town government, and distributed as discussed at a village congress.

The land acquisition compensation fee was divided equally among all of the group members since 2004 in DaYuanBaoShan Village through holding villagers' representatives congress and determined by a show of hands. As the village is located in the suburban area with the rapid development of the city, many LA have been happened. The 5 affected HHs have been affected by other project LA before and also received the relevant land compensation fee in other project and benefit from this distribution. According to the field survey, there has never been discontent and disagreement with compensation allocation in the affected village.

The compensation fee included three parts which are land compensation fee for land, young crops and ground attachment. Land compensation is divided equally among 302 HHs in group 6, the average land compensation fee APs is 12,743 yuan. The compensation fee for young crops and ground attachments will be paid directly to the owners. The total amount of the three items of compensation for APs was 39868 yuan per capita.

3) Employment training

The Shuangluan District Government offers skills training for LEFs, and qualified trainees will receive certificates.

In the Subproject, vocational skills training, business startup training and employment guidance will be offered, in which:

- SDESB is responsible for vocational skills training and employment service for LEFs, including offering tailored training based on a survey of employment needs, appointing competent training agencies to offer training, and organizing job fairs for LEFs.
- The Shuangtashan Town Government and the Dayuanbaoshan Village Committee will conduct a survey on local LEFs.
- SDLRB and the Shuangtashan Town Government will provide basic information on LEFs.
- The Shuangluan District Finance Bureau will assume training costs for LEFs.

4. Jobs generated by the Subproject

At the construction stage, the construction agency will make jobs first available to villagers in the affected village. At the operation stage, both skilled and unskilled (cooking, cleaning, etc.) jobs will be first made available to local laborers.

Through repeated consultation, the JLH promises to offer 30 of temporary jobs (including 40% unskilled jobs) at the construction jobs, such as construction workers, materials, security officers, inspectors, carpentry, reinforcing steel bar, concrete worker, plasterer, foreman, laborer and doorman.etc. 21 Jobs will be offered at the operation stage for APs including cooking, cleaning, security, laundry and nursing, with monthly pays of 2,000 yuan and caregiver[3] jobs with monthly pays of 2,500 yuan. The caregiver job is preferred to hire woman and cooking, security and laundry are more suitable for the elder labors. The above jobs will be first made available to the APs and 50% of them will for women.

[3] The caregiver job is no strict requirement for education They don't need the intense training as the specific nursing job but still need the simple training of caregiver jobs organized by the elderly care center before they going to the work.

6.2 Restoration of Ground Attachments

Ground attachments will be compensated for in strict conformity with market rates.

7. Resettlement Organizational Structure

7.1 Resettlement Agencies

7.1.1 Organizational Setup

In order to ensure successful resettlement as desired, a systematic organizational structure must be established during project implementation in order to plan, coordinate and monitor resettlement activities. Since resettlement is a very comprehensive task that requires the assistance and cooperation of different departments, appropriate agencies should be established and institutional capacity strengthened. The agencies responsible for resettlement planning, management, implementation and M&E in the Subproject include:

- HECI
- SDLRB
- SDLRC
- SDCAB
- SDPCB
- SDLSSB
- SDESB
- Shuangtashan Town Government
- Dayuanbaoshan Village Committee
- Design agency
- External M&E agency

7.1.2 Organizational Responsibilities

Owner

- Appointing a resettlement consulting agency to prepare for resettlement
- Coordinating the consulting agency with other agencies at the preparation stage
- Supporting the work of the external M&E agency
- Collecting and compiling information required for internal monitoring reporting
- Managing resettlement archives

SDLRB

- Developing resettlement policies in coordination with authorities concerned
- Handling, reviewing and approving LA formalities, and conducting coordination, supervision and arbitration
- Coordinating construction and resettlement progress
- Implementing resettlement
- Supervising the implementation of resettlement activities

SDLRC

- Conducting the DMS
- Raising resettlement funds
- Disbursing resettlement funds
- Supervising the disbursement of resettlement funds
- Conducting land auction

SDCAB

- Coordinating the work of resettlement agencies
- Handling grievances and appeals arising from resettlement

SDPCB

Assessing market rates of young crops and ground attachments

SDLSSB

- Offering employment information
- Covering endowment insurance for LEFs

SDESB

Offering skills training to APs

Shuangtashan Town Government

- Participating in the DMS
- Participating in the calculation of compensation fees for AHs
- Participating in the disbursement of compensation fees to APs
- Handling grievances and appeals arising from resettlement
- Organizing skills training for APs
- Taking employment measures for APs
- Supervising fund disbursement
- Entering into an LA agreement with the affected group

Dayuanbaoshan Village Committee

- Assisting in the DMS and result verification
- Assisting in resettlement
- Assisting in handling issues arising from resettlement
- Convening a village congress to discuss the restoration program

Design agency

- Reducing resettlement impacts through design optimization
- Determining the range affected by LA

External M&E agency

The owner will appoint a qualified M&E agency as the external M&E agency. Its main responsibilities are:

- Observing all aspects of resettlement planning and implementation as an independent M&E agency, monitoring and evaluating the resettlement results and the social adaptability of the APs, and submitting resettlement M&E reports to ADB through the PMO; and
- Providing technical advice to the county PMO in data collection and processing.

7.2 Staffing

In order to ensure the successful implementation of the resettlement work, all resettlement agencies of the Subproject have been provided with full-time staff, and a smooth channel of communication has been established. These agencies are composed mainly of administrative staff members and specialized technicians, with workforces of 1-6, all of whom have a certain level of professional proficiency and considerable experience in resettlement. See Table 14.

Table 14 Staffing of Resettlement Agencies

Resettlement agency	Full-time workforce		Peak workforce	Composition
	Total	Female		
HECI	6	2	10	Project construction and management staff
SDCAB	3	1	5	Civil servants
SDLRB	1	0	2	Civil servants
SDLRC	3	0	4	Civil servants
SDPCB	2	0	3	Civil servants
SDLSSB	2	1	3	Civil servants

Town government	5	0	8	Civil servants and management staff
Design agency	2	1	4	Engineers, economists
Total	24	5	39	

7.3 Institutional Capacity Building

The following measures will be taken to strengthen institutional capacity:

1) Staff the resettlement agencies properly, and offer professional training;

2) Offer operational training to the staff of the resettlement agencies irregularly in order to learn ADB's requirements, and improve their professional proficiency and hands-on experience;

3) Strengthen information feedback to ensure a smooth information flow;

4) Strengthen the reporting system and internal monitoring to solve issues timely, and establish an early warning system.

8. Resettlement Budget

8.1 Resettlement Budget

The resettlement budget of the Subproject is 7,558,607 yuan, as detailed below:

Table 15 Resettlement Budget

No.	Item	Compensation rate (yuan)	Qty.	Amount (yuan)	Percent
1. LA compensation					
1	Land compensation	134,000 yuan/mu, 60% thereof for hilly unused land which is 80,400 yuan/mu	30 mu and 3.2 mu of unused land	3,848,480	50.92%
2	Young crop compensation	2000 yuan/mu * 15 years	8.37 mu	251,100	3.32%
3	Attachment compensation	Fruit trees: 500 yuan; 1,000 yuan if crown diameter is 6m or more	650 trees	302,500	4.00%
4		Clove: 75000 yuan/mu	6 mu	450,000	5.95%
Subtotal of Items 1-4				4,852,080	
2. Land-related costs					
5	Land reclamation costs	90000 yuan/mu	8.37 mu	753300	9.97%
6	Farmland occupation tax	30 yuan/m^2	8.37 mu	167483.7	2.22%
7	Survey and design costs	0.37 yuan/m^2	20010 m^2	7403.7	0.10%
8	Social insurance premiums for LEFs	10% of land compensation		384,848	5.09%
Subtotal of Items 5-8				1,313,035.4	
3. Other costs					
9	M&E costs	1.5% of Item 1		69,014.7	0.91%
10	Implementation management costs	3% of Item 1		138,029.4	1.83%
11	Skills training costs	1% of Item 1		46,009.8	0.61%
12	Contingencies	10% of Item 1		460,098	6.09%
Subtotal of Items 9-12				713151.9	
4. Taxes					
13	Compensation fees for the use of additional construction land	34 yuan/m^2	20010 m^2	680,340	9.00%
Total				7,558,607	100%

8.2 Annual Investment Plan

All resettlement funds of the Subproject are from local counterpart funds. Before project construction or during project implementation, the investment plan will be implemented in stages in order not to affect the production and livelihoods of the AHs. See Table 16.

Table 16 Annual Investment Plan

Year	2017	2018
Investment (0,000 yuan)	6802746.3	755860.7
Percent	90%	10%

8.3 Disbursement and Management of Resettlement Funds

8.3.1 Fund Disbursement

In order that resettlement funds are available timely and fully to the APs in strict accordance with the policies and compensation rates specified in this RP, the following measures will be taken:

- All costs related to resettlement will be included in the general budget of the Subproject. Compensation will be disbursed to SDLRC and the town government for further payment

to the APs.

- Land compensation will paid before LA.
- Financial and supervisory agencies will be established at different levels to ensure that all funds are fully and timely available.

8.3.2 Fund Management

Resettlement funds should be disbursed in strict accordance with the policies specified in this RP.

LA compensation will be used through adequate consultation with the APs.

The finance and audit departments of the Shuangluan District Government have the power to monitor and audit the use of resettlement funds.

The external M&E agency will perform follow-up monitoring on the availability of compensation fees for the AHs and the affected entities during external monitoring.

9. Public Participation and Grievance Redress

9.1 Public Participation Strategy

According to the state, provincial and municipal policies and regulations on LA, HD and resettlement, it is very necessary to conduct public participation at the preparation and implementation stages in order to protect the lawful rights and interests of the APs, reduce grievances and disputes, and realize the resettlement objectives properly by developing sound policies and implementation rules on displacement and resettlement, preparing an effective RP, and organizing implementation properly.

9.2 Already Started Public Participation Activities

Start from February 2016, the survey staff conducted public consultations with JIH, village officials and villager representatives effectively. The PMO has consulted with the AP representatives on compensation and resettlement many times. According to the survey, most local residents are aware of the Subproject and all APs are aware that they can file appeals by lawful means when their lawful rights and interests are infringed on. See table 17.

Table 17 Public Participation and Consultation Activities

Time	Participants	Key points	Key comments	Solution
February 2016	8 persons from Civil Affair Bureau, Planning Bureau, Land Resources Bureau and Dayuanbaoshan Village	Introducing the background of the Subproject, and optimizing the design	Villagers support the Subproject and have no objection to the proposed site.	
From March to September 2016	The relative persons from Civil Affair Bureau, JLH and 25 sub-district or community office	Consulting the house leasing for daycare center with the sub-district or community office	They agreed to lease the house to the daycare centers. But the rent is temporarily unable to determine.	The rental level will be determined according to market price.
June 2016	8 persons from the headquarters of the Zhangjiakou-Chengde Expressway project, Land Resource Bureau, Shuangtashan town , and Dayuanbaoshan Village and APs	Consulting the leasing contract of the headquarters of the Zhangjiakou-Chengde Expressway project	The headquarters will be relocated along with its mixing plant without affecting the Subproject	
July 2016	15 persons from Shuangtashan town and Dayuanbaoshan Village and APs	Introducing the progress of the Subproject, ADB's safeguard policies, and compensation policies of the Subproject, and identifying impacts preliminarily and discussing resettlement programs	The members of village committee support the project and believe that they will benefit from the project.	
July 2016	5 persons from JLH,	Introducing the	The APs and	JLH agreed to

	Civil Affair Bureau and Dayuanbaoshan Village and APs	progress of the Subproject and consulting the job opportunities which will be generated by this project	villagers in Dayuanbaoshan Village hope to get jobs during the project construction and operation.	provide 30 temporary jobs during project construction and 21 permanent jobs during project operation to the APs and the villagers.

In addition, the survey staff conducted a questionnaire survey on all AHs. It can be seen that 88.5% of the respondents support the Subproject. 62.7% of the respondents think the Subproject will improve local elderly care level, and 19.4% think it will generate temporary jobs. 14.8% of the respondents think the Subproject will affect their living quality, 45.3% think it will affect their work or production, 10.2% think it will tighten land supply, and 2.4% think it will reduce income. All respondents are largely aware of the local LA compensation and resettlement policies.

Table 18 Public Opinion Survey Form

No.	Question	Answers	Results (%)				
			(1)	(2)	(3)	(4)	(5)
1	Are you aware of the Subproject?	1) Yes; 2) Not clear; 3) No	4.5	93.3	2.2		
2	Do you support Subproject?	1) Yes; 2) No; 3) Don't care	88.5	1.9	9.6		
3	What benefit do you think the Subproject will have?	1) Improving the living environment; 2) Promoting local economic development; 3) Solving the local elderly care problem; 4) Generating temporary jobs	8.5	9.4	62.7	19.4	
4	What adverse impact do you think the Subproject will have?	1) Affecting living quality; 2) Affecting work or production; 3) Tightening land supply; 4) Reducing income; 5) Causing traffic congestion	14.8	45.3	10.2	2.4	27.3
5	What assistance do you expect from the Subproject to increase income?	1) Skills training; 2) Employment; 3) Other	2.4	97.6			
6	Are you aware of the compensation and resettlement policies?	1) Yes; 2) Somewhat; 3) No	33.9	58.3	7.8		
7	Do you know how to file an appeal when your lawful rights and interests are infringed on during resettlement?	1) Yes; 2) No	95.6	4.4			

9.3 Planned Public Participation Activities

In the future, the PMO will take the following measures to encourage public participation and consultation:

(1) Joint review

SDLRB will review the LA resettlement program together with the land user, town government and representatives of the affected village to improve it.

(2) Consultation meeting

Before LA, an FGD involving villager representatives (not less than 30% of participants being women) will be held to introduce project and LA information, and collect comments and suggestions.

In each community where a daycare center will be built, a community congress (not less than

30% of participants being women) will be held to collect comments and suggestions on elderly care.

(3) Publicity on LA policies

The LA policies of the Subproject will be communicated online and via other media.

(4) LA announcement

The LA announcement covers a brief introduction to the Subproject, the range of LA, resettlement policies, compensation rates, resettlement agencies, resettlement implementation schedule, APs' rights and obligations, grievance redress, M&E, etc.

(5) Disclosure of the RP

The RP will be accessible on the website of SDLRB or the town government. The owner will publish where the RP is accessible on a local newspaper before the implementation of the Subproject.

(6) RIB

Key points in the RP will be compiled into the RIB, and distributed to the APs before RP disclosure, covering project overview, resettlement impacts, compensation policies, implementation schedule, IAs, grievance redress, etc.

(7) DMS result verification

Before the implementation of the Subproject, SDLRB, SDLRC and SDPCB will verify the DMS results together with the Shuangtashan Town Government, the Dayuanbaoshan Village Committee and the AHs.

(8) Determination of income restoration program

Before the implementation of the Subproject, the village committee will hold a meeting to discuss and finalize the income restoration program.

(9) Training program

The town government, SDESB, SDLRB, village committee and villagers will hold a meeting to discuss training needs and develop a training program.

(10) M&E

The external M&E agency will monitor resettlement progress and impacts, compensation payment, information disclosure, production and livelihood restoration, etc.

9.4 Grievance Redress

Since public participation is encouraged during the preparation and implementation of this RP, no substantial dispute will arise. However, unforeseeable circumstances may arise during this process. In order to address issues effectively, and ensure the successful implementation of project construction and LA, a transparent and effective grievance redress mechanism has been established. The basic grievance redress mechanism is as follows:

Stage 1: An AP may file an appeal with the Dayuanbaoshan Village Committee, which will discuss the appeal together with the Shuangtashan Town Government and make a disposition within two weeks.

Stage 2: If the AP is dissatisfied with the disposition of Stage 1, he/she may file an appeal to SDCAB after receiving such disposition, which shall make a disposition within two weeks.

Stage 3: If the AP is dissatisfied with the disposition of Stage 2, he/she may file an appeal to competent administrative authorities level by level in accordance with the Administrative Procedure Law of the PRC for arbitration after receiving such disposition.

Stage 4: If the AP is still dissatisfied with the disposition of Stage 3, he/she may file a suit in a people's court in accordance with the Civil Procedure Law of the PRC.

All agencies will accept grievances and appeals from the affected persons for free, and costs

so reasonably incurred will be disbursed from contingency costs.

The above appeal channel will be notified to the APs by means of public meeting, the RIB and mass media.

If any AP may also file an appeal with the Office of the Special Facilitator or Compliance Review Panel of ADB in accordance with ADB's accountability mechanism [4].

The APs may file appeals about any aspect of resettlement, including compensation rates.

The resettlement agencies will appoint persons to collect and handle grievances and appeals from the APs specifically. See Table 19.

Table 19 Contact Information for Grievance Redress

Agency	Name	Title	Tel
SDCAB	Zhang Xiurui	Director-general	15803140686
SDLRB	Ma Lijun	Deputy Director-general	13081897430
SDLRC	Liu Jianxin	Director	0314-4041998
SDPCB	Hou Xiumei	Director-general	0314-4040918
SDLSSB	Director Chen	Director	0314-4044282
SDESB			
Shuangtashan Town Government	Zhang Xiaowei	Town head	15003146166
	Shen Haidong	Team leader	13932449886
Dayuanbaoshan Village Committee	Ding Fude	Village head	15732427777
Group 6	Yang Zidong	Group head	13731433319

[4] For more information, see http://www.adb.org/Accountability-Mechanism/default.asp.

10. Resettlement Implementation Plan

10.1 Principles for Resettlement Implementation

According to the project implementation schedule, the Subproject will be constructed from 2017 to 2022. In order that the resettlement schedule is coordinated with the construction schedule, LA will begin in January 2017 and end in May 2017. The basic principles for resettlement implementation are as follows:

LA should be completed 1-3 months prior to the commencement of construction, and the starting time will be determined as necessary.

During resettlement, the APs shall have opportunities to participate in the Subproject. Before the commencement of construction, the range of LA will be disclosed, the RIB distributed and public participation activities conducted properly.

All compensation fees will be paid to the affected proprietors directly and fully within 3 months of approval of the resettlement and compensation program. No organization or individual should use compensation fees on their behalf, nor should compensation fees be discounted for any reason.

10.2 Resettlement Implementation Schedule

Table 20 Resettlement Implementation Schedule

No.	Task	Agency	Target	Time	Progress
1	RP preparation stage				
1.1	Socioeconomic survey	Survey staff	Affected village and town	Jul. 2016	Completed
1.2	Preparation of RP	JLH	RP	May – Jul. 2016	Ongoing
2	Information disclosure and public participation				
2.1	Consultation with agencies concerned and APs	JLH	APs	May 2014 – Dec. 2016	Ongoing
2.2	Disclosure of the draft RP and RIB to APs	HECI	APs	Oct 2016	Ongoing
2.3	Disclosure of the revised RP and RIB to APs	HECI	APs	Oct. 2016	Ongoing
2.4	Disclosure of the RP on ADB's website	ADB	APs, public	Nov. 2016	Pending
3	Approval of construction land				
3.1	Preliminary land examination	SDLRB		Jul. 2016	Completed
3.2	Land approval	SDLRB		June. 2017	Pending
4	Implementation stage				
4.1	DMS on land	SDLRC	Affected group	Feb. 2017	Pending
4.2	Execution of LA compensation agreement and payment of compensation	SDLRC, town government	Affected group	Mar. 2017- May 2017	Pending
4.3	Income restoration measures	SDESB, district/ town governments	APs	Mar. 2017– Dec. 2018	Pending
4.4	Skills training	SDESB, district/ town governments	APs	Feb. 2017 – Dec. 2018	Pending
5	M&E				
5.1	Baseline survey	External M&E agency	Affected village	Feb. 2017	Pending
5.2	Internal monitoring	Internal monitoring agencies	Semiannual report	Mar. 2017 – Dec. 2019	Pending
5.3	External M&E	External M&E agency	Semiannual report	Mar. 2017 – Dec. 2019	Pending

11. M&E

In order to ensure the successful implementation of this RP and resettle the APs properly, periodic M&E on LA and resettlement activities will be conducted in accordance with ADB's resettlement policy. Monitoring is divided into internal monitoring by resettlement agencies and external M&E.

11.1 Internal Monitoring

11.1.1 Purpose

The purpose of internal monitoring is to ensure that all resettlement agencies function properly during RP implementation, the lawful rights and interests of the APs are not infringed on, and resettlement is implemented according to the principles and schedule specified in this RP.

11.1.2 Agencies and Staff

The internal monitoring agencies are SDCAB,HECI, SDLRB, SDLRC and the LA implementing agency. In order to conduct internal monitoring effectively, all agencies will appoint dedicated staff members who have participated in the preparation and implementation of this RP.

11.1.3 Procedure

During implementation, HECI and the LA implementing agency will collect and record information on resettlement from the monitoring samples, and report real-time activity records to the PMO timely to maintain continuous monitoring. SDCAB will inspect implementation regularly.

Information forms of specified formats will be prepared in the above monitoring mechanism to realize a continuous information flow from the LA implementing agency to SDCAB.

11.1.4 Scope

- Investigation and coordination of issues arising from resettlement and organizational structure;
- Payment and amount of compensation fees;
- LA implementation progress;
- Implementation of LA resettlement program;
- Income restoration of the APs;
- Execution of lease contracts, and rental payment
- Timetables of the above activities;
- Compliance with the policies in the RP
- Public participation, consultation and information disclosure;
- Establishment and staffing of resettlement agencies, and training and working efficiency of staff
- Grievance redress

11.1.5 Reporting

1) Interval

JLH will submit an internal monitoring report to ADB semiannually, and prepare a resettlement completion report at the end of resettlement.

2) Format

As required by ADB, an internal monitoring report should include a main text and tables to show the statistics of the past 6 months, and reflect the progress of LA, resettlement and use of compensation fees through comparison. Some table formats are as follows:

Table 21 Sample Schedule of LA and HD

_____ Town, _____ County/district
Cut-off date: _____ (MM/DD/YY)
Reporting date: _____ (MM/DD/YY)

Item	Unit	Planned	Actual	Total	Percent

Permanent LA	mu				
Compensation payment	0,000 yuan				
Staff training	/				
Rental payment	0,000 yuan				
Employment	/				

Prepared by: _____ Signature of person responsible: _____ Official seal: _____

Table 22 Sample Schedule of Fund Utilization

_____ Town, _____ County/district
Cut-off date: _____ (MM/DD/YY)
Reporting date: _____ (MM/DD/YY)

Affected entity	Description	Unit/ qty.	Rate	Compensation paid (yuan)
Village				
Community				

Prepared by: _____ Signature of person responsible: _____ Official seal: _____

11.1.6 Completion Report

After the completion of resettlement, the owner will prepare a resettlement completion report, which should provide details of resettlement implementation, including LA, resettlement, income restoration, costs, progress, grievance redress, etc., and be submitted to ADB before the submission of the final report of the Subproject.

11.2 External Monitoring

11.2.1 External M&E Agency

Independent monitoring is conducted on all resettlement activities by an agency independent of resettlement implementation with a comprehensive, long-term point of view. The external M&E agency will follow up the resettlement activities to see if the state laws on resettlement, and ADB's relevant policy are complied with, and if the production level and living standard of the APs are improved or at least restored to pre-project levels. The external M&E agency will give suggestions to the implementing agencies based on issues found during monitoring so that such issues can be solved timely.

11.2.2 Procedure and Scope

1) Preparing the terms of reference of M&E
2) Developing the M&E information system and software
3) Preparing a survey outline, survey form and questionnaire
4) Design of sampling survey plan

The sampling rate is 100%.

5) Baseline survey

A baseline survey required for the independent M&E of the affected enterprise and village will be conducted to acquire baseline data on their production level and living standard (livelihood, production and income levels).

6) Establishing an M&E information system
7) M&E survey

- Resettlement agencies: learning the capacity and efficiency of the resettlement agencies
- Resettlement progress, compensation rates, and payment
- AHs: payment of land compensation, resettlement, income restoration
- Public participation and consultation: public participation activities during the preparation and implementation of the RP, and the effectiveness of participation and disclosure

- Grievance redress: registration and handling of grievances and appeals

8) Compiling M&E data and establishing a database
9) Comparative analysis
10) M&E reporting

11.2.3 Monitoring Indicators

- Socioeconomic indicators: per capita net income, GDP, employment rate;
- Institutional indicators: staffing, staff competencies, rules and regulations, equipment, affairs handling rate
- APs affected by LA: availability of compensation fees, income variation, employment rate, satisfaction with resettlement
- Public participation: frequency and scope of participation, impacts on project implementation

The external M&E agency will submit an external M&E report to the county PMO and ADB semiannually. See Table 23.

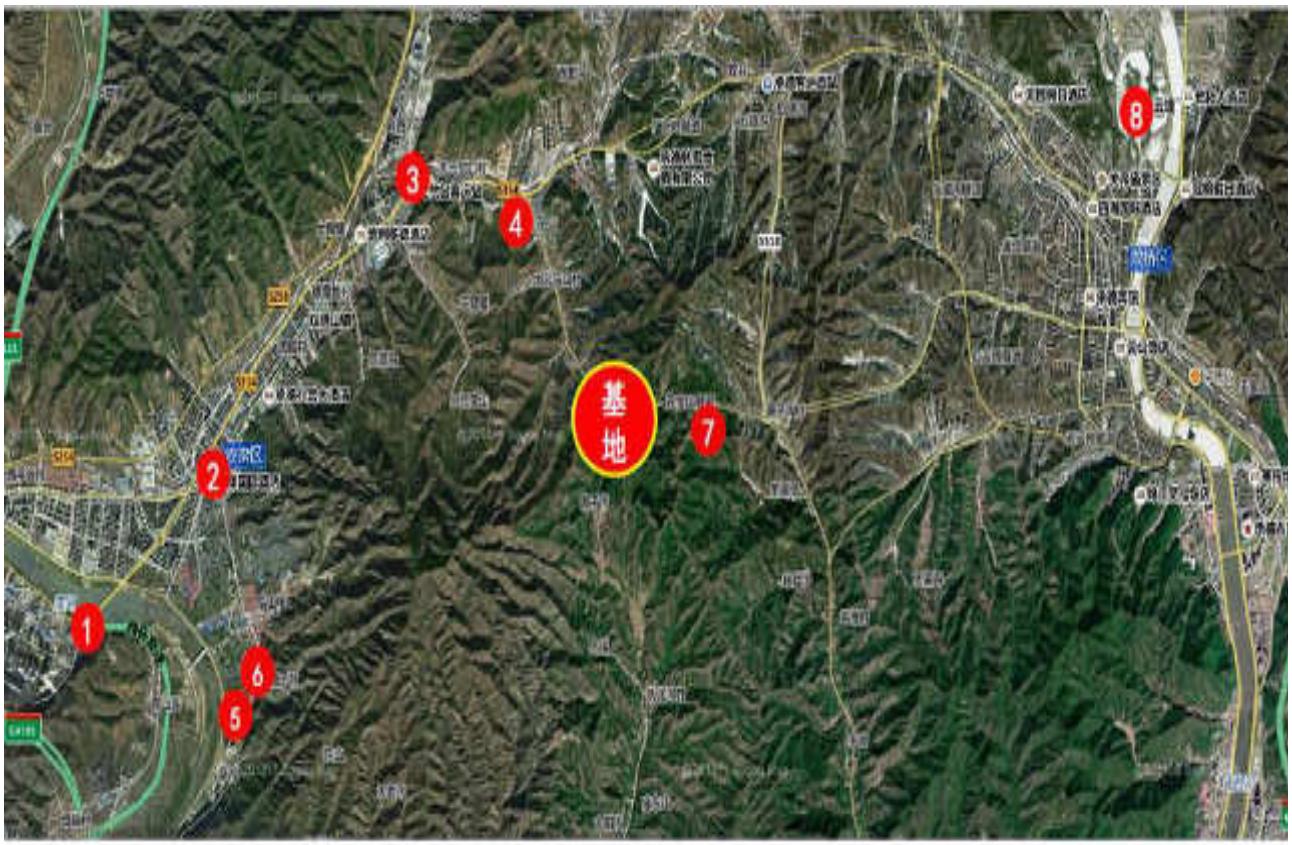
Table 23 Resettlement M&E Schedule

	Report	Date
1	Baseline report	Dec. 2016
2	M&E report (No.1)	July. 2017
3	M&E report (No.2)	Dec. 2017
4	M&E report (No.3)	July. 2018
5	M&E report (No.4)	Dec. 2018
6	M&E report (No.5)	July. 2019
7	Summary report	Dec. 2019

11.3 Post-evaluation

After project implementation, the county PMO (or through the external M&E agency) will apply the theory and methodology of post-evaluation to evaluate the Subproject's resettlement activities on the basis of M&E to obtain successful experience and lessons in resettlement as a reference for future work.

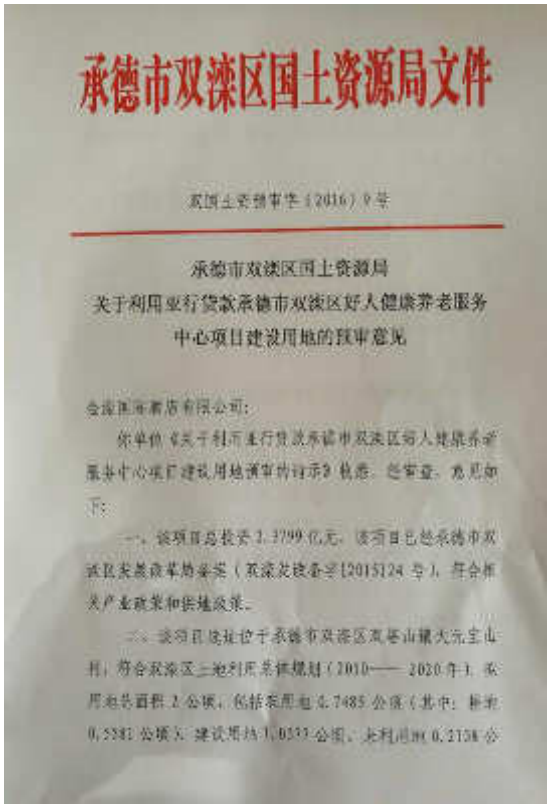
Appendix 1 Location Map of the Shuangluan District Elderly Care Base



本项目机构总部拟建于承德市双滦区双塔山镇大元宝山村，位于二十一世纪避暑山庄文化旅游产业园区内。

1 高速口
2 金滦国际酒店
3 三岔口
4 鼎盛王朝
5 承德双滦区精神病医院
6 承德双滦儿童福利院
7 承德北方酒文化基地
8 承德避暑山庄

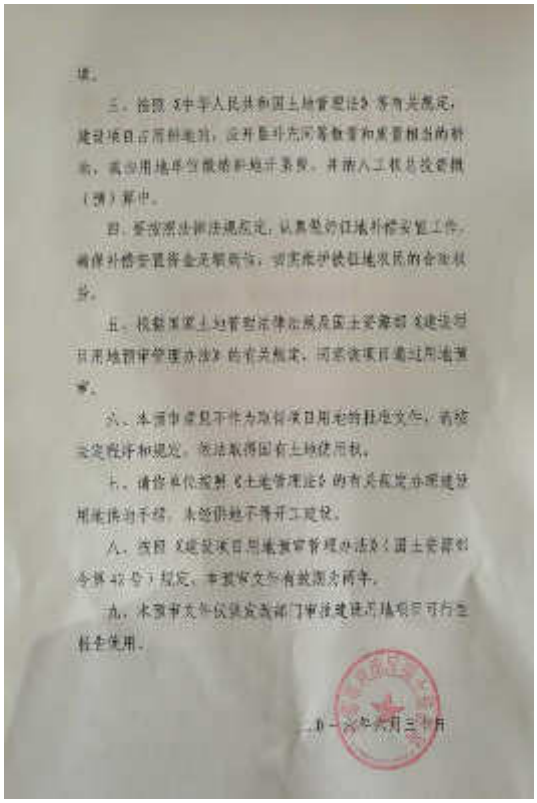
Appendix 2 Preliminary Land Examination



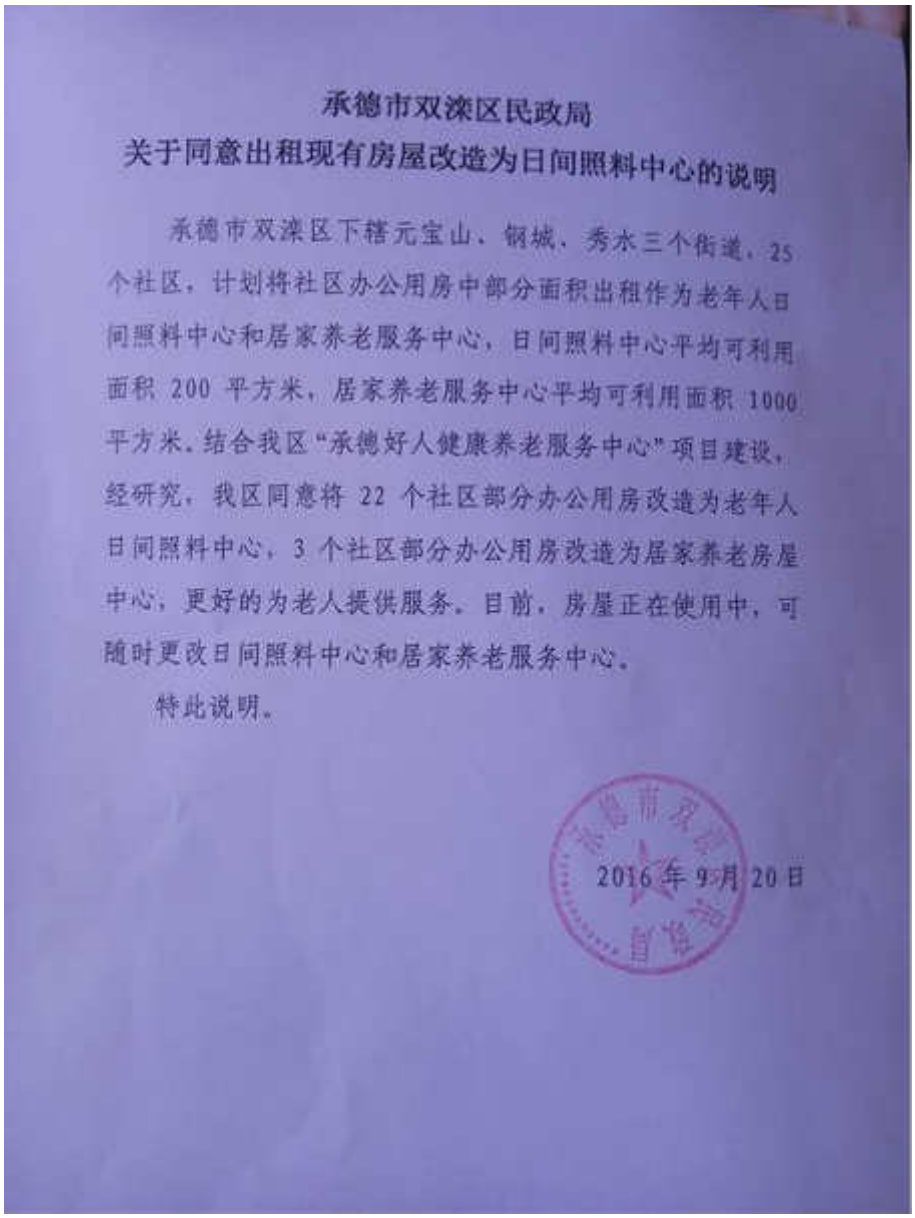
承德市双滦区国土资源局文件

双国土资预审字〔2016〕9号

承德市双滦区国土资源局
关于利用亚行贷款承德市双滦区好人健康养老服务
中心项目建设用地的预审意见



Appendix 3 Instructions on consent to lease to the daycare centers



承德市双滦区民政局
关于同意出租现有房屋改造为日间照料中心的说明

承德市双滦区下辖元宝山、钢城、秀水三个街道，25个社区，计划将社区办公用房中部分面积出租作为老年人日间照料中心和居家养老服务中心，日间照料中心平均可利用面积200平方米，居家养老服务中心平均可利用面积1000平方米。结合我区"承德好人健康养老服务中心"项目建设，经研究，我区同意将22个社区部分办公用房改造为老年人日间照料中心，3个社区部分办公用房改造为居家养老房屋中心，更好的为老人提供服务。目前，房屋正在使用中，可随时更改日间照料中心和居家养老服务中心。

特此说明。

2016年9月20日

Shuangluan District Civil Affairs Bureau
Note on Approving the Lease of Existing Premises for Reconstruction into Daycare Center

Shuangluan District, Chengde City governs Yuanbaoshan, Gangcheng and Xiushui Sub-districts, and 25 communities. Part of the community office premises is to be leased for use as elderly daycare centers and home elderly care service centers, with average usable areas of 200 m^2 and 1,000 m^2 respectively. Under the Chengde Good People Health and Elderly Care Center Project, the district government has agreed to reconstruct some office premises of 22 communities into elderly daycare centers, and some office premises of 3 communities into home elderly care service centers in order to serve old people better. These premises are being used, and may be converted into elderly daycare centers and home elderly care service centers at any time.

September 20, 2016
Shuangluan District Civil Affairs Bureau

Appendix 4 RIB

1. Purpose of the RIB

The RIB is prepared to provide the APs with relevant project information, especially information on resettlement impacts and programs, compensation principles and rates, and applicable laws and regulations. RIB distribution is an aspect of information disclosure. The RIB will be distributed to the APs before the DMS.

2. Introduction to the Subproject

The Subproject is a subproject of the ADB-financed Hebei Elderly Care Development Project, and a key project that promotes the coordinated development of Beijing, Tianjin and Hebei. The Subproject involves the construction of an elderly care base, 3 community elderly care centers and 22 daycare centers.

3. Resettlement impacts of the Subproject

30 mu of collective land in Dayuanbaoshan Village, Shuangtashan Town will be acquired permanently for the elderly care base in the Subproject, including 8.37 mu of cultivated land, 2.86 mu of rural roads, 15.57 mu of construction land and 3.2 mu of unused land, affecting 5 households with 37 persons in Group 6 of Dayuanbaoshan Village. The affected ground attachments are 500 pears, and 150 peaches and 6 mu of cloves mainly.

The 25 community elderly care centers and daycare centers will be built in leased properties, and expanded or reconstructed from existing properties, avoiding the permanent acquisition of collective land and the demolition of residential houses.

4. Applicable regulations and policies

1) ADB Policy

- Safeguard Policy Statement (2009)

2) PRC Laws, Regulations and Policies

- Land Administration Law of the PRC (January 1, 1999, amended on August 28, 2004)
- Regulations on the Implementation of the Land Administration Law of the PRC (Decree No.256 of the State Council) (December 27, 1998)
- Decision of the State Council on Deepening the Reform and Rigidly Enforcing Land Administration (SC [2004] No.28)
- Interim Regulations of the PRC on Farmland Occupation Tax (January 1, 2008)
- Detailed Rules for the Implementation of Farmland Occupation Tax of the PRC (Decree No.49 of the State Administration of Taxation)
- Guidelines on Improving Compensation and Resettlement Systems for Land Acquisition (MLR [2004] No.238) (November 3, 2004)
- Notice of the Ministry of Land and Resources on Doing a Practical Job in Compensation for Land Acquisition (MLR [2004])
- Notice of the Ministry of Finance, and the Ministry of Land and Resources on Adjusting Compensation Fees for the Use of Additional Construction Land (CZ [2002] No.93)
- Notice of the Ministry of Land and Resources on Doing a Better Job in LA Management (MLR [2010] No.96)
- Some Opinions of the State Council on Accelerating the Development of the Elderly Care Industry (SC [2013] No.35)

3) Provincial policies

- Land Administration Regulations of Hebei Province (amended in 2002)

- Regulations of Hebei Province on the Implementation of the Land Administration Law of the PRC (amended in 2005)
- Notice of the Hebei Provincial Labor and Social Security Department on Establishing the Endowment Insurance System for Land-expropriated Farmers (2005)
- Notice of the Hebei Provincial Government on Implementing Location-based Land Prices for Land Acquisition (HPG [2008] No.132)
- Notice of the Hebei Provincial Government on Amending Location-based Land Prices for Land Acquisition (HPG [2015] No.28)
- Opinions of the Hebei Provincial Government on Accelerating the Development of the Elderly Care Industry (2015)

4) District policies

- Opinions of the Shuangluan District Government on Policy Issues concerning the Effecting of Basic Endowment Insurance for Urban Workers for the First Group of Urban Village Dwellers (SDG [2010] No.95)

5. Compensation rates

1) Permanent LA

Collective construction land in Dayuanbaoshan Village, Shuangtashan Town will be acquired permanently for the Subproject. According to the Notice of the Hebei Provincial Government on Implementing Location-based Land Prices for Land Acquisition, and the Notice of the Hebei Provincial Government on Amending Location-based Land Prices for Land Acquisition, the location-based land price is 134,000 yuan/yuan applies to the subproject area, and the compensation rate for hilly unused land is 60% thereof which is 80,400 yuan/mu.

2) Compensation rates for young crops and ground attachments

The compensation rate for young crops is 2,000 yuan per annum (for 15 years). The compensation rate for fruit trees is usually 500 yuan each, or 1,000 yuan each if crown diameter is 6m or more, and that for clove 2-3 yuan each or 75,000 yuan/mu.

3) Compensation fee

The compensation fee included three parts which are land compensation fee for land, young crops and ground attachment. Land compensation is divided equally among 302 HHs in group 6, the average land compensation fee APs is 12,743 yuan. The compensation fee for young crops and ground attachments will be paid directly to the owners. The total amount of the three items of compensation for APs was 39868 yuan per capita.

6. Grievance redress

Since public participation is encouraged during the preparation and implementation of this RP, no substantial dispute will arise. However, unforeseeable circumstances may arise during this process. In order to address issues effectively, and ensure the successful implementation of project construction and LA, a transparent and effective grievance redress mechanism has been established. The basic grievance redress mechanism is as follows:

Stage 1: An AP may file an appeal with the Dayuanbaoshan Village Committee, which will discuss the appeal together with the Shuangtashan Town Government and make a disposition within two weeks.

Stage 2: If the AP is dissatisfied with the disposition of Stage 1, he/she may file an appeal to SDCAB after receiving such disposition, which shall make a disposition within two weeks.

Stage 3: If the AP is dissatisfied with the disposition of Stage 2, he/she may file an appeal to competent administrative authorities level by level in accordance with the Administrative Procedure

Law of the PRC for arbitration after receiving such disposition.

Stage 4: If the AP is still dissatisfied with the disposition of Stage 3, he/she may file a suit in a people's court in accordance with the Civil Procedure Law of the PRC.

All agencies will accept grievances and appeals from the affected persons for free, and costs so reasonably incurred will be disbursed from contingency costs.

The above appeal channel will be notified to the APs by means of public meeting, the RIB and mass media.